RIO GRANDE RESOURCES CORPORATION

September 8, 2026

Mr. Abimbola Ojekanmi
Uranium Mine Reclamation Coordinator
Mining Act Reclamation Program
Mining and Minerals Division
New Mexico Energy Minerals and Natural Resources Department
1220 South St. Francis Dr.
Sante Fe, NM 87502

RE: Rio Grande Resource's Response to March 18, 2026 Comments from Mining Environmental Compliance Section of the New Mexico Environment Department for Closeout/Closure Plan, Revision 22-1 Permit No. CI002RE

Dear Mr. Ojekanmi,

Rio Grande Resources Corporation (RGR) is submitting the enclosed Update of the Closure/Closeout Plan, Revision 22-2, for the Mt. Taylor Mine (Permit No. CI002RE). This revision has been prepared in response to the comments provided by the Mining and Minerals Division (MMD) in its March 18, 2026 comment letter.

Also enclosed is a separate Response to Comments document that addresses each of MMD's comments and identifies the corresponding revisions made to the Closure/Closeout Plan.

RGR appreciates MMD's review of this submittal and looks forward to continuing to work with the Department throughout the review process. If you have any questions or require additional information, please contact me.

Respectfully Submitted,
Rio Grande Resources Corporation

Jeff Schoenbacher
Reclamation Manager

CC
Clinton Chisler, Senior Reclamation Supervisor, EMNRD-MARP-MMD
David Ennis, Program Manager, EMNRD-MMD
Corey Dimond, Site Lead, NMED-MECS
Joseph Fox, MECS Program Manager, NMED-MECS
Kevin Raabe, President, RGR
Anita Willcox, Site Supervisor, RGR
Melissa Meyer, Project Manager, EA

RIO GRANDE RESOURCES CORPORATION
MT. TAYLOR MINE
PO BOX 1150
4899 W. HWY 605 GRANTS, NM 87020
TEL (505) 287-7971

September 2026 Rio Grande Resources Response to Comments from MMD For Closeout/Closure Plan, Revision 22-1

Mt. Taylor Mine, Permit No. CI002RE San Mateo, New Mexico

Prepared for:
Abimbola Ojekanmi
Uranium Reclamation Coordinator
Mining Act Reclamation Program
Mining and Minerals Division

Prepared by:

Engineering Analytics, Inc.
1600 Specht Point Road, Suite 209
Fort Collins, Colorado 80525
(970) 488-3111

On behalf of Mt. Taylor and Rio Grande Resources:

Kevin Raabe
President, RSO
Rio Grande Resources Corporation

Project No. 111360
September 8, 2026
Rev. 1.0

Comment Number	Section Number in CCP	Page From in CCP	Comment	Response	MMD Acceptance of EA Response
Comment Letter, Mt. Taylor Mine, Update of Closure/Closeout Plan, Revision 22-1, Permit No. CI002RE (March 18, 2026)					
1	Chapter 1	Page 5, Para. 5	**MMD "Comment 1" (March 18, 2026):** Chapter 1, Page 5, Paragraph 5, claimed: The discharged water flowed northward from the San Lucas Canyon and disappeared approximately 22 miles from the point of discharge after comingling with the San Miguel Creek drainage system. What are RGR's plans to further investigate, characterize, and reclaim San Lucas Canyon? Can you provide information that describes the nature of investigation that will be completed in both San Lucas Canyon and San Miguel Creek; or a summary of existing investigations that will inform some remediation/reclamation of the Canyon?	The statement regarding treated mine water flowing approximately 22 miles downstream has been removed from the CCP. Upon review of the historical investigation reports, RGR did not identify documentation supporting this specific distance. The text has been revised to describe the historical downstream investigations that were completed without making an unsupported statement regarding the extent of historical surface water flow. Additional discussion of the historical investigations completed downstream of Outfall 001 has been incorporated into Section 1.3.5 and 4.4.5, including the 2013 and 2014 investigations of soils, surface water, groundwater, sediment, and downstream impoundments. These investigations generally concluded that historical treated mine water discharges did not result in significant downstream environmental impacts requiring additional characterization at that time. As part of the mine closure program, RGR is planning additional characterization of the San Lucas Canyon area immediately downstream of Outfall 001 to further evaluate the localized area of elevated gamma radiation identified during the 2020 radiological survey. AVM is currently preparing a work plan describing the proposed characterization activities. The results of the characterization will be used to determine whether remedial actions are warranted and to support completion of closure activities at Outfall 001. Based on the historical investigations completed to date, additional investigation of San Miguel Creek is not currently planned. If the planned characterization identifies conditions that warrant further evaluation beyond the immediate Outfall 001 area, the scope of investigation will be expanded, as appropriate, in coordination with NMED.	
2	Chapter 3	Page 47	**MMD "Comment 2" (March 18, 2026):** Chapter 3, Page 47: The shaft plugs as configured will need to include space for monitoring devices and sensors as may be required by NMED and OSE in the future. How does RGR intend to accommodate monitoring devices in the plug design?	Text updated in Section 4.3.1. With future design, the shaft plug design will identify a secondary sampling port. Both ports will be sized appropriately to accommodate the necessary monitoring devices and sensors required by NMED and OSE.	

Comment Number	Section Number in CCP	Page From in CCP	Comment	Response	MMD Acceptance of EA Response
3	Chapter 4	Page 26 to 27	**MMD "Comment 3" (March 18, 2026):** Chapter 4. Page 26 to 27: RGR intends to dispose of solid waste into either expanded disposal cells or offsite the facility. This implies that RGR classify waste generated from this closure operation into 2 broad groups, depending on the radiological properties. Also, RGR seems to be working under the assumption that there are only 2 broad classes of waste - based on radiological characterization. What are RGR's plans to manage more complex waste mixtures if there are more than 2 types of waste - e.g. organic/inorganic wastes, radiological and non-radiological wastes, complex mixtures of radio-impact soil-heavy metal, etc. Specifically, MMD is interested in cell design as related to radiologically contaminated soils combined with the diesel contaminated soils on-site.	RGR acknowledges that the CCP text may have implied a binary waste classification. In practice, RGR employs a multi-tiered waste classification protocol that considers radiological, chemical, and physical properties. The *Evaluation of Diesel Placement in Proposed Expanded Disposal Cell* (EA, 2026f) provides a comprehensive assessment specifically addressing the co-placement of diesel-impacted and radiologically elevated soils. Key findings are as follows: 1. Diesel-impacted soils at the site do not meet the definition of hazardous waste under RCRA — they are not listed wastes and do not exhibit hazardous characteristics (ignitability, corrosivity, reactivity, or toxicity per TCLP). 2. A spatial analysis confirms that elevated diesel concentrations (exceeding the NMED industrial SSL of 3,000 mg/kg TPH-DRO) do not spatially coincide with radiological hotspots (Ra-226 > 20 pCi/g). Therefore, the material does not constitute mixed radioactive and RCRA hazardous waste. 3. Where both contaminants co-occur (e.g., Mine Compound), diesel concentrations are well below the SSL (≤170 mg/kg). 4. The expanded disposal cell's design — clay liner, radon-attenuating cover, and long-term monitoring — is technically compatible with both waste streams. If additional waste streams or more complex waste mixtures are identified during ongoing characterization, they will be evaluated using the same multi-parameter waste classification process. Waste management and disposal requirements will be determined based on the applicable regulatory criteria and the physical and chemical characteristics of the material. The CCP has been revised to reflect this multi-tiered waste classification framework.	

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4	Chapter 4	Page 27	**MMD "Comment 4" (March 18, 2026):** Chapter 4. Page 27. Can you confirm how long RGR intends to keep waste materials in the proposed staging areas? Please provide an overlay map of the proposed staging areas and how they will be protected from surface water or precipitation.	Waste materials stored within the three proposed staging areas will be managed on a temporary basis. The timing for relocation of staged waste materials to the expanded disposal cell will be determined as the sequencing of closure activities and disposal cell construction is finalized. Staged materials will be relocated to the expanded disposal cell as practical during implementation of the closure activities. The locations of the three NMED-approved staging areas and the surrounding stormwater drainage patterns are reflected in Figure 4-2 of the submittal. While the staging areas are open to direct precipitation, they are protected from surface water run-on and runoff through the following measures: • **Siting:** The staging areas have been intentionally placed outside of concentrated surface water flows and within footprints previously approved by NMED in 2024 (NMED, 2024). • **Runoff Controls:** Stormwater runoff from these areas is fully managed by the onsite stormwater engineering upgrades completed under the MMD-approved Permit No. CI002RE. • **Permit Compliance:** These upgrades were specifically designed and constructed to support National Pollutant Discharge Elimination System (NPDES) compliance. They provide run-off controls and increased surface water retention capacity within the mine area. These controls are engineered to remain effective across all phases: active operating status, post-mining land use, and the long-term, post-closeout period.	
5	NA	NA	**MMD "Comment 5" (March 18, 2026): Mount Taylor Expanded Cell Design (June 06, 2025)** Page 15: RGR uses the word "store and release, earthen cover system". Can RGR elaborate on the actual meaning and engineering implications of such cover system. Does this term imply an evapo-tranpirative (ET) cover?	The term "store and release" as used on Page 15 of the *Mt. Taylor Expanded Cell Design* (EA, June 2025) does indeed describe a cover system that functions on evapotranspiration (ET) principles, consistent with the terminology used in the New Mexico Copper Rule (20.6.7.33 NMAC). Specifically, a store-and-release cover is an earthen cover designed to temporarily store precipitation within the soil profile, then remove it through evapotranspiration, minimizing percolation into the underlying waste.	

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6	NA	NA	**MMD "Comment 6" (March 18, 2026): Mount Taylor Expanded Cell Design (June 06, 2025)** Section 4.12: Can RGR elaborate on the functional implications of such ET cover system and how proposed cell extension will affect or complement the function of existing cover system.	The ET cover system for the proposed cell extension is designed to function in an integrated and complementary manner with the existing cover. Functionally, the store-and-release (ET) cover operates through three primary mechanisms: 1. **Surface interception and runoff**: The 12-inch rock mulch layer dissipates raindrop energy, reduces surface sealing, and promotes lateral runoff rather than infiltration. 2. **Soil moisture storage:** The 25-inch in-situ soil layer temporarily stores infiltrating water within its pore structure. Nominal AWHC is 0.10 cm^3/cm^3, yielding 2.50 inches of total storage capacity. 3. **Evapotranspiration removal**: While not required, the native vegetation, which is adapted to semi-arid conditions, draws moisture upward and releases it to the atmosphere via transpiration. The 12-inch clay radon barrier beneath the in-situ soil layer provides the final low-permeability boundary, preventing downward percolation (saturated hydraulic conductivity maintained per design). The extended cover will tie into the existing cover along a designed transition zone, maintaining grade continuity, surface drainage patterns, and erosional stability. The existing cover's functions, which include radon attenuation, frost protection, erosion resistance, and infiltration control, are not diminished by the extension. Rather, the extension expands the protected footprint, reducing the area of unlined, impacted soils. The report revised by EA has included a more detailed functional description of the ET mechanism and the design interface with the existing cover.	
7	NA	NA	**MMD "Comment 7" (March 18, 2026): Mount Taylor Expanded Cell Design (June 06, 2025)** Page 38, Fig 4.3: This figure claimed 1,093,840 volumes of storage will be created in the extension. Is this volume in cubic feet, cubic yard or m3.	The volume of 1,093,840 reported in Figure 4.3 of the *Mt. Taylor Expanded Cell Design* (EA, June 2025) is in cubic yards (yd^3). This value represents the total engineered storage capacity of the combined existing Waste Rock Pile (WRP) and the proposed disposal cell expansion. The figure caption and associated text in the revised report has been updated to clarify the unit as cubic yards (yd^3) to eliminate any ambiguity.	

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8	NA	NA	**MMD "Comment 8" (March 18, 2026): Comments on Geotechnical Analysis of Borrow Sites** RGR collected samples from three different test pits/locations as shown in Fig 1. Geotechnical analysis of samples was completed, but the data were not presented in spatial dimensions. If these data were projected spatially, can RGR confirm that there are sufficient fine graded soil materials within each of the 3 locations, such that each area has sufficient materials suitable as impermeable covers (clay) for the storage cells?	RGR acknowledges that the geotechnical data from the three borrow site test pits were presented in tabular form without explicit spatial projection. The three borrow locations (Borrow Areas A, B, and C) were selected based on field reconnaissance identifying zones of fine-grained soil within each area. Laboratory testing confirmed that samples from all three locations meet the geotechnical criteria for use as low-permeability cover material — specifically, Atterberg limits, particle size distribution, and compacted hydraulic conductivity consistent with the design requirement ($k \leq 1\times10^{-7}$ cm/s). The infiltration and stability analyses in the updated analysis used material properties derived from this borrow program (dry density ~1.51–1.59 g/cm³, porosity 0.35–0.38, etc.). To directly address MMD's question: RGR confirms that based on field observations, test pit logs, and the spatial extent of each borrow area as shown in Figure 1 of the borrow site report, there is sufficient fine-grained material within each of the three locations to supply the clay cover material needed for the disposal cell construction. A revised borrow site analysis section spatially maps the fine-grained soil zones within each borrow area and provides estimated volume yield calculations, confirming material adequacy.	
9	NA	NA	**MMD "Comment 9" (March 18, 2026): Comments on Geotechnical Analysis of Borrow Sites** For areas deemed suitable as borrow sources of cover material, RGR should produce the radiological distribution of such areas to ensure that materials deemed suitable for cover soils based on geotechnical analysis do not have high radiological properties above the critical limit of 6.8 pCi/g.	Acknowledged. The report has been updated to include the radiological distribution for the areas identified as potential borrow sources. A discussion has also been added to the appropriate section describing the radiological characterization of the borrow areas and confirming that only materials meeting the applicable radiological criteria for use as cover material will be used in the final cover system.	

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10	NA	NA	**MMD "Comment 10" (March 18, 2026): Comments on Geotechnical Analysis of Borrow Sites** RGR should include one or two paragraphs in this section, on how RGR intend to borrow soils that are suitable (from operation perspective, considering geology is not 100% clay), and exclude unsuitable cover materials from the same area.	RGR agrees with MMD's recommendation and has included a description of the operational protocol in the revised Geotechnical Analysis of Borrow Sites. The borrow site geology at Mt. Taylor is heterogeneous and includes fine grained silty clays, sandy silts, coarser gravels, and volcanic materials. Not all materials within the borrow footprint are suitable for use as low permeability cover. The following operational protocol will guide borrow site excavation and material selection: 1. **Pre excavation screening**: Before large scale excavation begins, each borrow area will be systematically test pitted at a spacing determined by the site geologist to map the lateral and vertical extent of fine grained and coarse-grained zones. GPS coordinates and elevations of suitable zones will be recorded. 2. **Field identification and segregation**: During active borrowing operations, a qualified soils technician or geologist will be present to perform visual classification and field testing, such Atterberg limits screening, on excavated materials. Materials that do not meet field classification criteria, such as excessive gravel content or a low plasticity index, will be segregated and stockpiled separately for use as noncritical fill or erosion armor. 3. **Quality assurance and quality control verification**: Representative samples of accepted material will be submitted for laboratory testing, including grain size analysis, Atterberg limits, compaction, and hydraulic conductivity, at a minimum frequency specified in the Construction Quality Assurance Plan. 4. **Stockpile management**: Accepted fine grained materials will be stockpiled on lined or protected areas and covered to prevent moisture loss or contamination before placement. These procedures ensure that only geotechnically suitable materials are incorporated into the engineered cover system despite the natural variability of the borrow source geology. This description has been incorporated into the revised Geotechnical Analysis of Borrow Sites.	

RIO GRANDE RESOURCES CORPORATION

September 8, 2026

Mr. Corey Dimond
Mining Environmental Compliance Section
Ground Water Quality Bureau – Water Protection Division
New Mexico Environment Department
Harold Runnels Building
1190 Saint Francis Drive
P.O. Box 5469
Santa Fe, New Mexico 87502

RE: Rio Grande Resource's Response to March 6, 2026 Comments from the Mining Environmental Compliance Section of the New Mexico Environment Department for Closeout/Closure Plan, Revision 22-1 Permit No. CI002RE

Dear Mr. Dimond,

Rio Grande Resources Corporation (RGR) is submitting the enclosed Update of the Closure/Closeout Plan, Revision 22-2, for the Mt. Taylor Mine (Permit No. CI002RE). This revision has been prepared in response to the comments provided by the Mining Environmental Compliance Section (MECS) of the New Mexico Environment Department (NMED) in its March 6, 2026 comment letter. Additionally, we have incorporated responses to the February 19, 2026, comments provided by the NMED Surface Water Quality Bureau (SWQB).

Also enclosed is a separate Response to Comments document that addresses each of the MECS and SWQB comments and identifies the corresponding revisions made to the Closure/Closeout Plan.

RGR appreciates MECS's review of this submittal and looks forward to continuing to work with the Department throughout the review process. If you have any questions or require additional information, please contact me.

Respectfully Submitted,
Rio Grande Resources Corporation

Jeff Schoenbacher
Reclamation Manager

RIO GRANDE RESOURCES CORPORATION
MT. TAYLOR MINE
PO BOX 1150
4899 W. HWY 605 GRANTS, NM 87020
TEL (505) 287-7971

RIO GRANDE RESOURCES CORPORATION

CC
Joseph Fox, MECS Program Manager, NMED-MECS
Alan Klatt, Watershed Protection Section, NMED-SWQB
Abimbola Ojekanmi, Uranium Reclamation Coordinator, EMNRD-MMD
Clinton Chisler, Senior Reclamation Supervisor, EMNRD-MARP-MMD
David Ennis, Program Manager, EMNRD-MMD
Kevin Raabe, President, RGR
Anita Willcox, Site Supervisor, RGR
Melissa Meyer, Project Manager, EA

RIO GRANDE RESOURCES CORPORATION
MT. TAYLOR MINE
PO BOX 1150
4899 W. HWY 605 GRANTS, NM 87020
TEL (505) 287-7971

September 2026 Rio Grande Resources Response to Comments from MECS For Closeout/Closure Plan, Revision 22-1

Mt. Taylor Mine, Permit No. CI002RE San Mateo, New Mexico

Prepared for:
Corey Dimond
New Mexico Environmental Department
Ground Water Bureau
Mining Environmental Compliance Section

Prepared by:

Engineering Analytics, Inc.
Now Part of MacKay

Engineering Analytics, Inc.
1600 Specht Point Road, Suite 209
Fort Collins, Colorado 80525
(970) 488-3111

On behalf of Mt. Taylor and Rio Grande Resources:

Kevin Raabe
President, RSO
Rio Grande Resources Corporation

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Comment Letter, New Mexico Environment Department (NMED) Comments, Mt Taylor Uranium Mine, Updated Closure Closeout Plan, Mining Act Permit No. CI002RE					
1	1.3	NA	**MECS "Comment 1" (March 6, 2026):** 2025 Closure/Closeout Plan, 1.3 Project History – The document could be improved with a figure showing pre-1971 disturbance that will not be addressed as part of the 2025 CCP.	RGR evaluated the availability of information to prepare a figure depicting pre-1971 disturbances. Although historical records indicate that exploratory drill pads and access roads existed prior to 1971, the locations of these historical disturbances were not documented and are not known with sufficient accuracy to develop a representative figure. Therefore, a figure has not been included. Section 1.3 has been revised to clarify the historical existence of these exploration disturbances and to reference the December 17, 1997, U.S. Forest Service recommendation regarding their reclamation.	
2	1.3.5	NA	**MECS "Comment 2" (March 6, 2026):** 2025 Closure/Closeout Plan, 1.3.5 Mine Water Treatment, Pumping, and Discharge– The Radiological Surveys of Discharge Pipeline report dated July 6, 2020, identifies an area of localized elevated gamma radiation at the discharge pipeline endpoint Outfall 001 that may be contaminated in excess of the 6.8 pCi/g site standard. Please account for any remaining soil impacts here to the volume of material requiring disposal. If all impacted soil has been removed, please provide the final gamma survey for the area of Outfall 001 to ensure reclamation is complete.	A comprehensive radiological evaluation of the Outfall 001 area has not yet been completed. In addition, the discharge pipeline removal work did not include excavation or removal of the radiologically impacted soil identified at Outfall 001. Consequently, the extent of any residual radiological contamination and the associated volume of material requiring management or disposal cannot currently be quantified. The Outfall 001 area will be included in future closure characterization activities to determine the nature and extent of any remaining radiological impacts. Based on the results of that characterization, the volume of soil requiring excavation and disposal, if any, will be determined to support completion of reclamation and site closure. If any material is identified to be removed, it would be done when the disposal cell was ready to accept material.	
3	3.3.4	NA	**MECS "Comment 3" (March 6, 2026):** 2025 Closure/Closeout Plan, 3.3.4 Radiological levels for PMLU – This section references Nuclear Regulatory Commission (NRC) Regulatory Guide 1.86 criteria for radioactive contamination in habitable buildings. However, NRC guidance is not applicable in this case. Instead, MMD's 2016 joint guidance of 5 pCi/g Ra-226 above background (6.8 pCi/g at the site) should be applied.	The MMD 2016 joint guidance specifies the criteria for Ra-226 only for impacted soil cleanup. It does not specify any criteria for radiologic surface contamination limits for the release of equipment, material, and facilities. In the absence of MMD- or NMED-specific radiologic surface contamination release criteria for facilities, RGR has applied the conservative gross alpha surface contamination limit of 5,000 dpm/100 cm² contained in the MMD-approved March 2021 Site Radiation Protection Program Manual. The MMD requested that the gross alpha surface contamination limit for the PMLU at the Site would not exceed the dose limit of 100 mrem/yr. In the 12/27/2021 Addendum to *Work Plan for Post-Mining Radiological Surveys of Permit Area and Impacted Lands*, RGR calculated the radiologic release criteria consistent with the 25 mrem/yr radiological dose-based criterion for license termination and unrestricted use from Title 20, Chapter 3, Part 4, Subpart 426.B of the New Mexico Administrative Code (NMAC). The gross alpha surface contamination limit for the release of facility at the dose limit of 25 mrem/yr was calculated to be 2,364 dpm/100 cm². For a 100 mrem/yr dose limit, the gross alpha surface contamination would be 9,456 dpm/100 cm². This is because the relationship between surface contamination and dose is linear. However, RGR proposes the gross alpha surface contamination limit of 5,000 dpm/100 cm², as specified in NRC Regulatory Guide 1.86, which is well below the 9,456 dpm/100 cm² calculated based on the 100 mrem/yr dose. In addition, the gross alpha surface contamination limit of 5,000 dpm/100 cm² is specified in the MMD-approved March 2021 *Site Radiation Protection Program Manual*.	

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4	4.3.1	NA	**MECS "Comment 4" (March 6, 2026):** 2025 Closure/Closeout Plan, 4.3.1 Shaft Plugging – NMED continues to have concerns regarding the long-term integrity of the shafts in relation to water quality. Procedures outlined in Appendix C.3 of the 2022 CCP continue to be referenced in the 2025 CCP. Appendix C.3 states "The remainder of the shaft, as well as connecting tunnels and raises, shall be backfilled with a cementitious slurry of soil, Portland cement, fly ash, and water". However, the volume of material to be added and the final backfill depth within the shaft have not been clearly specified. Water seepage has been documented at construction joints and horizontal cracks observed in the sub collar portion of the shaft, and the proposed concrete plugs will not extend to or seal all of these areas. NMED still remains concerned with the long-term stability of the shaft walls, due to potential concrete degradation and the potential lowering of the current water levels in the shafts due to future mining operations nearby. The added weight of the plugs on the shaft concrete is also concerning, given the documented degradation of the underlying shaft concrete. Additionally, NMED requests that a plan be developed for monitoring shaft water levels and water quality following backfilling of the shafts and plugging activities. The current Structural Design of Shaft Plugs diagrams in Appendix G indicate a steel pipe intended to function as a sampling well. Please provide additional details describing how a monitoring well will be incorporated in the final plug design. Also, the plan shall provide for additional new monitoring wells located in close proximity to the shafts, within each aquifer intersected by the shafts. This is required for monitoring groundwater quality and protection the surrounding aquifers.	The shaft plugging design consists of constructing a structural plug at the subcollar level. Following construction of the structural plug, controlled low-strength material (CLSM) backfill will be placed only within the shaft interval above the structural plug, as shown on the shaft closure drawings. The final plug elevations, backfill limits, and associated backfill material volumes will be refined during final design and documented in future design submittals. Refer to Appendix G, Drawings C/100 and C/200, and the associated shaft closure design details for the conceptual plug and backfill configuration. To address the observed near surface sub-collar seepage, field evaluations are currently being conducted under the 2025 approved *Site Investigation Plan* (EA, 2025a); it is anticipated that a targeted plan to seal off this seepage will be developed based on these findings. Furthermore, to address concerns regarding plug stability and the added weight on the legacy shaft concrete, the final shaft closure design will incorporate measures to transfer the structural loads from the shaft plug into competent host rock, such as engineered horizontal keyways, or another engineered approach determined during final design. The final design will support the plug independently of the existing shaft walls and minimize reliance on the long-term integrity of the shaft concrete or future regional water-level fluctuations. The final shaft closure design will be submitted to NMED for review and approval prior to construction. The *Post-Closure Monitoring Plan* (PCMP) will be updated to address long-term monitoring of groundwater levels and water quality following shaft plugging activities. The updated monitoring program will include proposed monitoring wells in the vicinity of the shafts, as appropriate, and will be submitted to NMED for review and approval prior to implementation. Two redundant, structurally isolated steel monitoring ports will be incorporated into each individual shaft plug to provide redundant groundwater sampling access. The final monitoring port design will be included in the final shaft plugging design submitted for agency review.	
5	4.4.2	NA	**MECS "Comment 5" (March 6, 2026):** 2025 Closure/Closeout Plan, 4.4.2 Disposal Cell and Expansion - In Permit Condition 32 of DP-61 dated October 14, 2015, NMED requires RGR to document the construction quality assurance (CQA) of all clay liners and caps of the disposal cell. Please add the following language from Permit Condition 32 to the updated 2025 CCP. "CQC and CQA plans shall be submitted to NMED for approval a minimum of 30 days prior to beginning of construction of the clay liner. Within 60 days following completion of construction of the clay liner, a CQA report and as-built plans shall be submitted to NMED."	This language has been added to Section 4.4.2 of the CCP and the *Expanded Disposal Cell Design* report (Appendix K).	

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6	NA	Page T-30 Table 4-3	**MECS "Comment 6" (March 6, 2026):** 2025 Closure/Closeout Plan, Former Lagoon, Table 4-3, Page T-30 – The former sewage lagoon was mentioned as a possible source of elevated nitrate in monitoring well WP-5 in the Stage 1 Abatement Plan in 2005. In the 2021 Site Investigation Plan (2021 SIP), RGR had originally proposed to excavate the sediments and waste rock in the former sewage lagoon and surrounding area to remove any uranium and nitrate source material. Currently, RGR estimates that approximately 10,680 cubic yards of sediment and waste rock are present in the former lagoon. This volume has been added to Table 4-3 of the updated 2025 CCP and is listed as Sediment and Waste Rock in the Former Lagoon. A note in Table 4-3 states, "Volumes associated with the former lagoon are included per NMED request. It is not likely that the material will be excavated and transferred to the disposal cell." Please clarify whether excavation of the former lagoon material is a planned activity. If so, describe how the work would be conducted and coordinated with disposal cell expansion activities. In addition, please propose a plan to for additional source characterization and removal delineation.	The sediment and waste rock within the former lagoon have been included in the estimated disposal cell volume in response to NMED's request. However, excavation of this material is not currently identified as a planned closure activity. The need to excavate the former lagoon material will be evaluated as additional information becomes available. One consideration is whether the material could adversely affect the final disposal cell design or long-term performance, since the former lagoon is located beneath the proposed disposal cell footprint. A second consideration is whether future Site Investigation Plan (SIP) investigations and subsequent groundwater abatement activities indicate that the former lagoon sediments and waste rock represent a continuing source of groundwater impacts that cannot be addressed through other remedial measures. If future investigations determine that removal of the material is necessary, a source characterization and removal delineation will be completed to define the extent of material requiring excavation. If needed, the excavation approach and coordination with disposal cell construction activities will be developed as part of the final closure design and submitted to NMED for review and approval.	
7	NA	NA	**MECS "Comment 7" (March 6, 2026):** 2025 Closure/Closeout Plan, Lack of Abatement Strategy - Current abatement activities (i.e., shallow extraction wells, etc.) have not fulfilled abatement per NMAC 20.6.2.4103. While the upcoming site investigation activities related to the approved 2025 Revised Site Investigation Plan will help better define the extent of the shallow groundwater plume, they do not address all components necessary of site-wide abatement. Groundwater monitoring alone is not abatement nor a remedial strategy. NMED will work with RGR to continue abatement activities and will recommend a modification of the approved CCP when consensus is reached by all parties.	RGR acknowledges NMED's comment regarding the distinction between ongoing site investigations and groundwater monitoring activities and the development of a comprehensive, site-wide abatement strategy under NMAC 20.6.2.4103. RGR agrees that groundwater monitoring and operation of the current shallow extraction wells alone do not constitute a final remedial solution. The primary objective of the approved 2025 *Revised Site Investigation Plan* (EA, 2025a) is to better delineate the extent and nature of groundwater and to collect the information necessary to evaluate and develop effective long-term abatement alternatives. This information is needed before an appropriate site-wide abatement strategy can be developed. RGR appreciates NMED's willingness to continue working collaboratively on the development of a long-term abatement strategy. Following completion of the site investigation and evaluation of the results, RGR will work with NMED to develop an appropriate abatement approach and, as necessary, modify the CCP to incorporate the selected remedial strategy.	
8	NA	Page T-30 Table 4-3	**MECS "Comment 8" (March 6, 2026):** 2025 Closure/Closeout Plan, Disposal Cell Capacity, Table 4-3, Page T-30 - The estimated total volume of impacted soils is now listed as 418,167 cy in Table 4-3. NMED notes this volume does not include work currently underway to determine soil volumes from the South Controlled Area, nor does it include other potential future studies. If this work will be completed prior to the finalization of a cost estimate, it needs to be included. If it is not completed, NMED recommends a conservative estimate be included based on current knowledge with 20% contingency added. RGR can update this estimated volume after the completion of work in a future update to the CCP. In the June 30, 2025 response, RGR provided updated soil volumes included in Attachment A – Summary of Material Scheduled for the Disposal Cell. Attachment A lists 942,450 cy as the "Disposal Cell Capacity at 25 Acres". The updated 2025 CCP states that the expanded disposal cell will be up to 13.5 acres, bringing the combined area of the existing Waste Rock	The disposal cell capacity listed in Table 4-4 represents the total capacity of the combined existing Waste Rock Pile (WRP) and the expanded disposal cell. As part of the October 15, 2025 CCP submittal, the disposal cell design was revised, increasing the total estimated disposal cell capacity from 942,450 cubic yards to 1,093,840 cubic yards. Table 4-4 has been updated to include the estimated disposal volumes for the South Controlled Area based on the current characterization results. RGR acknowledges that additional characterization activities may identify other materials requiring disposal. As additional information becomes available, the estimated disposal volumes and closure cost estimate will be updated, as appropriate. If characterization activities are not completed prior to finalization of the closure cost estimate, conservative estimates, including appropriate contingency, will be incorporated, as appropriate.	

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			Pile (WRP) and the expanded cell to 25 acres, consistent with the 2022 CCP. Including recently reported South Controlled Area soil volumes, the table below summarizes the materials proposed for placement in the expanded disposal cell, as well as NMED's understanding of the remaining available disposal cell capacity. Please clarify whether the stated disposal cell capacity of 942,450 cy applies solely to the new 13.5-acre expanded disposal cell, or whether it includes capacity from the existing WRP in addition to the expanded cell.		

Materials to Be Placed in Expanded Disposal Cell at 13.5 Acres		
Type	**Volume (cy)**	**Document Source**
Excavation - Contaminated Soil	418,167	Table 4-3 of 2025 CCP
Removal - Buildings	40,943	Attachment A - Summary of Materials Scheduled for the Disposal Cell (June 30, 2025 Response Letter)
Removal - Other Debris	40,789	Attachment A - Summary of Materials Scheduled for the Disposal Cell (June 30, 2025 Response Letter)
Potential South Controlled Area Contaminated Soil	26,560	South Controlled Area Soil Radiologic Characterization (February 27, 2026)
Total Volume to Be Placed in 13.5 Acre Expanded Disposal Cell	526,459	
Type	**Volume (cy or %)**	**Document Source**
Disposal Cell Capacity at 25 Acres	942,450	Attachment A - Summary of Materials Scheduled for the Disposal Cell (June 30, 2025 Response Letter)
Proportional Capacity % of New 13.5 Acres Out of 25 Acres	54.0%	
54.0% of Total Disposal Cell Capacity	508,923	
Remaining Available Disposal Cell Capacity (Excluding South Controlled Area Soils)	-17,536	

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9	NA	Figure 4-1	**MECS "Comment 9" (March 6, 2026):** 2025 Closure/Closeout Plan, Figure 4-1 - Figure 4-1 of the updated 2025 CCP appears to indicate that portions of the existing WRP/disposal cell would be regraded or that the pre-existing slope would be modified. Please clarify if the proposed design changes will be incorporated to ensure protections for minimal disturbance of existing reclamation. Please clarify if the new cover design result in modification of the entire existing disposal cell facility or only be applicable to the new 13.5 acre expanded disposal cell. If the new design is not over the existing facility, please explain the transition area between the two designs. Please explain how groundwater monitoring well MW-11A and the newly proposed extraction well RW-11AR will be accommodated in the proposed design.	**(1) Existing WRP/Disposal Cell Disturbance:** The proposed design changes are limited exclusively to the 12-acre expanded disposal cell area. The existing WRP/disposal cell and its established reclamation will not be disturbed or regraded. The existing cover system will remain in place and is not subject to modification under the current design. Figure 4-1 has been updated for clarity. **(2) Transition Zone:** A graded transition zone will be designed at the interface between the existing disposal cell and the expanded cell. This zone will taper the cover layers to match existing grades and avoid abrupt geometric discontinuities. Specific transition geometry, including slope and layer pinchout details, will be provided in the final construction drawings to be submitted for approval at a later date. **(3) Wells MW-11A and RW-11AR:** The final grading plan will include adequate setbacks and access routes for both wells to ensure continued operability throughout and after construction.	
10	Appendix H	Table 2 of PCMP lists	**MECS "Comment 10" (March 6, 2026):** 2025 Closure/Closeout Plan, Appendix H - Table 2 of the PCMP lists the proposed Point of Compliance (POC) wells, including MW-1M, MW-5, WP-5, MW-11A, DW-3, DW-10, DW-11, DW-14, and DW-19. NMED agrees with the use of wells MW-1M, MW-5, WP-5, and MW-11A for long-term monitoring of the Alluvial/Menefee aquifer. NMED also requests that existing monitoring well MW-4 and the planned MW-13 (upcoming Site Investigation activities), be included as POC wells for the Alluvial/Menefee aquifer to address downgradient data gaps associated with the expanded disposal cell. Based on a September 25, 2025 technical memorandum from the Office of the State Engineer (OSE), DW-13 has been determined to have a low probability of inter-aquifer exchange, and NMED therefore concurs that it may be suitable for long-term groundwater monitoring of the Westwater aquifer. However, wells DW-3, DW-10, DW-11, and DW-19 are not suitable long-term groundwater monitoring wells. All four wells have been classified by OSE as having either possible inter-aquifer exchange or probable inter-aquifer exchange. In addition, wells DW-3, DW-10, and DW-11 currently have confirmed hydrocarbon releases, with several contaminants of concern above NMWQCC standards. NMED therefore requests installation of four new, dedicated wells designed specifically for long-term monitoring of the Point Lookout and Tres Hermanos aquifers, as these legacy dewatering wells are not in a condition to provide accurate long-term groundwater data. NMED will work with RGR on the location of and timing for the new monitoring wells, however cost for installation and long-term care need to be included in an updated cost estimate. A placeholder for these wells should be added to the PCMP for inclusion in the updated CCP.	The *Post-Closure Monitoring Plan* (PCMP) was updated as part of this CCP submittal to address NMED's comments regarding the proposed Point of Compliance (POC) monitoring network. Regarding the Westwater aquifer, RGR notes a discrepancy in the agency's reference to well DW-13. A review of the September 25, 2025 Office of the State Engineer (OSE) documentation indicates that DW-14 (B-516-POD40) was identified as the Westwater well with a low probability of inter-aquifer exchange. Conversely, the OSE directive explicitly lists DW-13 among the wells requiring a plan to investigate the potential for inter-aquifer exchange, or a repair/plugging plan. Based on this OSE clearance, RGR assumes NMED's concurrence for long-term groundwater monitoring is intended for DW-14 rather than DW-13, and the PCMP has been updated to reflect DW-14 as the appropriate POC well. RGR acknowledges NMED's concerns regarding the long-term suitability of dewatering wells DW-3, DW-10, DW-11, and DW-19 for post-closure groundwater monitoring. The updated PCMP includes placeholders for proposed new dedicated monitoring wells for the Point Lookout and Tres Hermanos aquifers. The final number, locations, and construction details of these wells will be developed in coordination with NMED. The updated CCP closure cost estimate will include placeholder costs for the installation, long-term monitoring, maintenance, and eventual abandonment of the proposed monitoring wells, as appropriate.	

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11	Past Attachments/Addenda	NA	**MECS "Comment 11" (March 6, 2026):** 2025 Closure/Closeout Plan, Past Attachments/Addenda - The CCP should be revised into a single, consolidated document. For example, Attachment A—Summary of Material Scheduled for the Disposal Cell—from the June 30, 2025 RGR response to CCP comments was not included in the updated 2025 CCP, while the Post Closure Monitoring Plan received on June 30, 2025, was included as Appendix H. Please update Attachment A as needed and include it, along with all other separate necessary addenda, as attachments or appendices to an updated CCP.	The Summary of Material Scheduled for the Disposal Cell has been updated and incorporated into Table 4-4 of the updated CCP. RGR also reviewed prior CCP attachments, appendices, and addenda and incorporated relevant information into the updated CCP, as appropriate, to provide a consolidated document. To the best of RGR's knowledge, all necessary supporting materials have been incorporated into the updated CCP.	
12	4.2	NA	**MECS "Comment 12" (March 6, 2026):** Expanded Disposal Cell Design, 4.2 Description of Cover - Please provide a detailed explanation of the purpose of the coarse sand capillary break layer in the updated disposal cell cover design. Also, please provide some examples of where this layer has been effectively used in cover designs. NMED has not approved of a layer of this nature in a cover design, therefore is not approving of it without support and evaluation for an alternative design.	Engineering Analytics (EA) has completed a detailed critical review of the capillary break layer requirement. Based on this analysis, EA recommends eliminating the coarse sand capillary break layer from the cover design. The revised optimized 3-layer cover system — 12-inch rock mulch / 28-inch in-situ soil / 12-inch compacted clay — has been confirmed by radon diffusion analysis to yield a surface flux of approximately 13.99 $pCi/m^2 \cdot s$, well below the 20 $pCi/m^2 \cdot s$ regulatory limit. The capillary break layer is accordingly not included in the revised design.	
13	4.6.3.1	NA	**MECS "Comment 13" (March 6, 2026):** Expanded Disposal Cell Design, 4.6.3.1 Climate Data Used for Analysis - The model results of the infiltration analysis indicate that the mean annual percolation value through the cover system is 0.45 inches/year or 7.4% of the mean annual precipitation value. This would indicate that the mean annual precipitation determined for the mine site would be 6.1 inches per year. Monthly climatological summaries for the Mt. Taylor mine site from 2018 – 2025 reported in DP-61 quarterly monitoring reports show a mean annual precipitation of about 10 inches per year. Please explain the discrepancy between those values and the mean annual precipitation values presented in the CCP. Additionally, please explain why Rice Park, NM, is used as the primary source of historical weather data. Rice Park is located approximately 30 miles to the west of Mt. Taylor mine and in a different mountain range.	EA acknowledges NMED's comment and provides the following clarification. **(1) Precipitation Values Used in the Model:** We acknowledge the discrepancy in the previous draft, which contained a calculation error. The revised *Expanded Disposal Cell Design* report has been updated to explicitly use the continuous on-site meteorological data from the San Mateo station (2018–2025) as the primary dataset for the infiltration analysis. The documented on-site mean annual precipitation (MAP) is 10.01 in/yr. Using this site-specific precipitation input, the revised SEEP/W transient numerical model yields a long-term mean annual percolation rate of 0.40 in/yr through the cover system. This corrected percolation value accurately represents 4.0% of the MAP **(2) Rice Park Weather Station:** We agree that on-site data should serve as the primary climatic reference. As noted above, the revised Expanded Disposal Cell Design now utilizes the on-site San Mateo data (2018–2025) as the primary dataset for the water balance, infiltration, and Copper Rule analyses. Regarding Rice Park, we would like to clarify that the SNOTEL station is located approximately 20 miles northeast of the mine, not 30 miles west. While the on-site data drives the infiltration model, Rice Park was retained solely as a supplemental dataset to evaluate long-term winter hydrology (e.g., snow water equivalent and freeze-thaw behavior). Because the on-site station record is relatively short, the Rice Park data is necessary to conservatively project the Air Freezing Index (AFI) for the 200-year return period frost penetration analysis. To validate this approach, a statistical comparison was performed; the results demonstrated no significant departures ($p > 0.05$) between the on-site San Mateo record and the long-term regional datasets, confirming that the site data falls within normal regional variability. Additional discussion clarifying the specific applications of these datasets has been added to Section 2.6 of the design report.	

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14	4.6.4	NA	**MECS "Comment 14" (March 6, 2026):** Expanded Disposal Cell Design, 4.6.4 Results of Infiltration Analysis - The infiltration analysis in the Expanded Disposal Cell Design Report does not provide the modeled available water holding capacity for the cover. NMAC 20.6.7.33.F.(2) states that soil cover systems shall be designed to limit net-percolation by having the capacity to store within the fine fraction at least 95 percent of the long-term average winter (December, January and February) precipitation or at least 35% of the long-term average summer (June, July and August) precipitation, whichever is greater. Please provide the available water holding capacity of each of the cover layers above the waste material.	EA has revised and finalized the Available Water Holding Capacity (AWHC) analysis for the cover system. This complete layer-by-layer breakdown and Copper Rule compliance evaluation has been added to Section 4.6.5 of the *Expanded Disposal Cell Design* report. The analysis summary is provided below. **Material Properties and Available Water Holding Capacity (AWHC):** Based on the soil-water characteristic curves (SWCCs) derived from the Mt. Taylor borrow source characterization program (Appendix B), the AWHC for the 28-inch on-site soil cover layer (classified as CL-ML) is **0.10 in/in**. This is determined from a volumetric water content at field capacity (θ_{fc}) of 0.20 minus the volumetric water content at the wilting point (θ_{wp}) of 0.10. • **Rock Mulch Layer (12 inches):** Not credited with fine-fraction water storage. • **On-Site Soil Cover (28 inches):** Provides the primary fine-fraction moisture storage. Total storage capacity = 28 inches × 0.10 in/in = **2.80 inches**. • **Compacted Clay Barrier (12 inches):** Storage is conservatively excluded from this calculation, as this layer serves as the primary low-permeability radon and infiltration barrier. **Copper Rule Compliance:** Using the reconciled on-site precipitation record (2018–2025 San Mateo station) presented in Table 4-4 of the design report, the governing storage requirement under NMAC 20.6.7.33.F.(2) is the greater of: 1. Long-term average winter (December, January, February) precipitation × 95% 2. Long-term average summer (June, July, August) precipitation × 35% Based on the site data: • December, January, February Precipitation = 0.94 inches (95% = **0.89 inches**) • June July August Precipitation = 4.70 inches (35% = **1.65 inches**) The strict regulatory requirement based on the 3-month seasonal definitions is **1.65 inches**. The 2.80 inches of storage provided by the 28-inch on-site soil layer easily exceeds this requirement. Furthermore, as documented in Section 4.6.5 of the *Expanded Disposal Cell Design*, EA evaluated the cover against a more conservative 6-month seasonal criteria (Winter: Oct–Mar; Summer: Apr–Sep). Under this highly conservative evaluation, the required storage capacity was 2.73 inches. The storage capacity provided of 2.80 inches exceeds even this more rigorous standard, confirming full compliance with the Copper Rule store-and-release performance criteria.	

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15	4.11.2.3	NA	**MECS "Comment 15" (March 6, 2026):** Expanded Disposal Cell Design, 4.11.2.3 Rock Mulch Borrow Sources - Please confirm the D50 rock size of the AASHTO No. 1 gravel proposed for the rock mulch cover and explain why this size is appropriate	The AASHTO No. 1 gravel specified for the rock mulch admixture has a nominal D_{50} (median rock size) of approximately 2.2 inches. The complete gradation and supporting engineering analyses have been incorporated into Section 4.9 and Appendix I of the *Expanded Disposal Cell Design* report. This specific size range is appropriate for the Mt. Taylor disposal cell cover for the following reasons: **1. Water Erosion Resistance (PMP Design Storm):** The rock size was evaluated using the Abt-Johnson method, as recommended in NUREG-1623 and NUREG/CR-4620. For the engineered 5H:1V (20%) cover slopes, the required D_{50} to resist the Probable Maximum Precipitation (PMP) event increases with slope length. At the maximum designed unsupported slope run of 250 feet, the required D_{50} is 2.04 inches. The provided AASHTO No. 1 gravel D_{50} of 2.20 inches exceeds this requirement, ensuring individual particles resist displacement under maximum expected surface flow conditions. **2. Gully Formation and Armoring:** Gully formation was evaluated using the Shield's incipient motion equation and Pemberton and Lara (1984) scour-depth calculations. The analysis confirms that the critical particle size to resist movement is 4.15 inches; the larger fraction of the AASHTO No. 1 gravel provides these coarser particles. This ensures that a protective armor layer will naturally develop within the 12-inch rock mulch admixture depth (calculated scour depth of 10.3 inches) before any scour can reach the underlying moisture-storage soil layer. **3. Wind Erosion Protection:** The admixture blend (30% AASHTO No. 1 gravel and 70% on-site soil) creates a durable surface. As wind and minor water action winnow away surficial fines, the 2.2-inch gravel forms a self-reinforcing desert pavement. Wind Erosion Prediction System (WEPS) modeling for comparable covers in the Grants Mineral Belt demonstrates that this coarse fraction keeps annual soil loss well below the EPA benchmark of 2 tons per acre per year. **4. Regional Precedent and Vegetation Support:** This 30% gravel admixture approach is consistent with successful, analogous uranium mill tailings closures in the Grants Mineral Belt. The AASHTO No. 1 gravel size is large enough to provide the necessary physical armoring, while the 70% soil matrix retains sufficient fines to successfully support the shallow-rooted native vegetation required for the store-and-release cover's evapotranspiration functions.	

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16	4.14	NA	**MECS "Comment 16" (March 6, 2026):** Expanded Disposal Cell Design, 4.14 Material Placement - The Expanded Disposal Cell Design Report states that petroleum-contaminated soil may be land farmed prior to placement, whereas the updated 2025 CCP does not mention land farming and instead states that all soils exceeding diesel and uranium cleanup standards will be excavated and placed in the disposal cell. Table 4-3 of the CCP estimates up to 24,600 cy of diesel-contaminated soil, with volumes subject to increase as the investigation continues. Please confirm whether land farming of diesel-contaminated soil is being proposed. If so, explain how land farming of diesel contaminated soil containing uranium and radium above screening levels would be managed to prevent additional environmental hazards, including but not limited to wind-blown, surface water, and groundwater impacts. Also describe any alternative method other than land farming if the soil contains free liquids and fails a paint filter liquids test. NMED continues to approve placement of diesel-contaminated soil in the expanded disposal cell provided it passes the paint filter liquids test.	Land farming of diesel-contaminated soils is not proposed as a primary disposal method in the current design. The reference to land farming in the previous *Expanded Disposal Cell Design* report reflected an earlier contingency that has since been eliminated. The revised *Expanded Disposal Cell Design* has been updated to remove this language and avoid confusion. **Approved Approach:** All excavated soils exceeding diesel and/or uranium/radium cleanup screening levels will be managed in accordance with the current *Closeout/Closure Plan* and placed in the expanded disposal cell, provided they pass the paint filter liquids test in accordance with 40 CFR 261, Appendix II. This approach is consistent with NMED's approval. **Free Liquids Management:** If excavated soils fail the paint filter liquids test, they will not be placed in the disposal cell until they have been managed to eliminate free liquids and subsequently pass the paint filter liquids test. No land farming of these materials is proposed.	
17	4.14	NA	**MECS "Comment 17" (March 6, 2026):** Expanded Disposal Cell Design, 4.14 Material Placement - Please confirm the proposed compaction of all cover design layers. It appears that a minimum of 90 percent of the maximum dry density is proposed for the various cover layers, but it is not clearly stated in the Expanded Disposal Cell Design Report.	EA confirms that a minimum compaction standard of 90 percent of the maximum dry density (per Standard Proctor) is specified for the compacted earthen cover layers, specifically the on-site soil cover and the underlying clay radon barrier. The clay radon barrier carries a design saturated hydraulic conductivity of 7.6×10^{-6} cm/s, based on site-specific laboratory testing, to ensure its radon attenuation and infiltration-barrier functions are achieved. The uppermost rock mulch admixture layer is not subject to this specific compaction density standard, as it relies on particle interlock and gradation for long-term stability and erosion resistance. The *Expanded Disposal Cell Design* report has been updated to clarify the 90 percent compaction standard for the applicable cover layers. Detailed execution specifications—including lift thicknesses, moisture conditioning requirements, and specific field QA/QC testing frequencies (e.g., nuclear densometer or sand-cone testing)—will be established in the Construction Quality Control (CQC) and Construction Quality Assurance (CQA) plans. As noted in the design report, these CQA/CQC plans will be submitted to the NMED for approval a minimum of 30 days prior to the beginning of construction of the clay liner.	

<table>
<tr><th>Comment Number</th><th>Section Number in CCP</th><th>Page From in CCP</th><th>Comment</th><th>Response</th><th>MMD Acceptance of EA Response</th></tr>
<tr><td>18</td><td>NA</td><td>Figure 4-1
Figure D-1</td><td>MECS “Comment 18” (March 6, 2026):
Expanded Disposal Cell Design, Figure 4-1 vs Figure D-1 - In a June 30, 2025 response, RGR acknowledged revising the disposal cell design in response to feedback from NMED and MMD. NMED acknowledges receipt of the Expanded Disposal Cell Design Report (November 11, 2025) and the 2025 Borrow Source Investigation (December 1, 2025) as addenda to the updated 2025 CCP. The Expanded Disposal Cell Design Report describes a disposal cell cover composed of four layers totaling 78 inches in thickness, as shown in Figure 4-1. However, Appendices D and E, along with Figure D-1, depict a different cover configuration consisting of three layers with a total thickness of 57 inches. Please clarify which configuration represents the proposed design. Additionally, explain whether the thicker cover described in the main report (78 inches total) is intended as an added protective measure, given that modeling in the appendices shows a thinner cover achieves radon flux below 20 pCi/m²-sec and places the radon barrier below the calculated frost depth.</td><td>Engineering Analytics (EA) acknowledges this inconsistency. The optimized 3-layer cover design has been included in the design report. The proposed configuration. The revised design consists of:
<table>
<tr><th>Layer</th><th>Material</th><th>Thickness</th></tr>
<tr><td>Surface</td><td>AASHTO No. 1 Rock Mulch</td><td>12 inches</td></tr>
<tr><td>Middle</td><td>In-situ Sandy-Loam Soil</td><td>28 inches</td></tr>
<tr><td>Base</td><td>Compacted Clay Radon Barrier</td><td>12 inches</td></tr>
<tr><td colspan="2">Total Cover Thickness</td><td>52 inches</td></tr>
</table></td><td></td></tr>
</table>

<table>
<tr>
<td>19</td>
<td>NA</td>
<td>NA</td>
<td>MECS “Comment 19” (March 6, 2026):

2025 Borrow Source Investigation - Please confirm that the available clean borrow material known is sufficient to complete the planned disposal cell cover as currently designed. Additionally, please confirm that, should the volume of contaminated materials (e.g., soil, building materials, etc.) exceed expectations, the remaining clean borrow material will still be adequate to cover the increased disposal cell volume.</td>
<td>EA confirms that the available clean borrow material is sufficient to complete the planned disposal cell cover as currently designed, with adequate contingency to accommodate potential increases in the final waste volume.

The comprehensive borrow source investigation conducted by EA evaluated Borrow Sources A, B, and C. The investigation concluded that Sources A and B were partially or fully depleted during previous construction. Therefore, Borrow Source C (an undisturbed 12.0-acre footprint) is the primary source for the earthen cover materials.

Based on the 52-inch optimized cover design (12-inch rock mulch admixture, 28-inch on-site soil, 12-inch compacted clay), the required borrow quantities and estimated available volumes are detailed below:
<table>
<tr><th>Cover Layer</th><th>Thickness</th><th>Estimated Required Volume (CY)</th><th>Primary Source</th><th>Estimated Available Volume (CY)</th></tr>
<tr><td>Rock Mulch Admixture</td><td>12 inches</td><td>31,833</td><td>30% AASHTO No. 1 gravel (Imported/Approved local source) & 70% on-site soil</td><td>Scalable to demand (commercial/imported rock)</td></tr>
<tr><td>On-Site Soil Cover</td><td>28 inches</td><td>70,620</td><td>Borrow Source C (Overburden sand and sandy clay)</td><td>Sufficient (Constitutes the upper strata across the 12-acre footprint)</td></tr>
<tr><td>Compacted Clay Barrier</td><td>12 inches</td><td>28,740</td><td>Borrow Source C (Subsurface clayey soils)</td><td>38,735 to 58,102 (Based on 2.0 to 3.0 ft of average recoverable thickness)</td></tr>
</table>
Contingency for Increased Waste Volume:

Should the volume of contaminated materials exceed current expectations (necessitating a larger disposal cell footprint or height), the borrow strategy provides adequate contingency:

1. Clay Barrier: Borrow Source C can yield up to approximately 58,102 cubic yards of suitable clay if excavated to an average recoverable thickness of 3.0 feet across the 12.0-acre footprint. This provides a substantial buffer beyond the current 28,740 CY requirement, accounting for over 100% contingency to cover material rejection, shrinkage, and cell expansion.
2. Soil Cover: The 28-inch soil layer utilizes the abundant sand and sandy clay overburden that must be stripped to access the deeper clays in Borrow Source C, providing ample material to scale with the cell dimensions.
3. Rock Mulch: Because the AASHTO No. 1 gravel fraction will be sourced from an approved local rock quarry or imported, its availability is not strictly limited by the site's earthen borrow footprint and can be scaled to meet any increased</td>
<td></td>
</tr>
</table>

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				surface area demands. The *Expanded Disposal Cell Design* report has been updated to reflect these specific layer volumes. Section 4.11 of the design report details these volumetric calculations, which were conservatively estimated based on the measured surface area of the borrow footprints and the recoverable material thicknesses observed in the test pit logs.	
Comment Letter, New Mexico Environment Department (NMED) SWQB Comments, Mt Taylor Uranium Mine, Updated Closure Closeout Plan, Mining Act Permit No. CI002RE					
1	NA	NA	**"SWQB Comment 1 – National Pollutant Discharge Elimination System (NPDES) Permit Status" (February 19, 2026):** The Mt. Taylor Mine is covered under a Multi Sector General Permit (MSGP), #NMR05J02B, for industrial stormwater discharges currently issued by the U.S. Environmental Protection Agency. RGR should keep the stormwater pollution prevention plan (SWPPP) up to date to reflect conditions on the ground.	RGR will update the SWPPP to reflect current conditions as necessary.	
2	4.4.6	39	**"SWQB Comment 2 – Excavation and Disposal of Contaminated Soil" (February 19, 2026):** Section 4.4.6 of the revised CCP describes that RGR is currently investigating all areas between its northern fenced boundary and the windblown area to identify the extent of any impacted areas, including the Marquez Canyon Arroyo to identify and dispose of any contaminated soil. The 2020 Radiological Surveys of Discharge Pipeline describes that soil excavation will be required for surface soils along the pipeline corridor or at Outfall 001 if Ra-226 concentrations exceed 6.8 pCi/g; A 2025 report demonstrates that materials have been removed along the pipeline corridor. Removal of contaminated soils, completion of the disposal cell, and completion of the site drainage upgrades will protect surface water quality.	RGR acknowledges this comment and concurs with the SWQB's assessment. RGR remains fully committed to executing the remediation activities outlined in Section 4.4.6 of the revised CCP, and investigations in the Marquez Canyon Arroyo and areas north of the fenced boundary will continue as described. Although the pipeline outfall was previously characterized in 2013 (Appendix E of RGR, 2013a), RGR will include the Outfall 001 area in future closure characterizations to ensure any remaining radiological impacts are fully delineated. Based on these results, any soils exceeding the 6.8 pCi/g Ra-226 threshold will be excavated and properly placed in the expanded disposal cell once it is ready to receive material. RGR agrees that completing these soil removals, finalizing the disposal cell, and upgrading the site drainage will effectively protect surface water quality.	

Comment Number	Section Number in CCP	Page From in CCP	Comment	Response	MMD Acceptance of EA Response
3	2.3 and 4.6.2	8, 43, and 44	**"SWQB Comment 3 – Surface Water" (February 19, 2026):** Section 2.3 Surface Water of the revised CCP says that stormwater runoff retention structures will remain for livestock watering or will otherwise be re-directed to the existing drainage courses that would receive runoff. Stormwater retentions structures that were originally created in surface waters of the state or resulted in the impoundment of surface waters of the state meet the definition of surface waters of the state (see 20.6.4.7.S.5.b New Mexico Administrative Code for the definition of surface waters of the state). Section 4.6.2 of the revised CCP describes the original middle arroyo was largely filled in during site construction. Therefore, the stormwater runoff retention structures in this area are likely surface waters of the state and are subject to state surface water quality standards which include standards for livestock watering. RGR should conduct at least one sampling event to demonstrate that surface water in these retention structures meet the surface water quality standards for livestock watering, particularly for Radium 226 + Radium 228 which is 30 pCi/L (20.6.4.900 New Mexico Administrative Code).	RGR acknowledges the SWQB's comment and is committed to ensuring that any stormwater retention structures remaining to support the approved post-mining land use of livestock grazing are protective of human health and the environment and meet applicable regulatory requirements. Accordingly, RGR will conduct at least one surface water and sediment sampling event within the stormwater retention structures proposed to remain following reclamation prior to final closeout. Sampling will include analysis for constituents necessary to evaluate livestock watering use, including combined Radium-226 and Radium-228, which will be compared to the applicable surface water quality criterion of 30 pCi/L in 20.6.4.900 NMAC. The results will be provided to SWQB and MMD. During active mining and closure operations, these stormwater retention structures will continue to function as engineered operational facilities for stormwater management, sediment control, and site remediation. Following completion of closure activities, including final grading, contaminated soil removal, and confirmation of water quality, RGR will coordinate with SWQB and MMD regarding the long-term management and regulatory status of any stormwater retention structures that remain as part of the approved post-mining land use. Section 2.3.1 has been revised to reflect this sampling commitment and clarify the planned evaluation of the remaining stormwater retention structures during the closure process.	
4	4.6.2	44	**"SWQB Comment 4 – Arroyo Design and Monitoring" (February 19, 2026):** The SWQB supports using the 500-year, 24-hour storm event to design the southern arroyo channel. SWQB recommends the portions of the arroyos that are in close proximity to reclamation areas be included in the Post Closure Monitoring Plan to ensure appropriate actions are taken to prevent potential impacts to the reclamation areas (and the arroyos) in the event the arroyos erode towards the reclamation areas.	RGR appreciates the SWQB's support for using the 500-year, 24-hour storm event as the design basis for the southern arroyo channel. However, given the limited area available within RGR-owned property to accommodate the proposed channel improvements, RGR is evaluating whether the 500-year, 24-hour design event can be practicably achieved within the available footprint. Condition 3(b) of the MMD-approved Revision 13-2 identifies a 100-year, 24-hour storm event as the design criterion for water diversion structures, or an alternative criterion approved by the MMD in consultation with other state or federal agencies. Accordingly, RGR proposes to evaluate the 100-year, 24-hour storm event as an alternative design basis for the southern arroyo channel. RGR also concurs with the SWQB's recommendation to include those portions of the arroyos adjacent to reclaimed areas in the Post-Closure Monitoring Plan. Section 2.3 of the Post-Closure Monitoring Plan has been revised to include periodic inspections of these reaches to evaluate channel stability and identify erosion that could adversely affect reclaimed areas. If monitoring identifies erosion that could compromise reclaimed areas or drainage features, corrective actions will be evaluated and implemented as necessary.	

Closeout/Closure Plan

Mt. Taylor Mine

Existing Mine Permit No. CI002RE

Discharge Permit DP-61

Prepared for:

Rio Grande Resources Corporation

P.O. Box 1150

Grants, NM 87020

Prepared by:

Engineering Analytics, Inc.
Now Part of MacKay

1600 Specht Point Road, Suite 209
Fort Collins, CO 80525
(970) 488-3111

Project No. 111360

September 8, 2026

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ACRONYMS

ACM	Asbestos Containing Material
ALARA	As Low as Reasonably Achievable
ALI	Annual Limits on Intake
AOI	Area of Interest
BLM	Bureau of Land Management
BMP	Best Management Practices
CAP	Corrective Action Plan
CCP	Closeout/Closure Plan
DAC	Derived Air Concentrations
DCGL	Derived Concentration Guideline Limit
EA	Engineering Analytics
ERG	Environmental Restoration Group
FA	Financial Assurance
FHWA	Federal Highway Administration
FM	Formation
GWQB	Ground Water Quality Bureau
IAEA	International Atomic Energy Association
IL	Investigation Level
LNAPL	Light Non-Aqueous Phase Liquids
MARP	Mining Act Reclamation Program
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MECS	Mining Environmental Compliance Section
MSGP	Multi-Sector General Storm Water Permit
MSHA	Mine Safety and Health Administration
MWTU	Mine Water Treatment Unit
NFM	North Force Main
NMAC	New Mexico Administration Code
NMED	New Mexico Environmental Quality Bureau
NMEI	New Mexico Environmental Institute

NPDES	National Pollutant Discharge Elimination System
NRC	Nuclear Regulatory Commission
NRCS	Natural Resources Conservation Service
NSWP	North Storm Water Pond
OSE	Office of the State Engineer
OSHA	Occupational Safety and Health Administration
PCMP	Post-Closure Monitoring Plan
PHC	Petroleum Hydrocarbons
PLH	Point Lookout/Hosta
PMLU	Post-Mining Land Use
PPE	Personal Protective Equipment
CQA	Construction Quality Assurance
CQC	Construction Quality Control
RCRA	Resource Conservation and Recovery Act
RGR	Rio Grande Resources Corporation
ROW	Right-of-Way
RPP	Radiation Protection Program
RSO	Radiation Safety Officer
RSPM	Radiation Safety Program Manual
RUSLE2	Revised Universal Soil Loss Equation
RWP	Radiation Work Plan
S2AP	Stage 2 Abatement Plan
SSWP	South Storm Water Pond
STP	Sanitary Treatment Plant
SWPPP	Storm Water Pollution Prevention Plan
THD	Tres Hermanos/Dakota
TLD	Thermoluminescent Dosimeters
UAV	Unmanned Aerial Vehicle
USCS	Unified Soil Classification System
USDA	United States Department of Agriculture
USFS	United States Forest Service

VTPP	Vegetation Test Plot Plan
WEPP	Water Erosion Prediction Project
WQCC	Water Quality Control Commission
WRP	Waste Rock Pile
WSP	Water Supply Project
WWC	Westwater Canyon

1.0 INTRODUCTION

1.1 Background

Rio Grande Resources Corporation (RGR) owns and operates the Mt. Taylor Mine, located near San Mateo in Cibola County, New Mexico. The mine is currently on active status under Permit No. CI002RE, Rev 13-2 (Mine Permit), which was approved on December 29, 2017, by the New Mexico Mines and Minerals Division (MMD).

In 2022, RGR applied for a revision of its Mine Permit No. CI002RE (RGR, 2022b) to expand the Disposal Cell and update the existing Closeout/Closure Plan (CCP;RGR, 2013b). This revision application is submitted pursuant to the New Mexico Administrative Code (NMAC) regulations 19.10.5.505 (NMAC, 2001a) and 19.10.7.701 (NMAC, 2001c).

The CCP is required by 19.10.5.506 and 19.10.5.507 NMAC (NMAC, 2001a) to describe the measures and estimated costs for reclamation of the mine site for the designated post-mining land uses (PMLUs) at closeout/closure. This CCP was prepared following the guidelines presented in the *Closeout Plan Guidelines for Existing Mines* (MARP, 1996) that are part of the State of New Mexico Energy, Minerals and Natural Resources Department (EMNRD). of Mining Act Reclamation Program (MARP).

From 2022 to the date of this report, RGR and the various agencies have been working toward obtaining the updated Mining Act Permit CI002RE and Discharge Permit-61 (DP-61). As part of this ongoing process, RGR is submitting this update to the Closeout/Closure Plan (CCP) as requested in the comment letters cited below:

1. **September 7, 2022:** Surface Water Quality Bureau (SWQB) of the New Mexico Environment Department (NMED). *"Request for Review and Comment, Mt. Taylor Mine and Mill, Updated Closeout/Closure Plan, Revision 22-1, Cibola County, New Mexico Mining Act Permit No. CI002RE, Revision 22-1"* (NMED, 2022a).

2. **September 12, 2022:** Air Quality Bureau (AQB) of the New Mexico Environment Department (NMED). *"Request for Review and Comment, Mt. Taylor Mine and Mill, Updated Closeout/Closure Plan, Revision 22-1, Cibola County, New Mexico Mining Act Permit No. CI002RE"* (NMED, 2022b).

3. **November 15, 2022:** Hydrology Bureau of the New Mexico Office of the State Engineer (NMOSE). *"Review and Comments, Revision 22-1 to Mt. Taylor Mine, Permit No. CI002RE, Rio Grande Resources Corporation"* (NMOSE, 2022).

4. **April 14, 2023:** Mining Environmental Compliance Section (MECS) of the New Mexico Environment Department (NMED). *"New Mexico Environment Department (NMED) Comments, Updated Closeout/Closure Plan, Revision 22-1, Mt. Taylor Mine, Rio Grande Resources, Cibola County, New Mexico, New Mexico Mining Act Permit No. CI002RE"* (NMED, 2023).

5. **May 17, 2023:** Mining and Minerals Division (MMD) of the New Mexico Energy, Minerals and Natural Resources Department (EMNRD). *"Comments on Closeout/Closure Plan Mt. Taylor Mine, Rio Grande Resources Corporation, Mt. Taylor Mine, Cibola County, New Mexico, Permit Tracking No. CI002RE"* (MMD, 2023).

6. **February 1, 2024:** Hydrology Bureau of the New Mexico Office of the State Engineer (NMOSE). *"Review of Revision 22-1 to Mt. Taylor Mine, Permit No. CI002RE, Rio Grande Resources Corporation"* (NMOSE, 2024).

7. **June 20, 2024:** Mining and Minerals Division (MMD) of the New Mexico Energy, Minerals and Natural Resources Department (EMNRD). *"2nd Comment Letter, Mt. Taylor Mine, Disposal Cell Expansion and Update of Closeout/Closure Plan, Revision 22-1, Permit No. CI002RE"* (MMD, 2024).

8. **March 14, 2025:** New Mexico Mining and Minerals Division (MMD) of the New Mexico Energy, Minerals and Natural Resources Department (EMNRD). *"3rd Comment Letter, Mt. Taylor Mine, Disposal Cell Expansion and Update of Closeout/Closure Plan, Revision 22-1, Permit No. CI002RE"* (MMD, 2025).

9. **April 25, 2025:** Mining Environmental Compliance Section (MECS) in the Ground Water Quality Bureau (GWQB) of the New Mexico Environment Department (NMED). *"New Mexico Environment Department (NMED) Comments Round 3, Mt Taylor Uranium Mine Closeout/Closure Plan, Cibola County, New Mexico, Mining Act Permit No. CI002RE"* (NMED, 2025a).

10. **April 25, 2025:** Mining Environmental Compliance Section (MECS) in the Ground Water Quality Bureau (GWQB) of the New Mexico Environment Department (NMED). *"Request for Additional Information Round 3 Comments, Discharge Permit 61 Renewal and Modification Application, Mt. Taylor Mine, San Mateo, New Mexico"* (NMED, 2025b).

11. **February 19, 2026:** New Mexico Environment Department (NMED). *"NMED Memorandum, Request for Review and Comment, Mt. Taylor Mine, Cibola County, New Mexico Mining Act Permit No. CI002RE"* (NMED, 2026a).

12. **March 6, 2026:** Surface Water Quality Bureau (SWQB) of the New Mexico Environment Department (NMED). *"NMED Surface Water Quality Bureau (SWQB) Memorandum, New Mexico Environment Department (NMED) Comments, Mt Taylor Uranium Mine, Updated Closure Closeout Plan, Mining Act Permit No. CI002RE"* (NMED, 2026b).

13. **March 18, 2026:** New Mexico Mining and Minerals Division (MMD) of the New Mexico Energy, Minerals and Natural Resources Department (EMNRD). *"Comment Letter, Mt. Taylor Mine, Update of Closeout/Closure Plan, Revision 22-1, Permit No. CI002RE"* (MMD, 2026).

The CCP was initially submitted in 1998 by RGR (RGR, 1998) as a revision to its existing Mine Permit No. CI002RE (RGR, 1994b) in accordance with the New Mexico Mining Act of 1993 (New Mexico, 2005), Section 69-36-1, Section 69-36-11B(3) and (4), and the New Mexico Mining Act Rules subparts 506.A and 506. B of 19.10.5 NMAC (NMAC, 2001a).

The NMED Water Quality Control Commission (WQCC), through 20.6.2.3107 A (11) NMAC (NMAC, 2018b), as enforced by the MECS of the GWCB, also required a CCP under DP-61 (NPDES, 1979). DP-61 was initially approved in 1979, modified and renewed in 1984 (NPDES, 1984) and 1989 (NPDES, 1989), and amended to include a CCP in 1995. Both the Mine Permit and the DP-61 require reclamation of some of the mine facilities and financial assurance (FA) to cover the cost of such reclamation. Because the CCP and DP-61 have common elements and similar FA requirements, MMD and MECS agreed that RGR could submit one CCP, including one cost estimate that satisfies the requirements of both agencies, with MMD taking the lead in coordinating the regulatory review and approval process, RGR submitted its CCP for existing conditions applicable to the mine site during standby in July 2012 (RGR, 2012).

In April 2013, RGR submitted an updated CCP (RGR, 2013a) for the mine after returning to active status. Energy, Minerals, and Natural Resources Department (EMNRD)/MMD accepted the 2013 CCP revision (RGR, 2013b) and MMD approved and issued an active status permit (CI002RE, Rev 13-2) on December 29, 2017 (MMD, 2017). This updated CCP is for revision of the approved 2013 CCP (RGR, 2013b) to reflect the status of the Mine Permit.

The original Mine Permit CCP (RGR, 1998) and the DP-61 closure plan renewal (NPDES 1998) anticipated that the primary post-mining land use (PMLU) of the mine site and most facilities would be a water supply project (WSP). Although the WSP remains a feasible PMLU, the previous business agreements for the WSP have expired. Thus, the WSP was not included in either the 2012 CCP update (RGR, 2012) nor the 2013 CCP (RGR, 2013a, 2013b) update and is also not included in this revision of the CCP.

The mine remains in active permit status. However, in 2019, RGR decided not to return the mine to production and to begin some closeout/closure activities included in the 2013 CCP (RGR, 2013b), which is permissible under the Mining Act (New Mexico, 2005). Accordingly, this submittal has been prepared to revise the 2013 CCP (NMED, 2013b) to reflect the existing land disturbances and the mine facilities, both those already removed and those remaining. This CCP describes the measures that will be taken to reclaim the disturbed land for post-mining land use and to satisfy the requirements of relevant environmental standards.

The following sections contain a description of the mine site and mining-related disturbances (Section 2.0); PMLU and related ecosystems (Section 3.0); completed and pending closeout/closure measures to achieve the PMLU (Section 4.0); and environmental monitoring, environmental standards, and permits required for closeout/closure (Section 5.0). Section 6 addresses the CCP schedule. The updated cost estimate for closeout/closure of the mine is discussed in Section 7.0. The revised cost estimate will be completed and submitted 60 days after CCP approval.

1.2 Project Description

RGR owns and operates the Mt. Taylor Mine in Cibola County, New Mexico, Section 24, T13N, R8W, NMPM (Figure 1-1). The mine site is 1/2-mile northeast of the Village of San Mateo and is accessible New Mexico State Route 605.

The mine facilities at the ground surface are shown in Figure 1-2. No mill was ever constructed or operated within the permit area. Since 2020, RGR has removed some surface facilities for closeout/closure.

The existing Mt. Taylor Mine units were described in the Mine Permit Application of December 1994 (RGR, 1994b). The mine permit areas consist of 4,006.7 acres (Figure 1-3), and the mine surface facilities are located on 285.6 acres, of which approximately 148 acres are disturbed land.

The disturbed land surface in the permit area consists of:

- Service and Support Facilities
- Mine Water Treatment Area
- Ore Stockpile Pad
- Existing Disposal Cell
- Storm Water Retention Ponds (North and South)
- Site Access Roads

The existing facilities and those already removed as of September 2026 are shown in Figure 1-2b. Permits other than the Mine Permit are listed in Table 1-1. Detailed locations and descriptions of deep wells are shown in Figure 1-4 of this CCP.

An inactive 24-inch diameter Treated Water Discharge Pipeline previously extended 4.3 miles from the Mine Water Treatment Unit (MWTU) area north to the outfall point in San Lucas Canyon north of the mine (Figure 1-3). RGR completely dismantled and removed this pipeline in 2024 and 2025; all associated corridor disturbances were successfully re-contoured and revegetated in the fall of 2025.

A maintained gravel access road (County Road 334) bisects the mine site. This is a state road and right-of-way, maintained by Cibola County, which provides public access to the west edge of the Cibola National Forest; it is not part of the Mine Permit area, but is an affected area (Section 4.4.5.). Any soils with levels exceeding the approved radium limit of 6.8 pCi/g will be removed during closeout/closure. Technical criteria governing these cleanups are detailed in Section 4.4.6.

An adobe ruin remains on the small hill east of the south storm water pond (Figure 1-2b). This feature was not disturbed by, or used in, mining and will be left in place.

The Underground Mine Unit, consisting of the underground workings, shafts, and conduits, has no surface disturbance other than that included in the Service and Support Facilities Unit (shaft collars and connecting ventilation openings). The mine extracted uranium ore using room-and-pillar and stope mining methods. Mining was conducted on a single level (Westwater Formation ore horizon), approximately 3,100 ft below the surface. These mine workings were connected to two approximately 3,300-feet deep shafts via shaft stations. Several hydrostratigraphic units were penetrated by the shafts, requiring three sets (phases) of deep wells for local dewatering to access the ore body (Figures 1-4 and 1-5).

1.3 Project History

Prior to 1971, when Gulf Mineral Resources Corporation acquired the property, no mining had occurred within the permit area of the Mt. Taylor Mine. However, exploratory drilling and construction of associated access roads occurred prior to 1971. A December 17, 1997, U.S. Forest Service letter addressing reclamation of these historical drill pads and access roads recommended that unused areas be closed to vehicle access and allowed to naturally revegetate rather than be recontoured because additional disturbance would adversely affect existing vegetation (Appendix L).

1.3.1 Mine Development

The Mt. Taylor Mine was developed in the 1970's by Gulf Mineral Resources Company (Gulf). Two, approximately 3,300-foot-deep mine shafts were constructed using traditional drill-and-blast methods with progressive liner construction to gain access to the ore zones. Shaft sinking began in 1976 and was completed in 1979. During shaft advancement, dewatering of the mine was accomplished by using a series of dewatering wells (DW Wells) constructed in three phases (Figures 1-4 and 1-5). Once the shafts were completed, development drifting into the orebody began. During development, dewatering of the mine was accomplished using pumps within the shaft and workings.

1.3.2 Mine Production

Gulf started production in 1980, after the orebody was sufficiently developed. Production continued until September 1982, when the market price of uranium fell dramatically, resulting in the temporary cessation of production by Gulf. Mine pumps continued dewatering the mine during this shut-down period. Ownership was transferred to Chevron Resources Company in 1985 when the two companies merged. Chevron produced ore from the mine from 1986 to 1990, when it suspended mining of uranium ore, again due to low market prices for uranium.

The mine historically produced uranium using conventional underground mining methods from ore zones of the Morrison Formation at depths of more than 3,000 ft bgs. Approximately 675,085 tons of ore and approximately 698,000 tons of waste rock have been mined (RGR, 1994a). The ore was shipped off-site for milling. Overlying formations, including the water-bearing Dakota Sandstone, were penetrated by the shafts, but no mining of ore was conducted in those formations.

Waste rock from shaft sinking (shaft muck) and from mine development was placed in an on-site stockpile, located at the southwest corner of the waste rock pile. The shaft muck was found to meet

the criteria of clean materials (radioactive components at or below background values, see Appendix D.1) and was subsequently added to the disposal cell.

The mine has not produced uranium since RGR purchased the property because of the continued low market price for uranium and the high cost of reactivation. Facility descriptions remain unchanged from those provided in previous renewals of this plan.

1.3.3 Mine De-Activation

Chevron Resources Corp. ceased mining activities at the Mt Taylor Mine in January 1990 due to low uranium market prices. RGR acquired the mine property in 1991 and maintained the mine in a ready status in anticipation of improving uranium market conditions.

1.3.4 Mine Permitting

RGR submitted its application for an Existing Mine Permit in December 1994, shortly after the New Mexico Mining Act was passed and the rules went into effect. The MMD approved the Mt. Taylor Mine Permit No. CI002RE as an existing mine operation on July 28, 1995 (MMD, 1995). On December 18, 1998, the MMD approved the CCP and FA for the mine (MMD, 1998).

RGR submitted its first application for standby status of the Mt. Taylor Mine on March 25, 1999 (RGR, 1999). MMD approved standby status on October 7, 1999, under permit revision 99-1 (MMD, 1999). From 1999 to 2017, the mine was in standby status due to the depressed uranium market.

Anticipating recovery of the uranium market, RGR submitted an application in 2013 to revise the Mine Permit from standby to active status (RGR, 2013a; RGR, 2013b). Since December 29, 2017, the mine has been in active status. However, in 2019, RGR decided that the uranium market was not recovering sufficiently to justify resuming production of the Mt. Taylor Mine, so closeout/closure activities began.

1.3.5 Mine Water Pumping, Treatment, and Discharge

To gain access to the ore zones during mine development, dewatering (depressurizing) wells were drilled and operated in stages. The primary function of these wells was to reduce the water pressure on the shaft as it was constructed. Pumping water from these dewatering wells began in the early 1970's and ceased by 1978. Locations and descriptions of these dewatering wells within the mine area are shown in Figure 1-4. A typical geologic section and typical well construction are shown on Figure 1-5. Shallow monitoring wells were installed to track the effects on shallow water resources from the sewage lagoon leakage or the diesel spill contamination (Figure 1-6, Table 1-3).

During mining operations in the late 1970’s and through the 1980’s, the mine was dewatered via underground pumps and piping. The water was pumped to the MWTU facility on the surface, where it was treated to reduce radium concentrations before discharge. The treated water was then discharged through a 24-inch diameter, 4.3-mile-long pipeline (Treated Water Discharge Pipeline). This pipeline mainly crossed private land, except for approximately a three-quarter-mile portion on US Forest Service land. The pipeline terminated at the outfall in San Lucas Canyon north of

the mine (Figure 1-3). The treated water was discharged under the now-terminated National Pollutant Discharge Elimination System (NPDES) Permit No. NM0028100 (NPDES, 2016) into the ephemeral drainage of San Lucas Canyon. Historical investigations completed between 2013 and 2020 evaluated soil, sediment, surface water, and groundwater conditions at Outfall 001 and at selected downstream locations within the San Lucas drainage to assess potential impacts from historical mine water discharges. These investigations generally concluded that historically treated mine water discharges had not resulted in significant impacts to downstream soils or groundwater; however, subsequent radiological surveys identified localized areas requiring additional evaluation as part of mine closure. A summary of the historical investigations and the planned characterization activities for Outfall 001 is provided in Appendix M, *Outfall 001 Historical Summary and Planned Characterization* (EA, 2026e).

Seven observation wells were installed for monitoring drawdown during the initial dewatering of the mine (Figures 1-4 and 1-7). Observation wells SM 24-89, SM 24-43, and SM 24-38, which are completed in the Westwater formation, are in the mine area near the production shaft (Figure 1-4). One of these observation wells, SM 24-23E, is in the mine area near dewatering well DW-8 and is competed in the Tres Hermanos/Dakota formation. The three other wells are located outside of the mine area at locations shown in Figure 1-7. These observation wells have not been used since operations ceased in the 1980's. Water levels in the dewatering and observation wells are listed in Table 1-2.

1.4 Other Permits

RGR maintains several permits that are relevant to the closeout/closure of the Mt. Taylor Mine. In addition to the Mine Permit and DP-61, the other permits related to the mine are listed in Table 1-1.

The NPDES Permit No. 0028100 (NPDES, 2016) was terminated by the U.S. Environmental Protection Agency (EPA) in 2021 because it was no longer required. The Mt Taylor Mine facility has not discharged through Outfall 001 since the early 1990's.

Radioactive Material License SO043-14 (NMED, 2020) was terminated in 2021 because it was no longer required. The sources covered under the license were no longer needed and were disposed.

There are no stationary sources with potential emissions of regulated contaminants associated with closeout/closure activities, so there are no air quality permit requirements for closeout.

The U.S. Forest Service Special Use Authorization (MOT220) for the treated water discharge pipeline was terminated on November 25, 2025, following completion of pipeline removal. No additional authorizations associated with the former treated water discharge pipeline are anticipated for mine closeout/closure.

No other permits beyond those listed in Table 1-1 and those just discussed above are required for closeout/closure of the Mt. Taylor Mine.

2.0 SITE CHARACTERISTICS

2.1 Site Climate

The climate and baseline air quality of the permit area are described in the *Environmental Site Assessment* (RGR, 1994a) and the *Permit Application* (RGR, 1994b). The climate is semi-arid, like most of the state, but the elevation (about 7,300 ft above MSL) and orographic effects of Mt. Taylor cause low winter temperatures and frequent high winds that impose some limitations on post-mining land uses and ecosystems. In particular, the climate of the site is not well-suited to crop production other than hay, but it has historically allowed livestock grazing. Rainfall is not sufficient to support forest within the area of the surface facilities, where most disturbance has occurred.

2.2 Site Geologic Setting Summary

The geologic setting of the mine has been described in detail in the *Environmental Baseline Study* prepared by New Mexico Environmental Institute (NMEI) in 1974 (NMEI, 1974) and the *Environmental Site Assessment* submitted in 1994 (RGR, 1994a). The following summary is derived from those, and other reports. The geologic section is illustrated in Figure 2-1.

The deepest geologic formation encountered in the Mount Taylor mine shaft is the Jurassic-age Morrison Formation. The Morrison Formation includes the following members, in ascending order: the Recapture Creek, the Westwater Canyon, and the Brushy Basin. Recapture Creek member occurs at a depth between 3,240-3,300 ft bgs in the mine shaft pilot well. This member grades vertically into the overlying Westwater Canyon member. The Westwater Canyon member is variable in thickness owing to lensing and vertical gradations into both the Brushy Basin and Recapture Creek members. At the mine site, the Westwater Canyon is divided into Upper and Lower units by a persistent shale unit. The lower sandstone unit is about 60 to 70 ft thick, while the upper sandstone unit is approximately 100 ft thick in the mine shaft area. These two sandstone units contain most of the uranium ore reserves of the mine. The Brushy Basin member conformably overlies and interfingers with the Westwater Canyon member. It is approximately 80 ft thick and consists predominantly of shales and claystones at the mine shaft.

Between the ore-bearing Morrison Formation and the ground surface is a sequence of sedimentary units approximately 2,950 ft thick, starting with the Dakota Sandstone, which unconformably overlies the Brushy Basin. The Dakota is approximately 50 to 60 ft thick and is only slightly mineralized and not mined at the Mt. Taylor Mine. The Dakota conformably intertongues with the overlying Mancos Shale.

The overlying Mancos Shale, nearly 900 ft thick, is composed chiefly of dark-gray, calcareous, marine clay shale but does contain interspersed sandstone units. The lowermost portion of the Mancos Shale contains three sandstone units that have been referred to as the Upper, Middle, and Lower Tres Hermanos Sandstones. These sands are 72 ft, 45 ft, and 118 ft thick, respectively, at the mine shaft pilot well (McGlothin, 1972).

Above the Tres Hermanos Sandstones, the Manco Shale extends up to the base of the Gallup Sandstone at approximately 2,050 ft bgs. The Gallup Sandstone consists of two separate sandstone

units separated by 130 ft of dark gray shale. Overlying the Gallup Sandstone is the Crevasse Canyon Formation which includes, in ascending order, the Dilco Coal, the Stray Sand, the Mulatto Tongue of the Mancos Shale, the Dalton Sandstone, and the Gibson Coal. The Crevasse Canyon Formation is conformably overlain by the Point Lookout Formation.

The Point Lookout Formation is the basal unit of the Mesa Verde Group and it is typically encountered between 700 and 850 ft bgs at the mine site. In the vicinity of the mine, this unit is separated into two units by the Satan Tongue of the Mancos Shale. The upper unit, referred to as the Point Lookout Sandstone, is the main body, and it is typically 110 to 130 ft thick. The lower unit is the Lower Hosta Tongue, a transgressive marine beach sandstone that is between 80 to 100 ft thick. Both units merge along the southern margin of the basin to a combined unit approximately 250 ft thick. The Lower Hosta Tongue is of limited areal extent, pinching out 30 miles northeast of its outcrop. The Point Lookout Sandstone consists of a sequence of thick-to very thick-bedded, very fine-to medium-grained, locally cross-bedded sandstone. The Point Lookout/Hosta (PLH) aquifer provides the domestic water supply for both the mine and the Village of San Mateo.

The Menefee Formation is the uppermost geologic unit present at the mine. It forms uneven slopes around the mine and near the Village of San Mateo. The formation is composed of interbedded pale yellowish-brown silt stone, fine to medium grained sandstone, gray shale, carbonaceous shale, and thin coal beds. Its thickness at the mine shaft is approximately 767 ft (NMEI, 1974). Mine water treatment pond basins were excavated into the Menefee, and both the manway/vent and production shafts are collared in this formation.

Deposits of Quaternary age exposed in the area consist of unconsolidated talus, alluvial, and eolian sediments. Talus, landslides, and black lava blocks cover extensive areas on the slopes adjacent to the high basalt-covered mesas to the south, southwest, and east of the mine. Clay, silt, sand, and gravel alluvial lenses underlie the valleys, as well as the lower topographic slopes (NMEI, 1974).

2.3 Site Hydrology Summary

The hydrologic conditions of the mine and impacts from mining have been described in detail in the Baseline Study (NMEI, 1974) and the Environmental Site Assessment (RGR, 1994a). The following summary of the surface and groundwater hydrology from those reports and updates from more recent observations and studies is provided as the basis for proposed closeout/closure measures.

2.3.1 Surface Water

Two main surface drainage systems collect both bedrock seepage water and storm water run-off in the vicinity of the mine. The primary surface water course is San Mateo Creek, located one-half mile south of the mine. This perennial stream is fed with numerous springs in the San Mateo Canyon area but disappears into the stream bed approximately two miles beyond the Village of San Mateo. During spring peak run-off and after heavy rainstorms, the surface flow may occasionally extend for a brief period farther down San Mateo Creek. Surface water runoff within the permit area occurs only after heavy precipitation on or upstream from the site.

The second main drainage system is the Marquez Arroyo ephemeral steam, located immediately north of the mine. This deeply incised arroyo collects water during the infrequent heavy rainstorms, but otherwise it is dry throughout the year. Low-flow springs are located at higher elevations feeding this drainage, but their total flow has never been large enough to be measurable at the mine's elevation. Marquez Arroyo flattens out, and surface flow dissipates into the alluvium about one-half mile west of the mine.

Constructed during mine development in the 1970's, diversion ditches and below-grade collection systems intercept and channel runoff originating on the site to storm water retention ponds where water is evaporated. These ditches replace three shallow ephemeral drainage courses that existed prior to mine development (Figure 2-2). Storm water originating directly on the mine site area is channeled into culverts and storm water pipes, which flow into storm water retention ponds and evaporates.

During the 2018–2019 mine reactivation phase, the facility's drainage infrastructure underwent a series of upgrades:

1. Runoff from the service and support area previously directed into mine water treatment Pond #2 has been diverted into a replacement storm water collection system (re-constructed 2018) along the county road that discharges to the South Storm Water Pond (SSWP).
2. Runoff from the east and north slopes of the Waste Rock Pile now collects in a storm water collection system that discharges into the SSWP (Appendix A Drawing Sheet CL 14), which was completed in 2019.

The storm water runoff retention structures are designed to contain not less than the 100-year storm runoff and hold the water for evaporation. Following final closeout, those diversion ditches and retention structures that support the post-mining land use (PMLU) will remain in use for stock watering; otherwise, runoff will be re-directed to existing drainage courses that naturally would receive runoff from the site (Appendix A Drawing Sheet CL 14).

Per 20.6.4.7.S(5)(b) NMAC, storm water retention structures that were originally created in surface waters of the state or resulted in the impoundment of surface waters of the state meet the definition of surface waters of the state. Because portions of the operational area and the associated storm water retention structures overlay the historical middle arroyo channel, these water bodies may be subject to state surface water quality standards, including the protective standards for livestock watering upon final site closeout.

To demonstrate that the surface water in these structures is safe for livestock consumption and satisfies state standards, RGR will conduct at least one comprehensive surface water and sediment characterization sampling event within the retention ponds prior to final site release. This sampling event will verify that the water quality meets the state livestock watering standards, with particular emphasis on ensuring that Radium-226 + Radium-228 concentrations comply with the 30 pCi/L maximum limit established under 20.6.4.900 NMAC. Throughout the active closure and earthwork execution phases, these ponds will continue to be managed as

active industrial containment and remediation facilities. The final jurisdictional status of the remaining stock watering ponds under 20.6.4 NMAC will be determined in coordination with the Surface Water Quality Bureau (SWQB) following the submittal of the closure validation data.

2.3.2 Groundwater

Aquifers and the groundwater conditions in the mine area are described in detail in the Baseline Study (NMEI, 1974), and in aquifer test reports (McGlothin, 1972), the Water Resources Report (Geohydrology Associates, Inc., 1994), and the Site Conceptual Hydrogeologic Model (EA, 2025b). The following summary of groundwater hydrology from those reports and updates from more recent observations and studies are provided as the basis for proposed closeout/closure measures. Aquifers capable of yielding large quantities of groundwater occur in some Cretaceous formations and in the Jurassic Morrison Formation, where the uranium ore bodies are found.

Several aquifers are intersected by the mineshafts and were affected by the mine dewatering. Key aquifer systems of interest include the Point Lookout/Hosta (PLH), Tres Hermanos/Dakota (THD) and the Westwater Canyon member of the Morrison Formation (WWC). Groundwater from these strata was removed by pumping a series of dewatering wells during mine shaft advancement until 1978 (Figures 1-4 and 1-5) and then by underground mine pumps into 1990 to dewater the ore bodies. The underground mine pumps were shut off in June 1990, after mining operations were suspended, and the mine has subsequently flooded as groundwater levels recovered. The mine water derived from the Westwater Canyon member has concentrations of uranium, radium, sulfate, and TDS that exceed current drinking water standards (Table 2-1).

The shallowest aquifer capable of sustaining a potable water supply in the mine area, the PLH, has a potentiometric surface at a depth of approximately 460 to 610 ft bgs (Table 1-2), and the aquifer has a large flow potential. The Village of San Mateo and the mine have wells reaching depths between 650 to 1190 ft and are completed within the PLH. The mine began using this water in 1972, whereas the San Mateo village water well, located at 35° 19’ 56.14” N, 107° 39’ 02.53” W, was drilled in 1976 by Gulf and serves approximately 200 residents. The geologic cross-section indicates that the Point Lookout Sandstone is separated vertically from the surface and alluvium by over 650 ft of shale and sandy shale sequences (Figure 2-1) in the Menefee Formation, minimizing the possibility of any shallow Menefee or alluvial aquifer groundwater discharging to the PLH aquifer.

As shown in the second quarter of 2026 dewatering well groundwater sampling results (EA, 2026a), the quality of the PLH aquifer generally meets the WQCC water standards with occasional exceedance of the fluoride standard and some low-level detections of petroleum hydrocarbon compounds (Table 2-2). Engineering Analytics (EA) prepared an assessment of fluoride levels measured in wells and springs in the area that are completed within or discharge from the shallow (alluvial and Menefee) and deeper (PLH through the THD aquifers and concluded that natural occurrences of fluoride commonly exceed the WQCC standard of 1.6 mg/L (EA, 2025b).

The Environmental Baseline Study (NMEI, 1974) includes a list of other shallow water wells, most of which are clustered in and around San Mateo. Six wells (three hand-dug) are in the alluvium, less than 100 ft deep, and nine wells produce from the Upper Menefee Formation from

120 to 336 ft deep. Some of these wells may still be used for watering livestock, but several of them were abandoned when the PLH water well was drilled for village use by Gulf.

The alluvial and shallow portions of the Menefee Formation are unconfined aquifer systems that yield small amounts of water in the local area. Water levels vary from 35 to 90 ft bgs. The alluvial sediments vary from 0 to 65 ft thick at the mine site. The Menefee Formation is typically over 750 ft thick and is comprised of interbedded shales, claystones, and sandstones, which provide a confining layer to the underlying Point Lookout Sandstone (Figure 2-1).

Perched groundwater occurs in some locations in the mine area. A discontinuous perched groundwater zone occurs at approximately 12-25 ft bgs, located within the Waste Rock Pile and paleochannels. Alluvial groundwater occurs at the alluvial/bedrock contact at approximately 45-60 ft bgs primarily in paleo-arroyos within the operational area of the mine and in shallow, low-volume saturated zones elsewhere in the Upper Menefee.

A geophysical study was conducted in 2020 (Willowstick, 2020) across the southern half of the mine site. This study concluded that preferential groundwater flow paths exist beneath the Waste Rock Pile and the operations area. The primary preferential groundwater flow paths identified in the study overlap the paleo-arroyo channels that were filled in as part of the mine site development. The study also identified several areas of perched water within the Waste Rock Pile. In late 2020, an additional site investigation was conducted, with installation of seven new monitor wells located in the preferential flow paths identified in the Willowstick study (Ensero, 2021b). These new wells were completed in water-bearing siltstones and sandstones within the Upper Menefee just below the alluvium/bedrock contact. One background monitoring well, MW-1C, was installed in the southeast portion of the mine site. Alluvial and Menefee monitoring and recovery well locations are shown on Figure 1-6 and listed in Table 1-3.

Recharge to the alluvial and Upper Menefee groundwater at the mine site comes from the Menefee Formation east of the mine site, historic seepage from a former sewage lagoon and meteoric waters that recharge occurs primarily through paleochannels from seeps and possibly springs along the (now) subcrop of Menefee sandstone beds that were covered when Gulf conducted extensive cut and fill of the mine surface during 1976-1980. The paleochannels were the drainage courses for discharge from those springs, as well as surface runoff from the mine site and the mesa above the mine site. Alluvial and Upper Menefee groundwater flows west to northwest through the mine site.

2.3.3 Site Conceptual Hydrogeologic Model

A site conceptual hydrogeologic model of the Mt Taylor mine site is presented that provides a synthesis of available site geologic and hydrologic information. More detailed description of the deeper aquifer systems is provided in a report submitted by EA in 2025 (EA 2025b).

The deepest aquifer of interest with respect to the mine site is within the Westwater Canyon (WWC) member of the Morrison Formation (Fm). This aquifer occurs at a depth of approximately 3,100 to 3,200 ft bgs, is between 120 and 180 feet thick, and was the ore-bearing unit that was mined for uranium at Mt Taylor. The WWC aquifer can transmit large amounts of groundwater. During the dewatering of the mine from 1979 to 1990, the WWC aquifer produced water at

sustained rates between 3,000 and 4,000 gallons per minute (gpm). Dewatering activities ceased in 1990.

Water level elevations within the WWC dewatering wells are generally between 6,580 and 6,590 ft amsl. Based on these potentiometric data, the ambient groundwater flow direction is to the northwest (Figure 2-3). Water levels within the WWC aquifer have largely recovered to pre-mining levels.

Water quality of the WWC aquifer measured prior to mining operations typically exceeded secondary drinking water EPA standards for sulfate and TDS, and NMED WQCC standards for total radium. Because of its depth and water quality, and the fact that there are better, shallower alternative sources, the WWC is not considered a potable water supply in the local area.

The WWC lies between the Recapture Creek and Brushy Basin members of the Morrison Fm, both of which are considered aquitards in the area of the mine site because they consist predominantly of finer grained units of shales, claystones, and mudstones, with thin interbedded sandstones. Between the Morrison Formation and ground surface is a sequence of sedimentary units approximately 2,950 ft thick.

Directly above the Morrison Fm, is the Dakota Sandstone, approximately 50 to 60 ft thick. The Dakota Sandstone is considered a regional aquifer, although it is not used for water supply locally, primarily because of its depth of around 2,900 ft bgs. Overlying the Dakota Sandstone is the Mancos Shale. Within the lowermost portion of the Mancos Shale are three sandstone units collectively referred to as the Tres Hermanos. The Dakota Sandstone is separated from the overlying Tres Hermanos by a relatively thin (less than 15 ft) shale layer and from the underlying WWC aquifer by the shaley Brushy Basin Member. Water level elevations for the dewatering wells are generally between 6,545 and 6,725 ft amsl. Water level data suggest that the Dakota and Tres Hermanos aquifers, and possibly the WWC aquifer, may be hydraulically connected. Limited potentiometric data for the Dakota/Tres Hermanos aquifers suggests a south to southeasterly groundwater flow direction (Figure 2-4), which is opposite to that of the WWC aquifer. However, the data may not be representative because many of the dewatering wells that are screened within the Dakota/Tres Hermanos aquifers are also screened across other shallower aquifers.

Most of the Mancos Shale is characterized as a thick sequence of predominately marine shales. There is an approximately 550 ft section of Mancos Shale separating the Tres Hermanos Sandstones from the overlying Gallup Sandstone. The Gallup aquifer (which includes the Lower and Upper Gallup Sandstones) occurs from approximately 1,740 to 2,010 ft bgs at the mine shaft. The Mancos Shale interval provides a significant confining layer between the Tres Hermanos and Gallup aquifers. Pre-mining water level data collected from a shaft pilot well confirmed the hydraulic isolation between the Tres Hermanos and Gallup aquifers (McGlothin, 1972). There is insufficient data to estimate the potentiometric surface of the Gallup aquifer system (which includes the Lower and Upper Gallup Sandstones).

Overlying the Gallup Sandstone is the Crevasse Canyon Fm, which is approximately 690 ft thick at the mine shaft. The Crevasse Canyon Fm consists of the following units in ascending order (approximate depth encountered in the mine shaft in parentheses in ft bgs): Dilco Coal (1,720),

Stray SS (1,640), Mulatto Tongue of the Mancos Shale (1,297), Dalton SS (1,138), and Gibson Coal (1,013). The formation is composed primarily of fine-grained sandstone, siltstone, and shale with coal present in the Gibson and Dilco Members. The sandstones within these units are typically fine-grained and are limited in areal extent but could potentially provide a localized water supply. The Gipson Coal is overlain by the Lower Hosta Tongue of the Point Lookout Sandstone. There are no dewatering or observation wells that are completed only within the Gallup Sandstone, or the Crevasse Canyon Fm, or any of its subunits.

The PLH aquifer is typically encountered between 700 and 850 ft bgs. At the mine site, the PLH aquifer is separated into two units by the Satan Tongue shale. The upper unit is the main body, commonly referred to as the Point Lookout Sandstone. The upper unit is typically 130 ft thick. The lower unit is the Lower Hosta Tongue, a transgressive marine beach sandstone that is approximately 100 ft thick. Testing in the mine shaft pilot well indicated relatively higher permeability within the PLH aquifer. The PLH provides a local water supply to the village of San Mateo and to the Mt Taylor mine. Water level elevations within the PLH dewatering wells are between 6755 and 6880 ft amsl. Potentiometric data indicates a southerly groundwater flow direction for the PLH aquifer (Figure 2-5).

The projection of the PLH aquifer potentiometric surface through the shaft location is approximately 6,785 ft amsl. The water level elevation within the shaft (which is open to the WWC aquifer) is approximately 6,564 ft amsl. The potentiometric surface of the PLH aquifer (Figure 2-5) is more than 200 ft higher than in the WWC aquifer (Figure 2-3) at the shaft location. No breeches or failures have been identified in the shaft where it penetrates the PLH. The large difference in the potentiometric surfaces clearly indicates that the concrete shaft lining is effectively separating groundwater in the WWC aquifer from the PLH aquifer.

Water quality of the PLH is generally within NMED WQCC standards although there are local exceedances of fluoride (Table 2-2). Additionally, petroleum hydrocarbons (PHCs) in the form of Light Non-Aqueous Phase Liquids (LNAPLs) and some dissolved concentrations were detected in two of the PLH dewatering wells (DW-3 and DW-10). LNAPLs were also detected in one THD well, DW-11. Corrective actions have reduced dissolved concentrations to below NMED standards for all PHCs and removed the LNAPLs, with the exception of naphthalene in DW-11. Investigation into the source of those constituents is ongoing, and monitoring of the PLH and THD dewatering wells is ongoing.

The Menefee Fm is the shallowest geologic unit present at Mt Taylor mine site and is found in outcrops and in the shallow subsurface. The Menefee Fm is typically greater than 750 ft thick and consists of interbedded siltstone, fine- to medium-grained sandstone, gray shale, carbonaceous shale, and thin coal beds. This thick sequence of relatively low permeability sediments provides a confining layer to the underlying PLH aquifer.

The shallow portions of the Menefee Fm yield small amounts of water in the local area. Water levels vary from 35 to 90 ft bgs. Potentiometric data indicates a generally west to northwest flow direction across the mine site within this hydrogeologic unit (Figure 2-6).

The alluvial sediments vary from 0 to 60 ft thick at the mine site and are typically located along drainages and within paleo-arroyos. Alluvial groundwater occurs locally as discontinuous, thin saturated zones at the alluvial/Menefee Fm contact at depths of 45-60 ft bgs within the operational area of the mine. A discontinuous perched groundwater zone occurs at approximately 12-25 ft bgs located within the Waste Rock Pile and paleochannels.

Groundwater impacts from mining have been identified within the perched, alluvial, and upper Menefee Fm groundwater systems. Table 2-2(a) summarizes the exceedances that were observed in the second quarter sampling event (EA, 2026b). Additional field investigation and characterization to delineate the nature and extent of those impacts is in progress at the time of this report.

2.4 Mine Units

Mt. Taylor Mine was an underground mine, with the ore bodies present over 3,000 ft bgs and supported by a surface facility. Refer to the Permit Application (RGR, 1994b) for details of the mine facilities. Ore was mined by conventional drill-and-blast methods, hoisted to the surface in ore skips via shafts, and transported offsite for milling.

A worst-case subsidence analysis was performed in support of the 1994 Permit Application (RGR, 1994b). Even with the assumed case of 100% extraction of ore, which would not be physically possible, no subsidence would reach the ground surface and would be limited to 300 ft above the mine workings. During previous mining operations, approximately 1.3 million tons of ore and waste rock were extracted from the ore bodies in the Morrison units.

Using best current practices of room-and-pillar mining with backfilling, subsidence would be limited to heights less than one room width above the room, leaving overlying aquifers and ground surface unaffected. Therefore, upon closeout, underground workings (the Underground Mine Unit) will be abandoned, and shafts plugged at the surface.

Mine units identified in the 2013 Mine Permit renewal application (RGR, 2013b) include the underground workings (referred to as the Mine Unit in the 2013 Mine Permit) and surface mine units that consisted of all activities at ground level needed for support of underground mining. These activities included:

- Hoisting of men, materials, and ore
- Ventilation and cooling of air for the underground workings
- Removal and treatment of mine water
- Disposal of waste rock
- Administrative, health and safety, and maintenance services
- Stockpiling and loading of ore for offsite milling

The location and identification of mine facilities are shown in Figure 1-2 and Figure 1-2b. Mine units are delineated primarily by function and secondary by location; there is some overlap in locations of the mine units. The mine units are described in the following sections:

- Underground Mine Unit (Section 2.4.1)
- Mine Dewatering and Mine Water Treatment Unit (Section 2.4.2)
- Service and Support Unit (Section 2.4.3)
- Low-Grade Ore Stockpile and Ore Pad (Section 2.4.4)
- Waste Rock Pile and Disposal Cell (Section 2.4.5)
- Storm Water Ponds (Section 2.4.6)
- County Road (Section 2.4.7)

2.4.1 Underground Mine Unit

The facilities in this category, collectively called the Underground Mine Unit, consist of below-surface facilities - the two shafts and associated underground workings. The underground mine workings, including all drifts, stopes, haulage ways, and other openings for ore extraction are shown on Figure II of the Environmental Site Assessment (RGR, 1994a). These underground workings follow the ore body at depths of 3,100 to 3,200 ft bgs. The shafts and conduits penetrate all the geologic units and aquifers described in Sections 2.2 and 2.3.

The Mt. Taylor Mine has two shafts: a production shaft (24-foot diameter) and a manway/ ventilation shaft (14-foot diameter). In addition, two 10 ¾ -inch inner diameter (I.D.) utility conduits (pipes) extend from the ground surface to the mine level. The conduits are steel casings/pipes, grouted in place. The conduits are 11.5 inches outer diameter (O.D.), cemented in place in 12.5-inch diameter boreholes through the entire length of 3,100 ft (north conduit) and 3,200 ft (south conduit). The annulus between the steel casing/pipe and the bore hole is cement grouted. The grout isolates the conduit from all aquifers except the Westwater at the mine level. As previously requested by MMD and approved in the Mine Permit, the entire length of each conduit will be grouted closed during closeout/closure.

Both shafts have slip-formed, cast-in-place concrete liners from collar level to mine level. The liner thickness increases with depth, from 1 ft at the sub-collar level to 3 ft at the mine level. The rock/concrete contact is pressure-grouted through the water-bearing sections from the Point Lookout aquifer to the shaft stations at mine level, isolating the shafts from the aquifers above mine level and the aquifers from each other.

The hydrologic isolation of the shafts and the mine water from the PLH aquifer is demonstrated by the difference in static water levels between the shafts and the Phase I dewatering wells that are completed in the PLH aquifer (Table 1-2). Water level data have been routinely measured at four Phase I wells since 2023. Potentiometric surface maps developed from that data (Figure 2-5)

indicate that the water level elevation of the PLH aquifer is approximately 6,830 ft above mean sea level (ft amsl) at the 14-ft manway shaft and approximately 6,780 ft amsl at the 24-ft production shaft.

The field-measured water level elevation within the production shaft is approximately 6,567 ft amsl, or about 263 ft lower than the projected potentiometric water level elevation in the PLH.

Dewatering operations ended around 1990. Water levels within the Point Lookout wells and within the production shaft have stabilized following recovery since dewatering ended 35 years ago. The water level being over 200 ft lower in the production shaft than the Point Lookout aquifer indicates that there is no discernible hydrologic connection between the mine water (Morrison/ Recapture/Westwater) and the PLH. If a connection existed between the shafts and the PLH aquifer, water levels in the mine shafts would be similar to those in the PLH. The isolation of mine water from the PLH is also evident from the differences in water quality between the mine water (Table 2-1) sampled from the production shaft and the PLH water sampled in the dewatering wells (Table 2-2).

2.4.2 Mine Dewatering Wells and Mine Water Treatment Unit

2.4.2.1 Mine Dewatering Wells

The mine facilities included deep dewatering wells for removing water from the mine, a MWTU, and a Treated Water Discharge Pipeline. During initial mine operations, water was pumped from up to 22 deep wells to dewater the mine. These wells are located concentrically around the shafts, as shown in Figure 1-4 and listed in Table 2-3.

When the mine was operating, these facilities were used to pump, treat, and discharge up to 7,200,000 gallons per day. However, during mine standby and the more recent active status period (2018-2019), no mine water was discharged, and these facilities were not in operation.

2.4.2.2 Mine Water Treatment Unit

The MWTU is regulated under DP-61, which was originally approved on July 20, 1979, and subsequently renewed every five years hence. DP-61 is in the process of timely renewal concurrently with RGR's application for renewal of the Mine Permit.

The MWTU covers 28 acres of land surface within the Mine Permit boundary. The mine water treatment unit included the water treatment equipment and buildings (Ion Exchange plant, flocculant treatment, and barium chloride treatment facilities), as well as the ponds, which had an original combined capacity of approximately 62 acre-feet (RGR, 2013b).

In the 1970's and 1980's, when the mine was operating, the mine water was treated in the MWTU to remove low concentrations of uranium and radium so that the treated water met human health standards (NMAC, 2018a). Treatment consisted of sediment settlement assisted by flocculation and precipitation of radium using barium chloride. An ion exchange (IX) circuit for removal of uranium was constructed but never placed into full operation because the uranium concentrations

of the mine water were below the groundwater standard (5 mg/L) in effect at that time. The IX circuit was run only in an initial test mode; it was not subsequently used for uranium removal.

Mine water was first treated with flocculant before being released into Pond #1. Mine water then flowed from Pond #1 through Ponds #2 and #3, where settling of suspended solids occurred. The settled mine water then flowed from Pond #3, through the barium chloride mixing facility, and into Pond #8. From Pond #8, the treated water flowed into Pond #4, then into Pond #5. Through the addition of barium chloride, barium precipitation was induced (barium-radium-sulfate co-precipitation) as the mine water flowed through these three ponds. After barium precipitation in Pond #5, the treated water flowed into Ponds #6 and #7 before release to the discharge pipeline.

From Pond #7, treated water was pumped through a 4.3 mile long, 24-inch diameter discharge pipeline and discharged to San Lucas Canyon (Figure 1-3) under authority of NPDES Permit No. NM0028100. The pipe was constructed above-ground and consisted of 1/4- to 3/8-inch thickness steel sections, welded in the field.

The MWTU was upgraded during the mine reactivation period (2018-2019), after the Mine Permit was revised to active status. During this time, MWTU Ponds #2 and #3 were enlarged in 2019 and 2018, respectively; existing hydraulic structures were refurbished, new concrete spillways were constructed at the inlets, and double-membrane high-density polyurethane (HDPE) liner systems were installed according to DP-61. Both ponds were enlarged for increased storage capacities (Table 2-4). Excavated contaminated soils generated during the reshaping activities were placed in the disposal cell.

MWTU Pond #3 is being used to retain and evaporate contaminated water and fluids generated around the site, including groundwater from abatement activities, surface water runoff collected from containment structures, monitor well purge water generated from sampling, and wash water generated on site from equipment and materials decontamination. MWTU Pond #2 is not regularly in use; it serves as backup storage in case MWTU Pond #3 becomes filled to capacity. A shallow pool of clean water is maintained in MWTU Pond #2 to preserve and maintain the liner.

MWTU Ponds #2 and 3 will remain in place until groundwater abatement objectives have been achieved, and site decontamination activities are no longer required. These ponds were constructed as below-grade basins excavated into native rock and soil. When no longer needed, these two ponds will be reclaimed. The sediments contained on the liners will be removed and placed in the disposal cell. The hydraulic structures and liners will then be removed and placed in the disposal cell. The berms will be pushed in, and the ponds backfilled and regraded to meet final grading contours (Drawing Sheets CL 07A and CL 08). The pond areas will then be re-vegetated according to Appendix F.

MWTU Ponds #1, 4, 5, 6, 7, and 8 were excavated in 2019, during the reactivation phase, to remove contaminated sediments and soil, which were subsequently placed in the disposal cell. These ponds were not relined and never put into use during active status because RGR initiated closeout/closure activities before those ponds were re-constructed.

Demolition of the MWTU pond hydraulic structures, with the exceptions of Pond #2 and 3, were completed 2026.

Once the disposal cell expansion is approved, RGR will complete cleanup and reclamation of MWTU Ponds #1, 4, 5, 6, 7, and 8. After these six ponds are demonstrated to be clean, the berms will be pushed in, and the ponds backfilled. These six ponds will be regraded to meet final grading contours during closeout (Appendix A Drawing Sheets CL 07A and CL 08).

2.4.3 Service and Support Unit

The Service and Support Unit includes all surface facilities other than mine water treatment and mine waste rock disposal. The location and identification of these facilities are shown in Figure 1-2b and listed in Table 4-2.

Service facilities are those units at ground surface that supported the overall mine operation but do not provide direct support for underground operations. These units provided site access control, administrative services, personnel and sanitary services, warehousing and storage, maintenance and repair, water and power utilities. The facilities included the guard house, fire equipment building, service building, car (maintenance) shop, carpenter shop, electrical building, water treatment building, storage building, core storage building, water tanks, fuel storage tanks, fan shop, septic tank, leach field, and water wells for water supply to the mine.

Support facilities are those facilities at ground surface (above the shaft collars) that had a direct function in underground mining operations. These support facilities supplied air for ventilation; pumping water from the underground space; cooling and heating of underground air; and hoisting of personnel, materials, and ore to and from the underground mining levels. The mine support facilities included the compressor building, chiller building, cooling towers, chiller pump building, shaft heating buildings, hoist house, headframes, and exhaust fan structure.

An electrical substation is located on the north side of the service and support facilities area. This substation is owned by the Continental Divide Electric Cooperative and Public Service of New Mexico and is not subject to regulation under the Mine Permit. However, because the substation has some contamination from fugitive dust, it is an affected area and will be cleaned up during closeout/closure.

2.4.4 Low-Grade Ore Stockpile and Ore Pad

The ore stockpile covered 6.8 acres and contained approximately 60,000 tons of low-grade ore. The ore stockpile has been removed, and the ore has been trucked to the White Mesa uranium mill in Utah.

In the previous version of the CCP, a new 10-acre ore pad was to be constructed with a liner, truck wash, and runoff collection system as described in RGR, 2013b. These improvements were never constructed and are no longer proposed at the site.

As part of closeout, the surface soils currently in the ore pad will be removed to eliminate any soil contamination from the ore stockpile. Contaminated soils in the ore pad will be placed in the disposal cell. This is described further in the Earthwork Section 4.4.3.

2.4.5 Waste Rock Pile and Disposal Cell

This mine unit consists of the original Waste Rock Pile (WRP) and the expanded disposal cell within and adjacent to the original WRP footprint. Together, these features serve as the permanent repository for radiologically contaminated materials, diesel-impacted soils, site debris, and other affected materials generated from the Mt. Taylor Mine and its affected areas.

The original WRP is comprised of waste material generated from previous mining and development activities, including approximately 698,000 tons of waste rock extracted and managed during the 1986 to 1990 production period alone. The disposal cell is a distinctly separate engineered structure constructed above and adjacent to the WRP and intended to contain newly generated site waste. Its low-permeability liner and engineered 52-inch store-and-release cover system, consisting of a 12-inch rock mulch surface, a 28-inch on-site soil buffer, and a 12-inch compacted clay radon barrier, are designed to reduce infiltration, attenuate radon, and minimize contaminant leaching and mobilization.

The existing WRP was reshaped during the mine reactivation period (2018-2019) and occupies 13 acres in the southwest corner of the surface facility area. Upon resuming mining operations, waste rock was to be placed on this pile until it reached the maximum build-out configuration. The WRP contains waste rock (rock with uranium content below economic value), excavated during mine development and production, from non-ore-bearing formations or below-ore-grade rock in the mine.

The mound of material previously located at the southwest corner before 2018 was shaft muck excavated from strata above mine level, meaning its radionuclide content was essentially at background levels. The shaft muck pile was reshaped into the south sloping berm of the current WRP and disposal cell during the 2018 reconstruction period.

The WRP also contains a variety of non-rock waste from the mine such as rock bolts, timbers, ventilation bags, pipes, and other mine-related debris. These materials occur randomly throughout the pile. Waste rock removed from underground mines typically includes non-rock materials that are hoisted alongside the rock and remain mixed when placed in the WRP. At the Mt. Taylor Mine, this mixture has been in place for up to 38 years with no visible evidence of settlement.

Non-rock waste (site debris and scrap materials) generated during closeout/closure will be placed in the disposal cell under controlled procedures to minimize future settlement. Structural materials and dismantled equipment will be cut, crushed, or reduced to manageable dimensions, and oversized components will be placed so surrounding earthen material can be compacted against them to eliminate bridging and unsupported voids. Hollow items such as pipes, conduits, tanks, and vessels will be filled with clean earthen material or flowable fill. Disposal cell fill will be placed in controlled loose lifts not exceeding 12 inches and compacted to least 90 percent of maximum dry density, with representative waste samples tested for consolidation and swell so

final grading can include sufficient camber. The cell will also accommodate approximately 7,400 cubic yards of non-hazardous diesel-impacted soils from the North Controlled Area, placed in a documented and controlled manner within the lined and covered repository.

2.4.6 Storm Water Ponds

Two runoff retention ponds, the north storm water pond (NSWP) and the south storm water pond (SSWP), capture and retain runoff from areas of the mine surface that contain ore or waste rock (Figure 1-2). The NSWP is also referred to as the ore pad runoff retention pond.

The NSWP (0.9 acres), located between the ore stockpile pad area and the mine water treatment area, retains runoff from the ore pad and holds it until it evaporates. The NSWP will be remediated as part of closeout, once the disposal cell expansion is approved and after the ore pad is removed.

The SSWP was reconstructed in 2018 to its current size of 2.67 acres (Kuhn, 2019) increasing the capacity sufficiently to hold the runoff of two 100-year storm events. The SSWP retains storm water from the existing WRP and the service and support facilities and will remain as part of PMLU after closeout/closure to retain and evaporate site runoff.

During reactivation (2018), the sediments and contaminated soils in the SSWP were excavated and placed in the disposal cell. Once cleaned, a 2-ft thick clay liner was installed over the floor and sides (Kuhn, 2019). Subsequent runoff from the mine facility has introduced new contaminated sediment onto the pond floor, as anticipated. Once closeout/closure is completed, these newly deposited contaminated sediments will be excavated and placed in the disposal cell.

Along with reconstruction of the SSWP during mine reactivation (2018-2019), the mine facility runoff that formerly flowed to MWTU Pond #2 was rerouted via reconstructed and new storm water pipe system to the SSWP. At this time, all mine facility storm water runoff has been diverted to the SSWP, including the catchment of storm water runoff from the disposal cell. Upon closeout/closure, this runoff will continue to be diverted to the south storm water pond.

All contaminated soil from the cleanup of both ponds will be placed in the disposal cell.

2.4.7 County Road

County Road 334 (County Road), also known as the Access Road, is a public gravel road and right-of-way, totaling approximately 4.7 acres, maintained for the State of New Mexico by Cibola County, that provides access to the west edge of the Cibola National Forest; it is not part of the Mine Permit area, and not subject to closeout. However, contaminated soil along and or on the County Road corridor will be removed and the road surface restored during closeout/closure.

3.0 POST MINING LAND USE

3.1 Factors in Selection of Post-Mining Land Use

In selecting post-mining land uses (PMLUs) for the permit area, RGR considered many factors. These included:

- Technical feasibility
- Economics
- Land ownership
- Current and possible future surrounding land uses
- Public interests
- Site resources and ecosystems
- Environmental impacts and standards

Technical feasibility - No PMLUs were considered for which necessary technology does not presently exist.

Economics - This factor consists of two parts, economic feasibility and economic compatibility. A PMLU should have net positive economic returns (returns at least equal to costs). The net returns can be in the form of revenues, cost savings, or any combination of these. The PMLU should work positively within the local economy, either by improving it or helping to sustain it.

Land Ownership - RGR controls, either through direct ownership or through leases with landowners, the permit-area surface listed in the Permit Application. RGR owns the surface land in the E-1/2, Section 24, T13N, R8W, containing the mine facilities, apart from a wedge-shaped portion of land around the SSWP, which is leased by RGR.

Current and possible future surrounding land - The surrounding lands have been used for livestock grazing and small-scale logging for several generations, and these uses are expected to continue in the foreseeable future. The Cibola National Forest to the east provides several recreational, commercial, and cultural uses available to the public. The selected PMLUs should be consistent and compatible with surrounding land uses but need not be the same uses.

Public interests - The San Mateo community has a strong cultural heritage and places great value on its rural, independent lifestyle. PMLUs that would require substantial new infrastructure or impose demographic changes were avoided to reduce the chance for negative impacts to the community.

Site resources and ecosystems - RGR examined the resources of the site other than the uranium ore, especially those already disturbed by mining, to identify which ones have potential for productive use after mining. Site resources include both natural and man-made attributes of the

site. Water removed from the mine and some mine surface facilities are resources that have potential use after mining operations. Reclamation should restore the pre-mining ecosystem to the extent consistent with the PMLU(s).

Environmental impacts and standards - Potential PMLUs should limit land disturbance or, preferably, contribute to mitigation of mining disturbances. Each PMLU must be able to meet standards for air and water protection established by NMED and federal agencies as applicable.

3.2 Potential Post-Mining Land Uses

Using the factors described above, RGR identified the following potential PMLUs:

- Livestock grazing
- Wildlife habitat
- Commercial, government, or light industrial facilities

Livestock grazing as a PMLU is consistent with surrounding and historical land uses and local public interest. It is also consistent with the wishes of those land surface owners who have expressed a preference. This use will be facilitated through covering of the WRP and mine water treatment ponds, final grading of disturbed surfaces, and revegetation. This PMLU could coexist with or next to the other potential PMLUs and would restore the pre-mining ecosystem.

Wildlife habitat is consistent with surrounding lands uses and community values. It is readily implemented with the same measures used for establishing livestock grazing.

Commercial, government, or light industrial facilities would make use of some existing mine buildings and infrastructure, all in usable condition, for offices, services, manufacturing, storage, or wholesale/retail sales, providing a center for employment in the San Mateo area. This use is compatible with a municipal/industrial water supply or livestock grazing PMLU but is generally not compatible with wildlife habitat. The mine surface facilities include office, warehouse, and maintenance facilities that could be used by other mining operations in the area or by land management agencies such as the Bureau of Land Management and the U.S. Forest Service. Although located away from main transportation routes and in a sparsely populated area, the mine facilities could also support light industrial uses.

3.3 Selected Post-Mining Land Uses

For the purposes of this CCP, RGR has selected grazing and light industrial as the primary PMLU and the basis of the cost estimate for financial assurance. RGR intends to utilize the selected buildings (retained for PMLU, Table 4-2 and Figure 1-2b) for its continued business operations in New Mexico and focus on maintaining a continued presence at the Mt Taylor facility. The buildings and facilities will provide storage and maintenance of its equipment, as well as office space for RGR's site personnel and current and future business opportunities, including light industrial, commercial, or government uses. The equipment will be used to maintain the PMLU facilities (water wells, grazing endeavors, other business potential).

3.3.1 Grazing

As stated in the Mine Permit Application (RGR, 2022a), prior to the development of the mine, the site was used for grazing by generations of the same families. Specifically, the surface owners have grazed livestock on, or expressed this preference for, the following areas:

- Portion of NE 1/4, Section 24 - This is the northerly portion of the mine surface area, containing the Mine Water Treatment Unit as well as the county road right-of-way. RGR is the surface owner of this tract. This land has been grazed historically so the non-excluded parts of this surface will be returned to grazing as the PMLU.

- Portion of SE 1/4, Section 24 - This is the southerly portion of the mine surface area as well as undisturbed land south of the mine facilities. It contains most of the surface support and mine support facilities and the WRP. RGR is the surface owner of all but a wedged-shaped portion of this tract (see bullet point below).

- Northwest Portion of SE 1/4, Section 24 - This triangle of land, about six acres owned by others, is the surface presently occupied by part of the WRP and the adjacent storm water retention pond. A land swap agreement to transfer title of this land to RGR is anticipated. This triangle of land would be included subsequently with the rest of the SE 1/4 of Section 24. The SSWP will be retained as a stock tank, and the remainder of the area will be converted to grazing except for the WRP, which will be fenced to exclude grazing.

3.3.2 Light Industrial, Commercial or Government Facilities

The existing service and support facilities are multiple-use buildings that support office, warehouse, and maintenance/repair activities. Some buildings and facilities will be left in place to support agricultural operations and future light industrial, commercial, or government uses. As the landowner, RGR desires that the facilities designated in Table 4-2 and shown on Figure 1-2b, together with the water supply wells shown on Figure 1-4, remain in place for these post-mining land uses.

3.3.3 Facilities Retained for PMLU

The following facilities will remain in place for PMLU:

- Guard House (Security Building)
- Core Storage Building
- Fan Shop
- Capacitor Building
- Ion Exchange Plant (for warehouse and equipment storage)
- Septic System (septic tank, leach field, and piping)

- Site water use wells: DW-1, DW-2A, DW-6, DW-7, and DW-8
- Monitoring wells: DW-1 and DW-14 (site water use backup wells)
- Water Tank
- Service Building
- Electrical Building
- Hoist House and Rocky's Shop (for warehouse and equipment storage)
- Access/Utility Tunnels necessary for the PMLU facilities
- South Storm Water Pond
- Storm Drainage System
- MWTU Ponds #2 and #3 (until groundwater abatement per DP-61 is completed)

These facilities are listed on Table 4-2 and shown on Figure 1-2b and Figure 1-4.

3.3.4 Radiological Levels for PMLU

Preliminary surveys performed in the habitable buildings designated for the PMLU indicate that radiological surface contamination does not exceed the gross alpha surface contamination limit of 5,000 dpm/100 cm² specified in the MMD-approved March 2021 Site Radiation Protection Program Manual (Table 3-1a). A final radiological characterization survey will be conducted prior to completion of mine closeout/closure to determine whether radiological contamination associated with closeout/closure activities has affected these facilities. Areas with radiological surface contamination exceeding 5,000 dpm/100 cm² gross alpha will be decontaminated, as necessary, to meet the applicable release criterion. The selected criterion of 5,000 dpm/100 cm² gross alpha is consistent with NRC Regulatory Guide 1.86 and is more conservative than the surface contamination level calculated to correspond to a 100 mrem/yr dose limit. No Waiver from Self-Sustaining Ecosystem or Post-Mining Land Use

RGR is not seeking a waiver from the regulatory requirements to establish a self-sustaining ecosystem or post-mining land use under 19.10.5.506C and 507B NMAC. RGR proposes livestock grazing as the primary PMLU for the broader permitted area, with wildlife habitat as a natural, compatible, and concurrent use. Once native vegetation is successfully re-established on reclaimed portions of the site not used for other purposes, grazing is expected to be sustainable and consistent with the historical and generational land use of the San Mateo area. The WRP and expanded disposal cell area will be fenced and permanently restricted from livestock grazing to protect the engineered cover system, including the rock mulch erosion layer, store-and-release soil cover, and shallow-rooted native grass community needed for long-term evapotranspiration performance.

Light industrial, commercial or government use of the service and support structures to be left in place, are additional PMLUs that will provide valuable infrastructure for sustainable economic opportunities for the San Mateo community and for RGR's continued business endeavors in New Mexico.

4.0 DESCRIPTION OF CLOSEOUT/CLOSURE ACTIVITIES

RGR's mine reactivation program, initiated in January 2018 and suspended in December 2019, was structured in four sequential phases:

- Phase 1 – Environmental Upgrades
- Phase 2 – Water Treatment Facilities Upgrades
- Phase 3 - Dewatering and Water Treatment Reactivation
- Phase 4 – Underground Facilities Reactivation

The scope of Phase 1 was focused on environmental clean-up and environmental upgrades identified in the Revision 13-2 of the Mine Permit (RGR, 2013b) and set as priorities in the Implementation Plan of DP-61.

Phase 1, initiated in 2018, was planned to include activities that were equally necessary for both reactivation and closeout/closure. Phase 1 was substantially completed by December 2019 and included (Kuhn, 2019):

1. Reshaping and flattening the west and northwest slopes of the WRP to 5H:1V grades.
2. Constructing the south and west berms of the disposal cell.
3. Constructing the disposal cell clay liner.
4. Excavating radiologically contaminated sediments and soils from all MWTU pond basins and placing material in the disposal cell.
5. Reshaping of MWTU Ponds #2 and #3 and upgrading their associated hydraulic control structures.
6. Reshaping and lining the SSWP and installing hydraulic control structures.
7. Installing double HDPE liner systems in MWTU Ponds #2 and #3.
8. Leak testing and commissioning of MWTU Ponds #2.
9. Upgrading and extending the surface water drainage system.
10. Constructing the new septic system.
11. Installing the North Force Main.
12. Began removing ore from the low-grade ore stockpile to an off-site licensed facility at MMD and NMED direction.

The Phase 1 work started in January 2018 with the preparation of construction bid documents. Earthwork began in May 2018, focused on reshaping the WRP and SSWP, reconstruction of the stormwater drain system, initial construction of the disposal cell and reconstruction of MWTU Pond #3. Phase 1 construction work was substantially completed by the end of December 2019 and was addressed in supplemental reports of closeout/closure construction in 2020 and later.

Removal of the ore pad was the only Phase I activity not initiated before the end of 2019. This activity could not begin until all the low-grade ore on the pad had been removed. Ore pad removal was completed in April 2022. Removal of the ore pad material is pending approval of the disposal cell expansion.

After RGR made its decision to begin the closeout/closure process of the mine, work related solely to mine reactivation in Phases 2, 3 and 4 ceased. RGR continues to conduct closeout/closure activities under its active status permit. Many activities, such as earth moving and facility removal, are suspended until approval is granted to expand the disposal cell. Expansion of the disposal cell is necessary as the existing and approved 13-acre disposal cell has been filled to near-capacity by the volume of contaminated sediments and soils excavated from the MWTU ponds (Ponds 1 through 8) during Phase I.

The following sections describe the closeout/closure practices (Section 4.1), activities completed by September 2026 (Section 4.2) and activities remaining to be completed (Section 4.3).

4.1 Closeout/Closure Practices

For Phase 1 and subsequent closeout/closure activities, Best Management Practices (BMP) were followed and will be followed, including "Best Practice in Environmental Management of Uranium Mining," IAEA Nuclear Energy Series NF-T-1.2. (IAEA, 2010), and Federal Highway Administration (FHWA) Best Management Practices for Erosion and Sediment Control FHWA-SLP-94-005 (Roberts, 1995). Technical specifications for some measures, as appropriate and as previously provided in the CCP, are contained in Appendix C. Future technical specifications of closeout/closure measures will be provided as part of submitted work plans or design sets. Select closeout/closure measures are illustrated in the drawing sheets contained within Appendix A Drawing Sheets CL 05, CL06, CL 07A, CL 07B, CL 08 and CL 14.

All contractors using heavy equipment, trucks, and other materials involving fuel, lubricant, solvents or capable of collecting and transporting solid contaminants will be refueled, serviced, washed, and parked in a specified area. This area will be located by the contractor and approved by RGR. The area will include a temporary wash facility with a temporary liner and water collection system. Alternatively, a temporary decontamination area will be set at the concrete wash bay adjacent to the production shaft, unless and until it is scheduled for removal under closeout/closure. Wash water will preferentially be transported to MWTU Pond 3 and evaporated or evaporated at the temporary decontamination site. Residues from evaporated water will be removed for disposal, either temporarily stored for placement in the disposal cell or offsite in a licensed facility.

At the time of this submittal, small quantities of solvents and lubricants from the maintenance shops may remain on site at the time of closeout/closure. The products being used and expected to be in use throughout that time are listed in Table 4-1.

Radiation levels in the facilities that will be retained for PMLU do not exceed the NRC Regulatory Guide 1.86 criteria for unrestricted release and use. A final radiological characterization survey of these facilities will be conducted to ensure release criteria are met (see Section 3.3.4).

4.2 Closeout/Closure Activities Completed

Since early 2018, RGR has completed numerous closeout/closure activities, including those specific to Phase 1, in accordance with the Mine Permit. These activities include, but are not limited to, the dismantling of numerous service and support facilities deemed non-essential for PMLU (Section 4.2.1), addressing non-essential concrete foundations (Section 4.2.2), removal of other facilities (Section 4.2.3), and the regrading of the WRP (Section 4.2.4).

The following Phase I reactivation tasks have been completed during the period of Mine Permit No. CI002RE, Rev. 13-2 (after 12/29/2017):

1. Reshaping of the WRP
2. Construction of the disposal cell liner and south, west and north-west berms
3. Excavation of contaminated sediments and soils within the eight MWTU ponds.
4. Construction and commissioning of MWTU Ponds 3 and 2
5. Filling of the existing 11.5-acre disposal cell to near-capacity
6. Covering the filled disposal cell with 24 inches of compacted clay and 12 to 18 inches of loam soil
7. Re-constructing the SSWP and septic system
8. Upgrading the surface water drainage system
9. Removal of the low-grade ore stockpile

Table 4-2 lists the status of each mine facility and its disposition at the time of this report.

4.2.1 Removal of Service and Support Facility Units

At the time of this report, the following service and support facilities have been dismantled at the mine.

1. Compressor Building
2. York Chiller Building

3. Chiller Pump Building
4. Chlorine Building
5. Shaft Heating Buildings (2)
6. Glycol Heat Exchanger
7. Cooling Towers
8. Fire Equipment Building
9. Carpenter Shop
10. Water Treatment Building
11. Storage Buildings
12. Flocculant Treatment Building
13. Barium Chloride Treatment Facility
14. Portable Building
15. Fuel Pump House
16. Fuel Storage Tanks
17. Mine Ventilation Structure (fan and base)
18. Ore Car Rails
19. MWTU Pump House and Motor Control Center
20. Production Shaft Headframe
21. Manway/Ventilation Shaft Headframe
22. Car (Maintenance) Shop
23. Emergency Hoist House
24. Treated Water Discharge Pipeline
25. Chiller Building Electrical Room
26. Trailer House

Table 4-2 lists the status of these and other mine structures, as well as the facilities that will be retained for support of post-mining land use identified in Section 3.3.3.

The dismantled building materials have been sheared into manageable pieces and either scanned and transported offsite, staged for the disposal cell, or are waiting for scanning to identify the final disposal location. This will be determined through radiological scanning to evaluate whether the materials meet the acceptance criteria for offsite disposal, thereby minimizing the volume of material requiring disposal in the disposal cell

Once RGR completes the characterization and segregation of the materials qualified for unrestricted release, the clean material will be staged in the parking lot north of the guard house until they can be recycled.

The remaining materials intended for the disposal cell will be moved to one of three NMED-approved staging areas on the site (Figure 4-2). Waste materials stored within the three proposed staging areas are temporary. RGR intends to relocate all staged waste materials to the expanded disposal cell following plan approval by MMD and NMED.

The locations of the three staging areas and the surrounding stormwater drainage patterns are reflected in Figure 4-2. While the staging areas are open to direct precipitation, they are protected from surface water run-on and run-off through the following measures:

- Siting: The staging areas have been intentionally placed outside of concentrated surface water flows and within footprints previously approved by NMED (2024).

- Run-off Controls: Stormwater run-off from these areas is fully managed by the comprehensive engineering upgrades completed under the approved DP-61.

- Permit Compliance: These DP-61 upgrades were specifically designed and constructed to enhance NPDES compliance. They provide run-off controls and increased surface water retention capacity within the permit area. These controls are engineered to remain effective across all phases: active operating status, post-mining land use, and the long-term, post-closeout period.

These three areas were also selected based on the following operational and environmental criteria:

- Spatial Efficiency: The staging areas are strategically located outside the immediate footprint of the proposed disposal cell. This separation avoids operational interference, ensures safe equipment clearance, and facilitates uninterrupted construction of the disposal cell upon approval.

- Minimizing New Surface Disturbance: The staging areas utilize existing, historically disturbed footprints from previous mining operations. By confining temporary storage to these already developed operational areas, RGR avoids impacting undisturbed native ground surfaces or undisturbed topsoil resources.

4.2.2 Concrete Foundations

Concrete foundations (including floor slabs) of the facilities will be either:

- Left in place and rubblized, then covered with clean soil; or

- Left in place intact.

- Rubblized and then placed in the disposal cell.

If no other purpose can be found, the rubblized concrete will be placed in the expanded disposal cell. All concrete left in place will be covered with two feet of soil.

Prior to removal of facilities and buildings, and breakage of the associated concrete foundations, radiological surveys of the structures will be conducted to determine whether the materials meet free-release criteria. Only those concrete foundations meeting the release criteria of the appropriate NRC guidance, as demonstrated via the radiological survey results, will be buried in place. Those that fail to meet release criteria will be buried in the disposal cell along with other contaminated materials. RGR will make reasonable efforts to reduce the amount of materials to be placed in the disposal cell through characterization studies. Materials found not to be radiologically contaminated will be separated and buried as clean fill or released from the site for proper disposal or recycling.

Table 4-2 provides a list of the disposition of the facilities and foundations. Except for the Electrical Building (preserved for PMLU), all facilities on the Compressor bench are to be removed in preparation for remediation of potentially diesel-contaminated soils existing beneath portions of the Compressor bench.

The foundations for the fire equipment building, emergency hoist house, glycol heat exchanger, and storage building are to remain intact for use as material storage areas for PMLU. The radiological surveys for these facilities demonstrated that the release criteria were met (Table 3-1c).

The concrete foundations around the manway shaft and production shaft will not be broken, so as to provide protection and confinement for the shaft plugs (when constructed). These foundations will be covered with two feet of clean soil once construction around the shaft is completed. In addition to providing a growth medium for revegetation, the soil cover will also minimize the chances of surface stormwater from entering the shafts.

The following foundations have been rubblized (Table 4-2):

a. Water Treatment and Boiler Building (#09 on Table 4-2): foundation also removed
b. Compressor Building (#10 on Table 4-2): foundation staged
c. Portable Building (#12 on Table 4-2): foundation also removed
d. Fuel Pump House (#13 on Table 4-2): foundation also removed
e. Carpenter Shop (#14 on Table 4-2): foundation also removed
f. Fuel Storage Tanks (#15 on Table 4-2): foundation staged
g. York Chiller Building (#17 on Table 4-2): cover pending
h. Car (Maintenance) Shop (#23 on Table 4-2): foundation also removed
i. Chiller Pump Building (#25 on Table 4-2): cover pending
j. Barium Chloride Treatment Facility (#31 on Table 4-2): cover pending
k. Flocculant Treatment Facility (#34 on Table 4-2): foundation also removed

l. Mine Water Treatment Pump House (#36 on Table 4-2): foundation also removed

m. Chiller Building Electrical Room (#40 on Table 4-2): cover pending

The foundations that remain and their disposition (Table 4-2) include:

a. Manway Shaft Headframe (#01A on Table 4-2): removed to ground surface, then remain intact for protection of shaft plug

b. Production Shaft Headframe (#02A on Table 4-2): removed to ground surface, then remain intact for protection of shaft plug

c. Shaft Heating Buildings (2) (#04A on Table 4-2): retain as part of shaft plug

d. Storage Building (#04B on Table 4-2): leave intact for PMLU

e. Emergency Hoist House (#04C on Table 4-2): leave intact for PMLU

f. Glycol Heat Exchanger (#05 on Table 4-2): leave intact for PMLU

g. Fire Equipment Building (#19 on Table 4-2): leave intact for PMLU

h. Cooling Towers (#26 on Table 4-2): foundation to be rubblized

i. Chlorine Building (#27 on Table 4-2): foundation to be rubblized

4.2.3 Removal of Other Facilities

The removal status of other facilities is:

a. Process Water Piping: estimated at 20% dismantled, temporarily staged for placement in expanded disposal cell

b. Mine Rails: removed, temporarily staged for placement in expanded disposal cell

c. MWTU Pond Hydraulic Structures: demolition was completed in 2026 for all ponds except for the MWTU Ponds #2 and #3 concrete overflow weirs, debris temporarily staged for placement in expanded disposal cell

d. Low-grade Ore Stockpile: removal completed, transported to White Mesa Mill

e. Discharge Pipeline and Structures: 100% dismantled, either recycled offsite after clearance or temporarily staged for placement in expanded disposal cell

The status of closeout/closure activities of facilities is summarized in Table 4-2. That table summarizes the disposition of mine facilities, including those already decommissioned or removed and those still to be either retained for post-mining land use or removed as part of closure activities.

4.2.4 Waste Rock Pile and Disposal Cell Status

The initial activity in Phase 1 construction involved re-shaping of the WRP, followed by construction of the disposal cell within the 11.5-acre WRP footprint approved under Revision 13-2

of the Mine Permit (RGR, 2013b). The integrated WRP and disposal cell are the permanent repository for radiologically contaminated materials generated on site that exceed applicable unrestricted release criteria. By December 2019, the disposal cell was filled to near-capacity after the MWTU ponds were remediated during the reactivation stage of the active status permit. Filling the disposal cell to near-capacity was a result of RGR's efforts to comply with the permit and remove all soils exceeding the accepted soil cleanup standard of 6.8 pCi/g Ra-226 (1.8 pCi/g background plus the 5 pCi/g regulatory limit). At that time, RGR recognized it could not proceed with earthwork remediation efforts unless the disposal cell was expanded. RGR continued to fill any available capacity of the disposal cell with contaminated materials throughout 2020 as it awaited decisions by MMD and NMED on expanding the disposal cell. As-built drawings for this phase are provided in Appendix J.

RGR submitted a permit modification request (MOD 20-1) in May 2020 to MMD (RGR, 2020), to alter the PMLU list of retained buildings, to expand the disposal cell from 11.5 to 25 acres, and to alter the closeout/closure schedule. MMD initially indicated a simple permit modification was appropriate under its definitions, however, NMED informed RGR that a formal modification of Discharge Permit DP-61 (as defined by NMED rules) would be required (NMED, 2021). As of the date of this CCP submittal, regulatory approval of the disposal cell expansion is pending. Because of the need for approval to expand the disposal cell, RGR has focused its closeout/closure efforts on removing facilities rather than continuing with earthwork remediation.

4.3 Closeout/Closure Activities Pending

At the time of this CCP submittal, the closeout/closure actions taken from 2018 through mid-2026 have accomplished many of the CCP goals. RGR continues to remove and encapsulate contaminants and facilitate the designated PMLU(s).

The large-scale site remediation will resume once regulatory approval of expansion of the disposal cell is approved as part of the DP-61 renewal and the Mine Permit revision.

Shaft closure, for the purpose of this CCP, and the information in Section 4.3.1 is unchanged. MMD has agreed to continued discussions and clarification which regulatory agency has shaft closure jurisdiction.

4.3.1 Shaft Plugging

Both the production shaft and the manway/ventilation shaft will be closed in the same manner, as approved in the current Mine Permit (RGR, 2013b) and detailed in Appendix A (Drawing Sheets CL 05 and CL 06) and Appendix C.3. In the approved Mine Permit design, the design utilized recycled steel from the headframes. However, a subsequent structural analysis revealed that this design did not provide an acceptable factor of safety against failure for the production shaft plug. A set of revised conceptual design drawings has been prepared by Critical View Engineering (Appendix G).

The updated design by Critical View Engineering is essentially the same concept of plug design as approved previously, namely a steel reinforced structural member. However, the construction materials are slightly different. The new concept is to utilize a steel (rebar) reinforced concrete

plug rather than steel I-beams encased in concrete. Structurally reinforced concrete is a proven and well-established structural member design, utilized in most new building construction around the world. The advantage of this revised concept is that the steel is encapsulated sufficiently to prevent corrosion, and the constructability of the structural member is more easily accomplished. The factor of safety is higher, and the structure is more efficient in shape and size.

Using the Technical Specifications in Appendix C.3, the entire closure plug will extend to a estimated depth of 62 ft in the production shaft and 40 ft in the manway shaft. Construction is anticipated to follow these procedures:

- Equipment and fittings within the shaft collar will be removed down to the sub-collar level.

- Once protruding steel and other obstructions have been removed below the sub-collar, a temporary work deck, supporting scaffolding, and concrete forms will be installed to facilitate construction of the reinforced concrete shaft plug

- The reinforced concrete shaft plug shall be constructed of reinforced concrete of appropriate design strength (Appendix A Drawing Sheets CL 05 and 06, Appendix G).

- The final shaft closure design will incorporate structural features to transfer plug loads into competent host rock rather than relying on the existing shaft lining for long-term support. These features may include rock keys or other engineered load-transfer mechanisms developed during final design. The final shaft closure design will be submitted for review and approval prior to construction.

- The structural plug will be constructed at the sub-collar level. The closure design does not include backfilling the shaft below the structural plug.

- Following curing of the reinforced concrete shaft plug, the shaft interval above the plug, including accessible connecting drifts and openings above the plug, will be backfilled with a controlled low-strength cementitious slurry consisting of soil, Portland cement, fly ash, and water. Mix proportions will be established during final design using laboratory testing of available materials.

- The remaining portion of the shaft collar will be capped with reinforced concrete and include a permanent survey/marker monument. The surface completion will accommodate and protect the two proposed shaft monitoring pipes while preventing surface runoff from entering the shaft. The final design will also include provisions for additional monitoring devices or sensors, if required.

Field evaluations are currently being conducted under the Site Investigation Plan (EA, 2025a) to address near-surface sub-collar seepage observed in the 14-foot diameter manway shaft. A targeted plan to seal this seepage will be developed based on these findings.

Infiltration or inflow of water from surface runoff will be prevented by the shaft plug and backfill in each shaft. The existing shaft liner and annular grout also provide a barrier to infiltration. Therefore, the proposed shaft closure measures will be protective of groundwater quality from both mine-level and surface sources of potential contamination.

A system of tunnels provides access to, and utility corridors for, the shafts and facilities (Figure 1-2b). The portions of the tunnels connecting directly to the shafts will be backfilled with slurried, weak, soil-cement (flowable fill) as part of shaft closure. The steel culvert running from the compressor bench to the car shop will also be closed with flowable fill.

4.3.2 Well and Conduit Plugging

4.3.2.1 Conduits

Two vertical utility conduits, consisting of casings that extend from the ground surface down to the mine level, are scheduled for permanent plugging. Both conduits have an 11.5-inch outer diameter (O.D.) and are cemented in place within 12.5-inch diameter boreholes. The north conduit extends to a depth of 3,100 feet, while the south conduit extends to a depth of 3,200 feet.

All plugging activities will be conducted in strict accordance with NMAC 19.24.4. Prior to the commencement of any field activities, a comprehensive conduit plugging workplan—which will include the specific grout mix design and procedural methodology—will be prepared and submitted for regulatory approval.

4.3.2.2 Dewatering/Depressurizing and Deep Aquifer Monitor Wells

As required under DP-61, two PLH aquifer wells, one THD aquifer well, and two WWC aquifer wells will be utilized for post-closure monitoring. Some of the existing dewatering wells may be suitable for that purpose, depending on well condition and the results of ongoing well rehabilitation efforts. The abandonment and potential replacement of certain wells may be required in some cases.

Regarding site water supply, at least one dewatering well completed in the PLH aquifer (DW-2A) is currently designated for domestic water supply and is utilized to provide water for site activities, such as well cleaning. This well, along with others designated for PMLU (e.g., DW-6, which is also equipped with a pump), will be retained to support mine site reclamation and will continue in that purpose throughout the CCP and post-closure monitoring.

Any dewatering well not used for site water supply or post-closure monitoring will be plugged and abandoned as part of site closure. Additionally, seven wells (designated as SM wells) used to observe drawdown in the mine area during active dewatering will also be plugged and abandoned (Figures 1-4 and 1-7). All wells that will be utilized for post-closure monitoring will be plugged and abandoned once post-closure monitoring is complete.

4.3.2.3 Abatement Monitoring and Recovery Wells

There are 37 shallow alluvial and Upper Menefee wells in the groundwater-abatement monitoring program as of the time of this report (Figure 1-6 and Table 1-3). In the summer of 2026, 14 new

wells were installed to provide additional data on aquifer characteristics and to further delineate the extent of groundwater impacts from historical mining activities. Of these newly installed wells, 12 are designed for monitoring and two are intended for recovery (MW-1MR and MW-11AR). Notably, four of the new wells (MW-12, MW-13, MW-1MS, and MW-9S) were dry upon completion.

The new well installations are designed to provide critical data to address several key site objectives:

- Differentiate between the Menefee, alluvial, and shallow perched hydrostratigraphic units, and identify the variability and limitations of groundwater flow between them.
- Characterize aquifer properties and delineate the lateral and vertical extent of groundwater exceeding NMED water quality standards for uranium, selenium, and nitrate.
- Evaluate the hydraulic communication between the different hydrostratigraphic units.
- Identify areas of perched water and potential sources of groundwater recharge.

Additionally, the two newly constructed recovery wells (RW-1MR and RW-11AR) were intended to extract and remediate impacted groundwater near existing monitoring wells MW-1M and MW-11A. However, during extensive well development efforts, both wells were repeatedly pumped dry at low extraction rates of 1 to 1.5 gallons per minute. Additional evaluations are currently underway to determine the sustainable pumping rates of these wells and to assess their viability for long-term groundwater remediation.

The enhanced monitoring network reflects an improved understanding of site hydrogeology developed since implementation of the Stage 2 Abatement Plan (Metric, 2010). While the existing abatement program has reduced constituent concentrations in portions of the shallow groundwater system, additional investigations have shown that the hydrostratigraphic framework and the lateral and vertical extent of groundwater impacts were not fully defined. Consequently, additional monitoring and recovery wells are being installed to better characterize groundwater conditions and improve the effectiveness of future remediation efforts.

RGR has been addressing detected nitrate and uranium contamination under a NMED-approved Stage 2 Abatement Plan (S2AP) (Metric, 2010) since 2011. Once the abatement program objectives are achieved (to reduce constituent concentrations within the shallow groundwater system to levels that meet WQCC standards), these active abatement wells will be plugged and abandoned. Likewise, any future abatement wells that are installed will be plugged and abandoned once the wells' abatement program has ended.

Before plugging and abandoning is initiated for any wells, the contracted licensed water well driller will submit to the OSE a deep well plugging plan on OSE's Form WD-08 that will include:

- Sealant design with ratios and material specifications of seal components.

- Well construction details – borehole and casing diameters, screen types and intervals
- Depth to water
- Casing annulus seal description
- Plugging steps
- Documentation and reporting of well plugging

Plugging and abandonment will be conducted in accordance with the approved OSE well plugging plan and NMAC regulations (19.27.4 NMAC, 2017). The conduit and deep well plugging plan will be submitted for approval separately. Abatement wells and post-closure monitoring well plugging plans will also be submitted separately.

4.3.3 Surface Facilities Removal Pending

Surface facilities not needed for PMLUs described in Section 3.2, will be demolished. Table 4-2 lists all surface buildings, their sizes and their disposition at closeout/closure. Facilities remaining to be demolished include:

- Process water piping
- Remaining MWTU Ponds #2 and #3 hydraulic structures (concrete overflow weirs)
- Foundations (as detailed in Table 4-2)
- Sanitary Treatment Plant
- Ore Loading Pad and Wash Bay
- Shaft Sump Cleanout Bin
- Ore Pad Storm Water Retention Pond
- Plant and Refrigeration Water Pipelines
- CMP Utility Tunnel
- Ore Pad

Radiological characterization surveys have been and will be conducted to determine whether contamination exists at levels that exceed the NRC Regulatory Guide 1.86 criteria for unrestricted release.

Building demolition debris and other scrap materials will be managed based on these survey results:

- Unrestricted Release: Materials meeting the unrestricted release criteria, or those successfully decontaminated to meet them, may be removed from the site for salvage or recycling.
- Disposal Cell: Materials exceeding unrestricted release criteria, including contaminated demolition debris (e.g. scrap steel, pipe, and concrete), will be placed in the onsite disposal cell.

All pipes that are exposed and within three feet of the surface, except the potable water line in the utility tunnels, will be removed and buried in the disposal cell. Other pipes that are deeper than three feet will be either capped or plugged and left in place.

Demolition of facilities will include removal of concrete slabs or other foundations not needed for PMLU. Uncontaminated concrete slabs not retained for PMLU may be broken and covered by clean soil or removed for placement in the disposal cell.

Generally, MWTU ponds will be decommissioned during closeout/closure. However, MWTU Ponds 2 and 3 will remain in use until the groundwater abatement project is successfully completed. RGR envisions the need to keep these ponds for storing contaminated water for at least the first half of the 12-year period of responsibility. These two ponds are monitored for water quality and water levels quarterly, per requirements of DP-61, and will take additional time to remediate because of the steps involved:

- Evaporate remaining water.
- Remove and transfer contaminated sediments
- Remove pond liners.
- Demolish hydraulic controls structures and associated piping.
- Backfill the pond basins.

Contaminated pond sediments and soils in these pond areas will be removed and placed in the disposal cell. Contaminated demolition debris, including scrap steel, pipe and concrete, will be placed in the disposal cell. Clean debris may be removed from the site for salvage and recycling.

The buried drainage culvert from the storm drain along the county road (Figure 1.-2b), which diverts runoff away from the mine water treatment area, will not be removed. As part of the PMLU, it will continue to direct water to the SSWP.

4.4 Earthwork

Excavation of soils that require cleanup as part of the closeout/closure will begin after the disposal cell footprint is expanded. Cultural resource surveys, and clearances if required, will be performed on any land surface not previously surveyed that will be disturbed by closeout earthwork. In general, earthwork will involve short hauls by dozer to redistribute berm fills or mine waste rock and by scraper, excavator and trucks or grader for contaminated soil removal. Some loader

excavation and short truck hauling may be required, as well. Except for short pushes of up to 300 ft on pond berms and WRP slopes, the working grades are less than 5%.

Borrow Area A, located within the permit area and previously approved for use under the current Mine Permit, is no longer expected to provide the primary volume of clean soil needed for the expanded disposal cell. The 2025 borrow source investigation indicates that Borrow Areas A and B have been partially or fully excavated during previous construction activities and that remaining quantities are likely insufficient for the proposed expansion. RGR therefore intends to use clay deposits identified in Borrow Area C, within the permit area, as the preferred primary source for clean clayey soils needed for engineered caps, low-permeability layers, and clay liner components. Borrow Area B, west of the permit area on RGR land, may be retained only as a supplemental or alternate source if usable quantities remain. Borrow Area C is approximately 14 acres in size and is preferred because it is undisturbed and can provide a substantial volume of fine-grained, clay-rich material with favorable engineering properties.

In 2025, Engineering Analytics (EA) completed a borrow source investigation for Borrow Areas A, B, and C. The investigation included the excavation of 24 test pits excavated to depths of approximately 6 ft, including six in Area A, five in Area B, and 13 in Area C, as documented in the *Expanded Disposal Cell Design* report (Appendix K; EA, 2026c). The investigation concluded that Areas A and B have been partially or fully depleted by prior containment cell construction, while Borrow Area C contains undisturbed, fine-grained, clay-rich soils suitable for low-permeability cover, cap, and liner applications. Subsequent laboratory testing confirmed that Borrow Area C soils exhibit properties consistent with engineered cover requirements, including moisture content, Atterberg limits, percent passing No. 200 sieve, Standard Proctor compaction, soil water characteristic curve, flexible wall permeability, and consolidated undrained triaxial shear testing.

The proposed access to Borrow Area C will be provided via the existing access road that exits the MWTU area through the north gate, crosses over the Marquez Arroyo, and connects to a newly constructed gravel road, as shown in Figure 1-2. Reclamation of the access road and borrow area will include regrading the ground to minimize water ponding, scarifying the ground, and revegetating according to Appendix F.

Cut slope stabilization will focus on maintaining existing infrastructure while improving localized stability where needed. Cut slopes above the chiller bench will remain at their current slope to maintain existing wells and conduits at base of slope. A protective fence will be installed at the top of the wall. The slope below the chiller bench requires no additional work, because it is already stable and vegetated. The cut slope to the south of the hoist house will have additional fill placed at the toe and extended upward to the base of the existing wire fencing to improve stability.

Once the disposal cell expansion is approved, contaminated soil removal will proceed in a controlled sequence that supports radon attenuation, maintains cell stability, and separates materials by placement function. Soils from the NSWP and ore pad area will be removed first because these materials contain residual low-grade uranium ore from mine production. They will be placed toward the bottom of the disposal cell to minimize radon flux through the final cover.

Diesel-impacted soils from the 2019 release area will be placed next because they contain weathered hydrocarbons, no free-phase product, and compaction behavior compatible with engineered placement. Contaminated soils from the support area and other operational zones will then be placed above the petroleum-impacted soils, followed by remaining contaminated soils from the MWTU area and affected lands outside the mine site. A secondary disposal cell will be built abutting the proposed main cell to contain materials from MWTU Ponds 2 and 3, the SSWP, and miscellaneous contaminated sediments. Table 4-4 lists the estimated quantities and locations of these materials prior to excavation.

Site regrading after soil cleanup will be completed using soils from previously disturbed areas to the extent practicable. Sufficient native fill volumes are calculated to be available from the design cut quantities on site (Table 4-3). For engineered caps, low-permeability layers, clay liner components, or other clean soil needs associated with the expanded disposal cell, Borrow Area C will be used as the preferred primary source. Borrow Area B may be retained as a supplemental or alternate source, only if usable quantities remain. These soils consist of sandy clay, clayey sand and clay with Unified Soil Classification of SC and CL as determined by test pits and laboratory testing and meet the engineering requirements for reclamation fills and engineered cover applications. Table 4-3 lists the estimated clean soil requirements, source areas, and overall earthwork balance.

The United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) web site (NRCS, 2026) indicates that site soils will naturally support western wheat grass, vine mesquite, alkali sacaton, and four-wing saltbush. Site soils consist primarily of low-to-moderate plasticity clays and sandy clays, with localized alluvial sands, gravel, and cobbles in arroyo deposits. Contaminated soils will not be used for closeout/closure covers, reclamation fill, or backfill outside the engineered disposal cell.

4.4.1 Existing Waste Rock Pile

Starting in 2018, RGR reclaimed the WRP to protect it against erosion. In the initial step of this reclamation, RGR reshaped the existing WRP to enhance long-term structural stability. The north, west and south slopes were flattened to 5H:1V, as represented in the lower slopes shown in the disposal cell as-built drawings (Appendix J), and then covered with 2 ft of compacted clay. The clay was sourced from Borrow Areas A and B, which were partially or fully depleted during prior containment cell construction, and from the clean shaft muck soil stockpile located in the southwest corner. The shaft muck was used to construct the south slope of the WRP.

Disposal of non-rock waste generated during closeout/closure was controlled to minimize long-term settlement. Materials were placed in loose lifts not exceeding 12 inches and compacted with surrounding soil. Hollow items, such as pipes, conduits, tanks, and vessels, were either placed in disposal trenches and flow-filled with a soil/cement slurry or filled with suitable clean earthen material to eliminate unsupported voids.

Contaminated soil and pond sediments, excavated as part of the reactivation of the mine, were the first materials placed in the newly constructed clay-lined disposal cell on the WRP. after these materials were consolidated, the WRP slopes were finish-graded. Historical phases used temporary

erosion control materials (e.g., Curlex® or other surface stabilization materials) ; however, the expanded disposal cell will use a permanent 52-inch cover system consisting of a 12-inch compacted clay radon barrier, 28 inches of on-site soil, and a 12-inch rock mulch admixture for long-term erosion protection.

The mound of shaft muck (soil stockpile) that formerly occupied the southwest corner of the WRP was found to have levels of radiation at or below background and supported healthy volunteer vegetation, so it was used to reshape the south slope of the WRP. Results of soil tests (Appendix D) show that the shaft muck has weathered to soil consistency and classifies as low to moderate plasticity clay and clayey sand (loam in USDA classification), like the soil that covered the ore stockpile, on which two feet of cover supported healthy volunteer vegetation.

4.4.2 Disposal Cell and Expansion

The disposal cell, which was constructed atop the WRP, is the permanent repository for contaminated pond sediments, soils and demolition debris generated by mine site closeout/closure activities. RGR constructed the current disposal cell during the mine reactivation phase (2018-2019), according to an approved design. This initial cell was constructed within the 13-acre footprint of the WRP. The existing disposal cell was filled to near-capacity by the contaminated materials (sediments and soils) excavated from MWTU pond basins, stormwater ponds, and other designated locations within the Mine Permit area. As of April 2022, the disposal cell had reached a filled volume of approximately 99,300 cubic yards (RGR, 2021). No new material has been placed within the disposal cell since 2020.

To accommodate the further remediation of the site during closeout/closure, the expanded portion of the disposal cell will be located east and north of the existing disposal cell and WRP at a nominal bottom elevation of 7,340 ft (Figure 4-1). The expanded cell will be up to 12 acres in area, which brings the total permanent containment footprint of the WRP plus disposal cell to 25 acres. A low permeability liner, consisting of not less than 1 ft of compacted clay soil (CL, CH, or SC soils per USCS classification), will be constructed under the expanded disposal cell to protect regional groundwater. Construction quality control (CQC) and construction quality assurance (CQA) plans shall be submitted to NMED for approval a minimum of 30 days before the clay liner construction. Within 60 days after liner completion, a CQA report and as-built plans shall be submitted to NMED.

This expanded disposal cell provides for permanent, engineered disposal of multiple waste streams. As illustrated in Figure 4-1 and Table 4-4, it will serve as the repository for contaminated pond sediments, radiologically contaminated soils, non-hazardous diesel-impacted soils generated during corrective action activities, and demolition debris generated during mine closeout/closure. If additional waste streams or more complex waste mixtures are identified during ongoing characterization, they will be evaluated using this same multi-parameter waste classification process to determine waste management and disposal requirements based on applicable regulatory criteria. The final position and precise dimensions of the expanded closure cell will be confirmed after closeout/closure activities are complete.

To date, no demolition debris has been identified as containing Resource Conservation and Recovery Act (RCRA) Subtitle C hazardous waste. Similarly, a comprehensive assessment of diesel-impacted soils (EA, 2026f) confirmed that these materials do not meet the definition of hazardous waste under RCRA, as they are not listed wastes and do not exhibit hazardous characteristics (ignitability, corrosivity, reactivity, toxicity per TCLP). A spatial analysis confirms that elevated diesel concentrations (exceeding the NMED industrial SSL of 3,000 mg/kg TPH-DRO) do not spatially coincide with radiological hotspots (Ra-226 > 20 pCi/g). Therefore, the material does not constitute a mixed radioactive and RCRA hazardous waste. In areas where both contaminants co-occur (e.g., Mine Compound), diesel concentrations remain well below the SSL (≤170 mg/kg). The expanded disposal cell's overall design—including its low-permeability clay liner, radon-attenuating cover, and long-term monitoring—is technically compatible with the co-placement of both waste streams. Limited quantities of asbestos-containing material (ACM) identified during previous site activities and have been removed and disposed of by a certified asbestos abatement contractor at a properly permitted offsite disposal facility. Any additional ACM encountered during mine closeout/closure will be managed in accordance with applicable State and Federal regulations, removed by a certified asbestos abatement contractor, and disposed of at a properly permitted offsite facility.

After waste placement and final grading, an engineered cover will be placed over the waste material. This cover will provide a barrier to reduce water infiltration, protection from erosion, support of vegetation, and radon attenuation. Extensive modeling for unsaturated flow, radon emanation, and frost penetration has been completed to finalize the cover design, as detailed in the *Expanded Disposal Cell Design* report (Appendix K, EA, 2026c).

The optimized cover system uses a 52-inch passive store-and-release configuration designed for the site's semi-arid climate. From top to bottom, the cover consists of 12 inches of rock mulch admixture, composed of 30 percent gravel and 70 percent soil, for wind and water erosion protection; 28 inches of compacted on-site soil for moisture storage and frost-depth buffering; and 12 inches of compacted clay as the primary radon and infiltration barrier. The system limits radon-222 surface flux to 13.99 pCi/m²/s, below the 20 pCi/m²/s regulatory limit, and restricts deep percolation to a design-basis rate of 0.40 inches per year.

4.4.3 Ore Pad Working Surface Removal

The ore pad material will be excavated by loader and hauled by truck to the disposal cell, alongside other cleanup related materials, in accordance with the Reclamation and Post-Reclamation Radiation Work Plan (ERG, 2020). A radiological characterization of the Ore Pad (AVM, 2023) was performed in 2023. Estimated quantities to be removed are found in Table 4-4.

4.4.4 MWTU and NSWP

The sediments in the Mine Water Treatment Unit (MWTU) Ponds #1 and #4 through #8 have been excavated and placed in the approved 11.5-acre disposal cell, as described in Section 4.4.2. They contained low levels of uranium, radium, barium sulfate and other constituents in the sediments from the mine and mine water treatment circuit described in Section 2.4.2 and Appendix D.

MWTU ponds were allowed to dry by natural evaporation, then the pond sediments were removed until residual gamma readings in the underlying soil met the soil cleanup standard (Appendix D).

A subsequent radiological characterization of the MWTU (AVM, 2024) was performed in 2024 that identified small, localized areas of cleanup that remain to be removed to the disposal cell. These estimated quantities for these remaining areas are provided in Table 4-4.

Once the Ore Pad is removed, the NSWP will be excavated to clean (background) radium values, with the contaminated materials being placed in the disposal cell (when expansion is approved).

MWTU Ponds #2 and #3 are lined with a double HDPE membrane system and are used for the evaporation of contaminated groundwater, surface water runoff, and other wash-water generated on site. These two ponds will be used during closeout/closure until groundwater abatement objectives have been achieved. When no longer needed, any newly generated pond sediments will be removed and the pond liners will be removed and placed in the disposal cell, then the hydraulic controls and related structures including foundations in the pond area will be demolished.

The NSWP sediments have not yet been removed. They will be excavated and placed in the disposal cell like the MWTU pond sediments.

After the hydraulic control structures of the ponds are demolished and all debris is removed, clean berm soils, not exceeding MMD's 2016 Joint Guidance standard of 5 pCi/g Ra-226 above background (MMD and NMED, 2016), will be used to fill the pond basins. Soil will be spread and compacted in lifts not to exceed eight inches. The area will be regraded to match final design grade (Appendix A, Drawing Sheets CL 07A and CL 08).

4.4.5 Affected Areas

Affected areas outside the immediate mine boundary will be reclaimed in strict accordance with 19.10.5.507.A NMAC and 19.10.1.7.R(1) NMAC (NMAC, 2001a; 2001b). Pursuant to 19.10.1.7.A(3) NMAC, an "affected area" is defined as any area outside of the designated permit area where land surface, groundwater, or air resources are impacted by mining operations conducted within the permit area (NMAC, 2001b).

RGR is currently identifying these affected areas and will continue to characterize and survey surrounding lands in accordance with the agency-approved *Reclamation and Post-Reclamation Radiological Survey Work Plan* (ERG, 2020a). Current delineation efforts are focused on characterizing contiguous lands surrounding the facility, with specific emphasis on identifying and bounding areas potentially impacted by windblown or water-borne radiological constituents.

Borrow Area B

Borrow Area B is situated on land that RGR owns but it is outside the permit boundary (Figure 1-2). No mining occurred on this land, and no activities were performed that were related to mining. Borrow Area B was used to supply the clay required to construct the 2-foot-thick clay cap on the west and northwest slopes of the WRP. Borrow Area B is comprised of a shallow pit and access road. The depression is presently being used as a stock pond and has 3:1 slope. The pit and access road will be regraded and revegetated according to Appendix F.

Borrow Area B was opened to supply these materials in the 3rd quarter of 2018, shortly after these specific clay materials were exhausted in Borrow Area A. Borrow Area B was reopened in 2020 to provide these same heavy clays to construct the 2-ft thick cap covering the disposal cell after it had been filled to near-capacity. RGR does not intend to use any more material from Borrow Area B because the supply of clay materials appears to be nearly exhausted.

There was some prior gamma survey conducted in the vicinity of Borrow Area B. Trinitech conducted a soil investigation of the areas west and north of the mine site in 2012 to investigate environmental dispersal of uranium from the Mt Taylor Mine (Trinitech, 2012) (Appendix D.2). Sixteen soil samples were collected and analyzed along arroyos that drain the mine property. Gamma dose rates were also measured. The conclusions of the memo indicated that no discernable dispersal of uranium from the mine property was detected.

Four soil samples were collected and analyzed in 2012 within the area of Borrow Area B location: MTE-12 to the west, MTE-13 and -14 to the south and MTE-6 to the west (Figure labeled "April 23, 2012, Soil Sample Locations", Appendix D.2). Uranium concentrations were below 1 pCi/g except for MTE-13 (1.4 pCi/g). Radium-226 concentrations were below the background of 1.8 pCi/g except for MTE-13 (2.7 pCi/g). All radium-226 values were below the accepted soil cleanup standard (background +5 pCi/g) limit of 6.8 pCi/g. Further gamma dose rates of these four samples were less than the Post Reclamation Radiation Level of 24 urem/hr, which is equivalent to 6.8 pCi/g. These four samples were located near drainages, where uranium dispersal from the mine would have a higher probability of accumulating.

A radiation characterization survey will be performed, as needed, for Borrow Area B and any contaminated soil will be removed so that the area meets the soil standard. Borrow Area B will be graded and revegetated according to Appendix F.

Continental Divide Substation Area

The electrical substation, located north of the Service Building (Figure 1-2), is within the permit boundary but is under the control of the Continental Divide Electric Cooperative and Public Service of New Mexico. Before final closeout, a radiation characterization survey will be performed, and any contaminated soil will be removed and placed in the disposal cell so that the area meets the soil standard. RGR will work with the substation owners on any potential reclamation and revegetation site work.

County Road 334

Existing NM 334 and its right-of-way through Section 24. The right-of-way is not under RGR now nor during mining. This surface is dedicated to public use and is not subject to reclamation or PMLU considerations under the Mining Act. A radiation characterization survey was performed in 2025 (AVM, 2026), and any contaminated soil will be removed so that the area meets the soil clean up standard. No revegetation is expected as the area is comprised of a gravel roadway. RGR will work with the Cibola County Road Maintenance Department to re-establish the roadway once contaminated materials are remediated.

San Lucas Canyon Outfall

Outfall 001 is located at the northern terminus of the former treated water discharge pipeline within San Lucas Canyon. Historical environmental investigations conducted between 2013 and 2015 evaluated soils, groundwater, surface water, sediment, and downstream impoundments and generally concluded that historical treated mine water discharges did not result in significant downstream environmental impacts requiring additional characterization at that time. As part of the mine closure program, RGR is planning additional characterization of the area immediately downstream of Outfall 001 to further evaluate localized elevated gamma radiation identified during the 2020 radiological survey. Additional information regarding the historical investigations and planned characterization is provided in the Outfall 001 Historical Summary and Planned Characterization Technical Memorandum (Appendix M: EA, 2026e).

4.4.6 Excavation and Disposal of Contaminated Soil

4.4.6.1 Waste Characterization and Management Strategy

RGR's waste management strategy is based on extensive site characterization data rather than a rigid assumption of only two waste classes. Characterization data from the Mt. Taylor Mine indicates that the site does not contain complex hazardous mixtures, heavy metal-organic wastes, or regulatory "mixed wastes." The diesel-impacted soils onsite are non-hazardous under the Resource Conservation and Recovery Act (RCRA) All identified contamination exceeding established cleanup standards will be remediated and placed in the expanded disposal cell.

4.4.6.2 Radiological Contamination and Cleanup

As is typical for a uranium mining operation, radiologically impacted materials associated with historical mining activities are present at several locations within the Mine Permit boundary. These areas include the Waste Rock Pile (WRP), Mine Water Treatment Unit (MWTU) areas, Service and Support Area (Mine Compound Area), Ore Pad Area, stormwater retention ponds, and limited areas north of Marquez Arroyo associated with historical windblown contamination. Since 2023, RGR has completed extensive radiological characterization investigations throughout the Site to identify the nature and extent of radiologically impacted materials, estimate impacted material volumes, support remedial planning, and facilitate mine closeout/closure activities. The radiological characterization reports are provided in Appendix D.1.

Investigative radiation surveys and soil sampling were initially performed in 2012 (Appendix D.1) and have continued through 2026. These investigations established background concentrations of radium, characterized radiologically impacted soils and materials, and provided the information necessary to support reclamation and closeout/closure planning. Background concentrations resulting from naturally occurring radium unrelated to mining activities were established through sampling conducted in 2007 and 2012 and are incorporated into the Mine Permit and DP-61. The approved background concentration for Ra-226 is 1.8 pCi/g.

Radiologically impacted soils and materials will be managed in accordance with the 2016 Joint Guidance for the Cleanup and Reclamation of Existing Uranium Mining Operations in New Mexico (MMD et al.) and the approved Work Plan for Post-Mining Radiological Surveys of Permit Area and Impacted Lands (ERG, 2020a). Based on the approved background concentration of 1.8 pCi/g Ra-226, soils exceeding the Site investigation and cleanup criterion of 6.8 pCi/g Ra-226 will be excavated, as appropriate, and placed in the disposal cell. Final status surveys will be conducted, as appropriate, to verify that remediation activities have achieved the applicable cleanup criteria. The radiological characterization investigations and final status surveys completed to date will be used to support implementation and verification of mine closeout/closure activities.

4.4.6.3 Diesel-Impacted Soils

Along with the remediation of uranium-contaminated soils, RGR will remediate the remnants of historical diesel spills located in the vicinity of the compressor bench (Figure 1-2) (Ensero, 2021a).

- **1991 Spill:** Originally reported while reactivating and flushing a previously abandoned potable waterline connected to the Car Shop water tanks (RGR, 1991). The area was subsequently remediated through removal of contaminated soil and seven underground storage tanks (RGR, 1992). The remediation was completed, and no further remedial actions are anticipated.

- **2019 Spill:** A diesel spill was reported while RGR was reactivating facility piping (RGR, 2019a). A limited inspection indicated petroleum hydrocarbons were detected in the riser pipes, a portion of the potable waterline by the risers, the red-lid manholes, the Car Shop potable water system, and the surrounding ground (RGR, 2019b). The source and extent of the petroleum hydrocarbon contamination continues to be investigated through the ongoing Diesel Investigation, which will support development of the corrective action plan.

NMED has approved the placement of these soils in the disposal cell (RGR, 2023a). RGR submitted a corrective action plan (CAP) to NMED in 2021 (Ensero, 2021a), and based on NMED comments, an updated CAP will be submitted in 2026.

4.4.6.4 Disposal Cell Design and Waste Compatibility

The expanded disposal cell is engineered to safely consolidate soils impacted by diesel and radiological materials within a single containment unit. Because the primary diesel release area does not overlap with radiological hotspots, and any minor overlapping areas remain well below

NMED screening levels, these materials do not classify as mixed waste under RCRA or the Atomic Energy Act. The integrated design and compatibility framework relies on the following elements:

- **Containment Compatibility:** An engineered cover and liner system effectively isolates the waste. Published data confirms that the high-density polyethylene (HDPE) liner system is chemically and structurally suitable for long-term contact with the expected concentrations of weathered petroleum hydrocarbons.
- **Material Suitability:** The diesel-impacted soils contain only weathered hydrocarbons and lack free-phase product. This allows them to meet standard engineered compaction requirements without the need for specialized blending.
- **Placement Controls:** To ensure safe handling, diesel-impacted soils will be segregated during excavation, staged on impervious surfaces, and sampled to confirm their non-hazardous status. Their final location and depth within the disposal cell will be strictly documented.

This consolidated approach effectively isolates both waste streams from the environment and prevents surface water infiltration. Bolstered by a 70- to 95-foot natural geologic separation from regional groundwater, this integrated strategy minimizes long-term environmental risk and simplifies post-closure institutional controls.

4.4.6.5 Excavation and Material Handling Operations

Access to the mine is controlled by fences, locked gates, and surveillance to prevent public exposure. Administrative and physical controls are implemented to maintain radiation exposures to levels as low as reasonably achievable (ALARA). Occupational exposure controls and monitoring (29CFR§ 1910.1096; OSHA, 2019) will continue throughout closeout/closure activities.

After the facilities demolition is complete and debris has either been staged (Figure 4-2) or placed in the disposal cell, soil excavation will commence. Gamma readings, correlated against Radium-226 soil samples, will be collected continuously during excavation. Contaminated soil in large, unobstructed areas will be excavated, loaded, and hauled to the disposal cell by truck or scraper. Smaller or obstructed areas of soil will be removed by loader, excavator or grader, and either windrowed for scraper pickup or loaded onto trucks for placement in the disposal cell. A final status survey consisting of independent laboratory analysis of soils from all remediated areas will be used to verify that soil remediation is complete. The technical specifications for contaminated soil earthwork are included in Appendix C.4.

4.4.7 Finish Grading

After demolition, soil cleanup, shaft and well plugging, and backfilling are complete, the mine site will be regraded as indicated on Appendix A Drawing Sheets CL 07A, CL 07, CL 08, and CL 14. The reshaping of the land will provide controlled drainage and will aid in the establishment of new vegetation. Grading will be adjusted as needed to remove obstacles or surface depressions that

might obstruct or divert runoff from the intended flow directions. The technical specifications for grading are included in Appendix C.4.

4.5 Revegetation

Following regrading, areas that have been disturbed by Mt. Taylor Mine operations and soil cleanup will be revegetated in accordance with the Revegetation Plan and Monitoring Protocols (Cedar Creek, 2025, Appendix F). Revegetated areas include the existing and expanded disposal cell area, the ore stockpile pad and runoff retention pond area, the mine water treatment pond area, borrow areas, and locations surrounding the demolished facilities within the service and support area. The SSWP bottom and other areas where mining-related features are retained (e.g. buildings and roads) will not be revegetated. RGR provided stormwater and erosion monitoring specifications for the areas that will not be revegetated in a Post-Closure Monitoring Plan (EA, 2026d; Appendix H).

Preparations for revegetation and the selected seed mix will be directed toward establishing a vegetation community that can thrive at this site and that can support grazing of livestock. Plants native to the general area will be used as much as possible to provide for long-term stability of the soil and vegetation communities. Plant species that provide rapid initial cover will be used in the seed mix to achieve initial soil stabilization. RGR may use irrigation water, as necessary, during drought situations only within the first three years after seeding to ensure the establishment of vegetation. Water for this irrigation will be provided by RGR's wells in the Point Lookout formation.

Runoff control during regrading and revegetation will use the most appropriate technology available at that time, including methods recognized by the NRCS or the International Association for Erosion Control. Measures that use present technology include check dams constructed of hay bales, geotextile silt fences secured in shallow trenches, and water bars across the disturbed area and perpendicular to the slope. Tobacco net, Curlex® or similar net-and-fiber mats might be used as required for protection of surfaces susceptible to rilling or wind erosion. The specific measures applied to revegetated surfaces will be based on the method most appropriate for the seeding method, erodibility and depth of the soils, degree of slope, proportion of large rocks at the surface, roughness of the surface, and anticipated rainfall.

Locations of temporary runoff controls will be selected, consistent with the Stormwater Pollution Prevention Plan (SWPPP), to slow down or divert runoff, trap sediment, and provide improved conditions for germination and plant establishment. Once revegetation has been achieved, temporary erosion control measures that have not disintegrated will be removed.

4.5.1 Revegetation Species

The predominant native grass species in the area is blue grama (NMEI, 1974); therefore, this species will be the primary species in the revegetation seed mix (assuming it is readily and economically available at the time of closeout/closure). The list of proposed species was optimized for the Mt Taylor mine site's specific soil and climate conditions (Appendix F).

4.5.2 Seedbed Preparation and Seeding

The regraded surfaces will be prepared for seeding by scarifying the surface and creating minor depressions to provide a proper seedbed. Seed will then be applied by either rangeland drill or broadcast. Broadcast seed will be incorporated into the growth medium by hand raking or some mechanical means such as heavy chains dragged behind tracked dozers.

Amendments. Organic soil amendments will be applied on a location-specific basis, taking into consideration the properties of the soil at that source. The material specifics and applications rates for the proposed amendments are described in Appendix F.

4.5.3 Seed Origin and Quality

Seed for the dominant species of grasses and shrubs that are indigenous to the mine area are available commercially and will be secured through those sources. All seeds must be certified, and each seed bag must have attached to it a complete label with certification information.

4.5.4 Revegetation Success

Technical Standard - The primary post mining land use is anticipated to be grazing, therefore, revegetation success in revegetated units will concentrate on four performance standards 1) vegetative ground cover, and 2) diversity, 3) woody plant density, and 4) productivity. Revegetation efforts will be considered successful when the following criteria have been met. The reference areas will be sampled along with the revegetation to provide a suitable comparison each year of assessment. In this manner, the success criteria outlined in the Revegetation Plan and Monitoring Protocols (Cedar Creek, 2025, Appendix F) is dynamic and adjusts to climatic conditions.

Monitoring - Monitoring of revegetated areas will be conducted on a periodic basis in accordance with the Revegetation Plan and Monitoring Protocols (Appendix F). Success of both germination and establishment will be dependent in large part on the moisture received in the summer and winter months and variations from year to year. Since establishment of vegetation is a function of its ability to reproduce, vegetation will also be assessed for its reproductive status, as well as its overall vigor. The survey will be conducted by a qualified vegetation specialist. Survey results will be analyzed and summarized to aid in determining the need for any changes in management practices or the need for reseeding or other supplementary practices. Less formal monitoring will be conducted throughout the year by RGR personnel to identify conditions in the revegetated areas that may require attention.

4.5.5 Management and Contingency Plans

After revegetation efforts have been completed, management of the revegetated areas will follow the Revegetation Plan and Monitoring Protocols (Cedar Creek 2025, Appendix F) and will include:

- Instruction of staff in measures to protect revegetated areas
- Posting of signs to warn against disturbance

- Placement, and replacement as necessary, of erosion controls
- Supplementary seeding of areas as necessary
- Periodic inspections and monitoring

Revegetation efforts will be repeated until successful. If results of annual monitoring indicate failure in all or part of a revegetated area, RGR will either supplement work already accomplished or revegetate the affected area, as appropriate. Efforts will be modified, as necessary, depending on what the cause of the failure is determined to have been.

4.6 Erosion Protection

The purpose of erosion monitoring of the disposal cell, WRP, SSWP, facilities and roads is to maintain the integrity and effectiveness of the disposal cell cover and stormwater retention or diversion measures.

Monitoring of the disposal cell /WRP includes conducting best management practices (BMPs) that include conducting inspections and making repairs as necessary to correct the effects of settling, erosion, or other significant events that may alter the effectiveness of the cover. Maintenance will prevent run-on and runoff from eroding or otherwise damaging the final cover.

Maintenance will involve repairing eroded areas by replacing lost soil material and reseeding. RGR considers any rill exceeding 6 inches of depth to be significant and requires soil replacement. Repairs will entail adding soil (in six-inch lifts and compacted) to the cover of the disposal cell. Lesser erosion will be addressed by regrading. Additional erosion control BMP's will be added where needed. These will include berms, silt fences, erosion blankets, hay bales and other water flow controls to minimize soil loss until vegetation becomes established.

Visual inspections of the ground surface will be carried out to monitor the physical stability of the disposal cell, WRP, and other reclaimed areas. Findings of the visual inspection and changes of the ground surface will be evaluated using professional judgement, informed by comparison to the closure criteria. This information will be used to generate a professional assessment of the physical stability of the disposal cell and WRP. Exceedances of the monitoring criteria will trigger geotechnical review and may or may not require corrective actions based on site-specific conditions. This may include a change in the frequency of monitoring.

4.6.1 Protection of the Existing Waste Rock Pile Surfaces

Erosion modeling using the Revised Universal Soil Loss Equation (RUSLE) performed for the original CCP submittal (RGR, 1998) showed that the maximum annual soil loss rate on the un-reclaimed WRP is only 0.02 T/acre/yr and would be reduced to less than 0.005 T/acre/yr after revegetation of the soil cover.

The analysis examined several base management scenarios, from smooth bare slope surface to 4-year-old vegetation on the modeled slope. For the modeled slope, representing the worst case for the WRP, 350 ft long at 20% slope, the best erosion protection is achieved by use of hay mulch.

The predicted soil loss is 0.77 t/ac/yr using hay mulch, compared to slightly higher soil loss of 0.82 t/ac/yr using rock mulch or gravel. For comparison, with vegetation after four years the predicted loss is 4.3 t/ac/yr, and a smooth bare surface is predicted to have 5.6 t/ac/yr soil loss. Therefore, RGR's use of certified weed-free hay mulch will provide the best slope protection while also encouraging vegetation of the WRP cover.

The WRP has been reshaped to avoid concentration of runoff and maintain sheet flow over the pile slopes. Erosion control blankets used in conjunction with revegetation should provide adequate interim protection of the 5H:1V and flatter slopes. If additional erosion protection is needed for surfaces on the WRP that are susceptible to erosion due to high runoff velocities or concentrated flows, such as steep slopes or drainage swales, riprap will be applied. Riprap screened for minus five inches with average particle diameter (d50) of not less 2.7 inches will be applied at least 0.5 ft thick in the bottom 1/3 of steeper slopes and as water bars in swales. Riprap will consist of basalt or equivalent rock.

Information on drainage structures and erosion protection design for the existing WRP is provided in Appendix B. Design runoff and shear calculations were prepared as part of the original CCP in 1998 (RGR, 1998). The updated erosion calculations for the expanded disposal cell design has been provided in the *Expanded Disposal Cell Design* report (Appendix K; EA, 2026c). The design will address erosion protection for the ultimate build-out size and shape of the disposal cell surfaces.

4.6.2 Arroyos

There are three arroyos at the mine site. There is a northern surface water diversion channel located north and east of the manway shaft and ore stockpile areas, which intercepts and diverts runoff northward to the Marquez Arroyo. The middle arroyo was largely filled in during site construction, but its remnants lead to the SSWP north of the WRP. The middle arroyo has a very small watershed; therefore, it receives little runoff. The southern arroyo (south diversion channel) was diverted at the time of mine development to run along the south side of the WRP.

Hydrologic analyses using the HEC-1 and HEC-2 models (Appendix B) show that the Marquez Canyon arroyo will convey the 24-hour, 100-year flood. These analyses show that the design flood water and energy surfaces are well within the arroyo banks in both cases, indicating that there should be no out-of-bank flow during the design flood and that the arroyo morphology appears to be in equilibrium with much larger runoff events.

The southern arroyo (south diversion channel) was diverted at the time of mine development to run along the south side of the WRP. The south diversion channel is currently in design. The New Mexico Department of Transportation (NMDOT) drainage criteria, as shown in their Drainage Manual, using the Simplified Peak Discharge methodology or the NRCS Unit Hydrograph methodology within the US Corps of Engineers Hydrologic Engineering Center-Hydrologic Modeling System (HECHMS) was used to develop flow rates and volumes. Existing development condition hydrology is the only scenario analyzed. Existing condition channel hydraulics were modeled using US Corps of Engineers Hydrologic Engineering Center-River Analysis System (HEC-RAS). Conceptual erosion control alternatives were analyzed for the south channel based

on NMDOT methodology to comply with mining requirements and regulations. Final condition hydraulics will be evaluated for the alternative selected and included in preliminary and final construction plans.

The north diversion channel, located north and east of the manway shaft and ore stockpile areas, intercepts and diverts runoff northward to Marquez Arroyo. The hydraulic analysis and design for the north diversion channel will be submitted at a later date. This is because closeout/closure activities will alter the final site grading, and the final survey cannot be completed until the ore pad has been removed.

4.7 Fencing

RGR has replaced and increased the height of existing fences on the mine site to provide better exclusion of cattle and wildlife from the mine site. One chain link fence, eight feet high, encloses the MWTU and is approximately 5,000 ft in length. Another eight-foot chain link fence will be up to 4,750 ft long surrounding the WRP and expanded disposal cell, depending on its final footprint. An additional 2,000 ft fence will be installed to prevent entry into the shaft areas.

5.0 POST-CLOSURE ENVIRONMENTAL COMPLIANCE AND MONITORING

Through the closeout/closure measures described in Section 4.0 and the requirements of other permits listed in Table 1-1 and described in the Environmental Site Assessment (RGR, 1994a), the Mt. Taylor Mine site is expected to stay within environmental standards for air and water quality.

5.1 Surface Water Monitoring

Surface water releases will continue to conform to NPDES-Multi Sector General Storm Water Permit (MSGP) No. NMR05J02B (NPDES, 2021) requirements until closeout/closure is completed and the permit has been terminated. The Post-Closure Monitoring Plan (EA, 2026d) (Appendix H) outlines all post-closure surface water monitoring, maintenance, and reporting requirements.

The surface water courses across the site are ephemeral. The storm water retention ponds collect runoff during larger storm or snowmelt events but are usually dry.

5.2 Evaporation Pond Leak Detection

As part of the surface water and facility management strategy, RGR will monitor evaporation Ponds #2 and #3 to ensure the pond liners remain intact and no fluids leak to the ground surface. This monitoring includes:

- Visual inspections of the liner surfaces for tears, rips, holes, and other defects.
- Recording the depth of water collected in the sump of each pond and calculating the leakage rate.

Should the action leakage rate be exceeded, RGR will repair the liners as needed, which may include pond evacuation, relining, and recertification of the repaired liners. Once the evaporation ponds are no longer needed for reclamation purposes, they will be reclaimed, and monitoring will cease.

5.3 Groundwater Monitoring

Per the following subsections, groundwater monitoring will be completed in the alluvial and Menefee, plus the deep aquifers.

5.3.1 Alluvial and Menefee Groundwater Monitoring

Previous mining activity has adversely impacted the shallow groundwater at the site. RGR has been addressing detected nitrate and uranium contamination under a NMED-approved S2AP (Metric, 2010) since 2011. Findings from site investigations indicate that the shallow groundwater quality and quantity is variable throughout the mine area. In various areas of the WRP and service areas, groundwater concentrations of arsenic, boron, chloride, iron, manganese, nitrate, pH, total radium, selenium, sulfate, total dissolved solids, and uranium exceed New Mexico WQCC drinking water standards.

Site investigations performed over the years (Willowstick, 2024; Ensero, 2021b; Willowstick, 2020; RGR, 2012; Kleinfelder, 2012; Metric, 2005; Metric, 2006; Metric, 2009; RGR, 1994a; NMEI, 1974) indicate that alluvium forms a discontinuous, thin veneer over residual soil and rock of the east-dipping Menefee shales and interbedded sandstones. The alluvial soil cover is thin or absent over most of the mine site. Shallow alluvial groundwater occurs primarily in preferential pathways that occur in the paleo arroyos that lie below part of the Service and Support area and the existing WRP (Willowstick, 2020; Kleinfelder, 2012).

The unlined sewage lagoon, used from 1975 to 1982, is the primary source of perched water and alluvial saturation and believed to be the source of uranium and nitrate observed in monitoring wells (Kleinfelder, 2012). Shallow groundwater flows from the site west-northwest along the alluvial-bedrock interface, primarily in paleo arroyos in the bedrock. Upper Menefee siltstones and sandstones, east of the mine site, provide groundwater recharge to alluvium and the Upper Menefee bedrock underlying the operational areas.

In addition to seepage of sewage lagoon water, minor amounts of water from over thirty years of precipitation and surface runoff infiltration contributes to a persistent groundwater mound within the WRP. The perched water migrates downward by gravity drainage along preferential pathways created by the different material buried in the WRP and paleochannels in the top of the Menefee bedrock (now buried beneath the WRP). This perched water is hydraulically connected to the underlying alluvial sediments and Upper Menefee silty sandstones as indicated by elevated uranium and nitrate concentrations present in monitor wells completed in the upper 50 ft of the Menefee in this area.

The S2AP (Metric, 2010) remedial action is extraction and evaporation of contaminated groundwater. RGR maintains a series of shallow recovery wells and alluvial/Menefee-aquifer and monitor wells as part of the ongoing abatement. Wells are completed in a perched-water zone within the WRP, in alluvium at the bedrock contact, and in the upper 50 ft of the Menefee Formation. Six wells (MW-6, WP-5, WL-2, WL-3, WL-4 and WL-5) are currently used as recovery wells. These wells are in the former lagoon area and on the western edge of the WRP (Figure 1-6, Table 1-3).

In 2026, RGR installed two more recovery wells (RW-1MR and RW-11AR) near MW-1M and MW-11A (Figure 1-6). Elevated levels of uranium and nitrate in the groundwater were detected in these areas during the 2020 site investigation (Ensero, 2021b).

A piping system, referred to as the North Force Main (NFM), was refurbished and updated during the 2018-2019 mine reactivation period. The NFM system is located just south of the Sanitary Treatment Plant (Appendix A Drawing Sheet CL03) and is comprised of a vault, pumps, and piping. The piping is buried and connects the vault to MWTU Pond #3. Monitor well WP-5 is plumbed into the NFM system, so that water extracted from the well can be pumped to MWTU Pond #3 for evaporation. Both the NFM and the WP-5 water delivery piping were leak-tested and certified leak-free by a registered New Mexico Professional Engineer, but neither has been placed into operation.

RGR intends to connect all other recovery wells to the NFM for transferring extracted water to MWTU Pond #3, if the recovery wells produce sufficient flow to justify connection. Because the recovery wells currently produce very low flow rates, impacted water may continue to be transported from the wells to MWTU Pond #3 using a mobile water tank. The existing above-grade HDPE pipeline and NFM system will operate throughout the closeout/closure period until they are no longer needed.

Piper diagrams of monitoring well water quality indicate that groundwater quality is highly variable at the mine. Water from wells MW-1C, MW-2F, and MW-1J are sodium-bicarbonate water (the predominant cation is sodium and the predominant anion is bicarbonate). Water from these wells represent background water quality in the Upper Menefee at the mine site. These three wells are located east of the WRP and have low total dissolved solids (TDS), low sulfate concentrations, and no elevated levels of chemicals of concern at the site. Water quality of all other abatement wells are sodium chloride-type waters (the predominant cation is sodium and the predominant anion is bicarbonate) and have variable levels of elevated TDS, sulfate, nitrate, and uranium concentrations. WP-4 water quality is a mixed-type water between sodium chloride and sodium bicarbonate. Details on the water quality monitoring and impacts of ongoing abatement are reported in the most recent quarterly DP-61 groundwater report (EA, 2026b).

Additional site investigation as part of the abatement program will continue to assess the source, nature and extent of groundwater impacts in the area of the shafts, near well MW-1M, and to the west and northwest of these areas.

Uranium (U) and nitrate (NO_3) isoconcentration maps for the shallow groundwater within the alluvial sediments and upper Menefee Fm have been provided in the Quarterly Groundwater Monitoring Report (submitted to NMED Ground Water Quality Bureau) in accordance with DP-61 (NPDES, 1998) and the S2AP (Metric, 2010) since the third quarter of 2018. The overall shape and magnitude of U and NO_3 distribution in shallow groundwater was relatively consistent from 2018 through the second quarter of 2021. The only notable change over that period with respect to uranium concentration was a greater than two orders of magnitude reduction at well MW-6, declining from 150 mg/L down to 1.1 mg/L. That well is completed across a perched water zone within the Waste Rock Pile (WRP).

Beginning in the second quarter of 2021, water quality from seven new monitoring wells (all completed in the upper Menefee Fm) were added to the quarterly reporting, and the results were included in the isoconcentration maps. The additional data points revealed a north-northeasterly trending arm of the nitrate and uranium plumes that extends up to newly installed well MW-1M. Note that this extension was not an indication of recent plume migration. Rather the extension reflected the addition of data in an area that was previously not part of the monitoring network.

From the third quarter of 2021 through the most recent sampling in the second quarter of 2026 (EA, 2026b), there has been little change in the shape or magnitude of either the U and NO_3 distribution in shallow groundwater at the Mt Taylor mine site (Figures 5-1 through 5-4).

Sulfate concentrations for the shallow groundwater monitoring network have been provided in the quarterly monitoring reports, but isoconcentration maps were not included (nor required under

DP-61). Sulfate isoconcentration maps for the shallow groundwater system (alluvial and Upper Menefee) from the third quarter of 2018 and the first quarter of 2026 are provided as Figures 5-5 and 5-6, respectively. Similar to the uranium and nitrate isoconcentration maps, the earlier sulfate map failed to detect the north-northeast trending arm of the plume that was later identified by wells MW-1M and MW4D.

Other potential sources of shallow groundwater contamination are the MWTU ponds, the ore pad and the NSWP, but such contamination is not expected. Well MW-3, which monitors groundwater down gradient of these areas, has not shown any exceedances of nitrate, uranium, nor radium (EA, 2026b). In the area of these features, the alluvial cover is thin or absent. The mine treatment ponds have been remediated and closed except for Ponds #2 and #3, which will remain open and serve as evaporation ponds until groundwater abatement activities are complete. Ponds #2 and #3 were remediated and reconstructed with HDPE liners and leak detection systems. The ore pad is graded so that water falling on it is directed to the NSWP. The NSWP is clay lined.

The S2AP (Metric, 2010) will continue to be followed until the groundwater quality meets the WQCC water quality standards for nitrate and uranium. RGR anticipates remediating site groundwater during the closeout/closure period. As needed, monitoring could extend beyond closeout/closure. Currently, groundwater extraction is the only approved remediation method, so no additional technology is included in this CCP. However, RGR intends to conduct a feasibility study of several other treatment options that potentially could accelerate groundwater remediation. The impacted groundwater and the effects of the abatement plan are being assessed through the DP-61 monitoring program. When the abatement plan objectives have been achieved, this monitoring program will be discontinued, and a completion report will be submitted to NMED.

Once the remediation goals are achieved, all abatement wells will be plugged and abandoned, except for five alluvial/Menefee wells (MW-1M, MW-4, WP-5, MW-11A, and the recently installed MW-15) that are proposed for monitoring water quality as part of the Post-Closure Monitoring Plan (EA, 2026d) (Appendix H). These well locations are shown in Figure 1-6. All wells that shall be plugged and abandoned will be done in accordance with OSE regulations and in consultation with OSE. RGR will submit a well plugging plan for approval prior to abandonment.

5.3.2 Deep Aquifer Groundwater Monitoring

As required by DP-61, RGR submitted a Post-Closure Deep Well Monitoring Plan (NV5, 2020) to NMED in April 2020. DP-61 Condition 57 (NMED, 2015) requires post-closure groundwater monitoring of the Point Lookout, Tres Hermanos, Dakota, and Westwater Canyon aquifers. RGR submitted an updated Post-Closure Monitoring Plan on June 30, 2025 (EA, 2025d) that included the water quality parameters and schedule for monitoring and reporting. In that plan, five wells were selected for long-term monitoring including: DW-3 and DW-10 (PLH aquifer wells); DW-11 (THD aquifer well); and DW-14 and DW-19 (WWC aquifer wells) (Figure 1-4). However, after that plan submittal, RGR received notice on September 25, 2025 from the New Mexico Office of the State Engineer (OSE) that all of those wells, with the exception of DW-14, may be in violation of NMAC 19.27.4, which does not allow for interaquifer exchange, and may require plugging and abandonment. Also, after the submittal of the June 2025 plan, NMED has indicated that additional

wells are required near the shafts to monitor potential impacts to aquifers penetrated by the shafts. The revised list of wells proposed for post-closure monitoring now includes DW-1 (PLH), DW-14 (WWC) and three new wells installed near the shafts: DMW-1 (PLH), DMW-2 (THD), and DMW-3 (WWC). Those locations are shown in Figure 5-7. Wells included in the PCMP may need to be changed or replaced, based on ongoing site reclamation and final site closure. An updated PCMP is included in Appendix H.

5.4 Radiological Safety and Monitoring

5.4.1 Radiological Safety

Radiation safety controls and monitoring are implemented to protect workers and the public consistent with applicable aspects of OSHA standards for ionizing radiation (29CFR§ 1910.1096 OSHA, 2019) (ionizing radiation) and NMAC standards for protection against ionizing radiation (20.3.4 NMAC, 2009) associated with uranium mine sites, and the ALARA requirement in 10CFR§ 20.1101 (NRC, 1991). The controls and monitoring will be implemented pursuant to the Mt. Taylor Mine Site (Site) March 2021 Radiation Protection Program (RPP) Manual (ERG, 2021) and its subordinate standard operating procedures (SOPs). The RPP includes radiation safety organization, radiation safety training requirements, ALARA policy, radiation dose standards, access controls, radiation protection controls, radiologic surveys and monitoring for exposures, associated SOPs, and environmental radiation monitoring. Radiation work permits (RWP) are written and implemented for one-time tasks which are not included in the WPs and RPP and are not ongoing activities. Applicable elements of the RPP will be updated for closeout activities, such as excavation and handling of uranium ore impacted material, that poses increased potential for exposure to workers and the public. The ongoing radiologic characterization of surface and subsurface soil will provide data that will facilitate any update of the RPP.

5.4.2 Radiological Surveying and Monitoring

The Site RPP (ERG, 2021) includes radiological contamination surveys, airborne particulate and radon monitoring for occupational exposure to radioactive material via internal pathways. The RPP also includes area TLDs and gamma radiation surveys for occupational exposure to radioactive material via external pathways. Radiologic monitoring for exposure to the public in the RPP consists of environmental area TLDs, radon gas monitors and airborne particulate monitoring as needed. The radiological surveys and monitoring specified in the RPP are consistent with NRC Regulatory Guide 8.30, 8.31 and 4.14 for radiation protection (NRC, 2002a; NRC, 2002b; NRC, 1980). Where warranted, the RSO will use the data generated by occupational radiation exposure monitoring to calculate estimates of radiological dose using conventional health physics principles and methods traceable to applicable State and/or Federal regulations and regulatory guidance documents.

The May 2022 MMD/NMED-approved *Work Plan for Post-Mining Radiological Surveys of Permit Area and Impacted Lands* for the Site (ERG, 2020a) includes surveys that will be utilized during the closeout activities. The radiologic surveys in the Site Work Plan are consistent with the *Multi-Agency Radiation Survey and Site Investigation Manual* (MARSSIM) (U.S. Department of Defense et al., 2000). Direct gamma scan and static surveys will be used for excavation control (Remedial Action Support) surveys during remediation (excavation and removal) of soils

exceeding the Ra-226 soil cleanup level. Direct gamma scan and static surveys and soil sampling and analysis will be used for Final Status Survey (FSS) for demonstrating compliance with the Site soil cleanup level following the soil remediation. U.S. EPA Method 115 (EPA, 2017) for monitoring of radon-222 emissions will be used over the uranium mine waste repository radon barrier to demonstrate compliance with the 20 $pCi/m^2/s$ radon flux emission standard.

During the post-closure period, long-term radiation monitoring will be conducted by a qualified radiation professional to evaluate the effectiveness and integrity of the Disposal Cell (DC) cover and to ensure facilities retained for light industrial and commercial PMLU meet criteria for unrestricted use.

Air Quality

Air quality impacts from Mt. Taylor Mine are minimal, resulting primarily from fugitive dust generated by truck traffic which is controlled by application of water as needed. Completion of closeout/closure measures will reduce truck traffic to occasional trips by the landowner if grazing is the PMLU. Traffic related to other continued use of mine facilities retained by the surface owners cannot be predicted at this time. Revegetation of disturbed ground and erosion protection on steep slopes will reduce other fugitive dust. There are no other sources of dust or gaseous emissions left after closeout/closure. For additional information on air quality, see page 14 of the Mt. Taylor Mine Site Assessment (RGR, 1994a).

5.5 Sanitary Treatment Plant Discharge

The sanitary treatment plant (STP), which has not operated since the early 1990's, will be demolished during the closeout and closure phase. The associated septic tank was inspected, determined to be in sufficient operating condition, and returned to service with the current septic system. It will remain operational through closeout. No monitoring of the septic system is planned.

5.6 Erosion Control and Stormwater Monitoring

After the CCP earthwork is completed and the surface water runoff controls have been installed in the area identified for commercial PMLU per the Erosion and Sediment Control Plan (RGR, 2018), RGR will initiate and continue erosion monitoring through the succeeding 12-year period, or until released under the New Mexico Mining Act.

RGR will visually inspect reclaimed land for signs of erosion and will mitigate significant erosion features to prevent soil degradation at the site. RGR will inspect drainage channels, diversion structures, retention ponds, and auxiliary erosion control measures and will repair and maintain them in accordance with the standards identified in the Field Office Technical Guides of the U.S. Natural Resource Conservation Service (NRCS), Section IV current at the time of the future erosion control monitoring activities.

Inspections will continue until the specific units are released under the New Mexico Mining Act (New Mexico, 2005). Inspections will be conducted monthly for the first year following completion of reclamation construction activities for each unit, and quarterly thereafter. Reclaimed

areas will also be inspected for evidence of erosion after storm events of one inch or greater in any one-day period.

Erosion control measures that are damaged or ineffective will be repaired or redesigned as necessary. RGR commits to using a variety of erosion control measures, as needed, if erosion control problems develop. Long-term erosion control measures will include the installation of berms, designed channels, and sediment containment structures, as necessary. Short-term erosion control measures may include, but not be limited to silt fences, hay bales, water bars, and mulching.

Monitoring methods include visual observation followed as needed by more quantitative methods that could include time-sequenced UAV-based imagery, close-range photogrammetry, silt fences, erosion bridges placed across active rills, and sediment traps at the terminus of rills. These and other methods are described in detail in *Upland Soil Erosion Monitoring and Assessment: An Overview* (BLM, 2011).

As a supplement to visual erosion inspections, ground surfaces created, disturbed, or reclaimed by closeout activities may be mapped by UAV-based imagery to document as-built topography and baseline terrain conditions. For the first three years after completion of closeout, the UAV imagery of reclaimed areas may be used as baseline conditions against which visual observations can be mapped. Based on those observations, erosion could be accurately located and quantitatively evaluated. Ideally, these observations and quantitative methods may be performed annually at the end of monsoon season.

As long as the NPDES Multi Sector General Storm Water Permit #NMR05J02B (NPDES, 2021) is active, RGR will continue to monitor stormwater discharges, as required, and operate in accordance with the Mt Taylor Mine SWPPP (Inspections Plus, 2019). RGR will inspect the entire length of all storm- and surface-water diversion channels, outfalls, the SSWP, and all associated structures for physical evidence of erosion and other damage that may compromise the integrity of the stormwater management system.

Even though the MSGP expiration date has passed, the EPA did not finalize the new 2026 MSGP before the deadline. As a result, the 2021 MSGP has been administratively continued. This means that since the mine had active coverage before February 28, 2026, the permit remains fully in force and effect until the EPA issues the new permit and requires a new Notice of Intent (NOI).

Stormwater and erosion monitoring will occur according the following schedule as listed in PCMP.

5.7 Vegetation Monitoring

Monitoring of revegetated areas will be conducted in accordance with the Revegetation Plan and Monitoring Protocols (Cedar Creek, 2025) (Appendix F). The revegetation liability period (the period that the owner is responsible for revegetation performance) under the MMD framework is 12 years, with monitoring evaluations conducted in Years 1, 3, 6, 9, 11, and 12. Results will be analyzed and summarized to assist in determining the need for any changes in management practices or the need for reseeding.

If it is determined at the end of the 12-year liability period that the vegetation needs additional time to mature, monitoring will continue once every three years until success evaluations are positive. Once final vegetation success is achieved and approved, routine vegetation monitoring will cease.

5.8 Meteorological Monitoring

The purpose of meteorological monitoring is to identify and record weather-related events, alerting RGR personnel to significant precipitation or wind events that may necessitate a site inspection. RGR monitors site-specific meteorological conditions daily using a Davis Instruments 6250 Vantage Vue wireless weather station located immediately south of the Guard House.

Weather data, including precipitation amounts, air temperature, and wind speed and direction, is recorded hourly, summarized into daily records, and transmitted via a wireless connection to a datalogger. Meteorological monitoring will continue on this hourly recording schedule for as long as post-closure monitoring activities are being performed at the site.

6.0 CLOSEOUT/CLOSURE SCHEDULE

The schedule for mine closeout/closure is shown in the Gantt chart in Figure 6-1. From initiation of the closeout/closure contracting process to completion of the closeout/closure activities on site is estimated to take about 5 years. The first 10 months would be taken up by project management and contractor procurement, followed by 52 months of actual construction activities on site from mobilization through demobilization.

7.0 COST ESTIMATE

Consistent with the Mine Permit, RGR will submit an updated detailed closure cost estimate within 60 days following approval of the CCP. The updated cost estimate will incorporate the final approved closure design, current contractor pricing, and other project-specific information available at the time of preparation.

The updated cost estimate will include the assumptions, methodologies, and supporting documentation used to develop the financial assurance estimate, including updated contractor pricing and other project-specific cost information, as appropriate.

Because the final closure design, construction sequencing, and associated closure activities remain subject to approval through the CCP review process, preparation of the detailed closure cost estimate has been deferred until completion of the CCP approval process.

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TABLES

Table 1-1 Other Permits

Name of Permit	Purpose	Expires
Federal		
Multi Sector General Storm Water Permit #NMR05J02B	Stormwater discharge effective 06/17/2021 industrial plant	February 28, 2026, MSGP was administratively continued in March 2026
State of New Mexico		
Mine Water Discharge Permit NMED Permit #DP-61	Mine water discharge and retention	October 14, 2020 (in timely renewal)
Mt. Taylor Mine Permits NM MMD Permit #C1002RE – Revision 13-2	Active status December 29, 2017	Applied for revision June 2022 (22-1), awaiting approval

Table 1-2 Groundwater Levels in Wells and Shafts

Well No.	State Plane Coordinates (NAD 83)		Top of Casing Elevation, Feet AMSL(a)	Well Depth, Feet from Surface	Well Depth, Feet Elevation AMSL	Screened Interval, Feet BGS (4)	Screened Interval Elevation, Feet AMSL (4)	Depth to Water, Feet from Top of Casing	Elevation of Water Level, Feet AMSL	Date of Water Level Measurement	Aquifer in Screened Interval (2)
	N	E									
DW-1	1579419	2782626	7342.0	1118	6222	740-890	6600-6450	474.84	6867.16	5/2026	PLH
DW-2	1579121	2782606	7337.6 (b)	2920	4425	2550-2920	4795-4425	739.98	6597.62	5/2026	TH/D
DW-2a(1)	1579202	2782709	7347.0 (b)	925	6422	750-900	6597-6447	483	6864	4/2018	PLH
DW-3	1579008	2782795	7350.1	1150	6197	737-891	6610-6456	594.55	6755.55	5/2026	PLH
DW-4	1578965	2783021	7349.0 (b)	1130	6214	750-900	6599-6449	-	-	-	PLH
DW-5	1579038	2783256	7403.4	1172	6234	852-1002	6554-6404	-	-	-	PLH
DW-6	1579210	2783402	7384.7	1190	6195	845-995	6540-6390	598.00	6786.65	12/2013	PLH
DW-7	1579455	2783384	7376.3	1125	6251	825-995	6551-6401	567.41	6808.89	5/2026	PLH
DW-8	1579672	2783240	7342.7	1044	6302	791-941	6555-6405	-	-	-	PLH
DW-9	1579723	2782973	7337.6	2845	4495	2538-2840	4802-4500	613.22	6724 .38	5/2026	TH
DW-10	1579619	2782734	7339.7	1065	6272	738-888	6599-6449	467.22	6872.48	5/2026	PLH
DW-11	1578845	2783245	7445.0	3028	4418	2819-3028	4627-4418	899.58	6545.42	5/2026	TH/D
DW-12	1579421	2783439	7418.9	2940	4479	2791-2940	4628-4479	821.22	6597.68	5/2026	TH/D
DW-13	1579378	2782065	7322.3	3185	4132	3045-3185	4247-4132	739.76	6582.54	5/2026	W
DW-14	1578847	2782182	7342.3	3205	4133	3048-3188	4290-4150	753.60	6587.70	5/2026	W
DW-15	1578491	2782501	7393.5(b)	3205	4142	3056-3196	4291-4151	-	-	-	W
DW-16	1578334	2782995	7393.6	3275	4118	3105-3245	4288-4148	805.15	6588.45	5/2026	W
DW-17	1578570	2783563	7496.8	3342	4159	3209-3342	4291-4159	908.19	6588.61	5/2026	W
DW-18	1578902	2783778	7497.7	3314	4188	3212-3314	4295-4192	919	6578.70	5/2022	W

Table 1-2 Groundwater Levels in Wells and Shafts Continued

Well No.	State Plane Coordinates (NAD 83)		Top of Casing Elevation, Feet AMSL(a)	Well Depth, Feet from Surface	Well Depth, Feet Elevation AMSL	Screened Interval, Feet BGS (4)	Screened Interval Elevation, Feet AMSL (4)	Depth to Water, Feet from Top of Casing	Elevation of Water Level, Feet AMSL	Date of Water Level Measurement	Aquifer in Screened Interval (2)
	N	E									
DW-19	1579493	2783781	7453.2	3274	4179	3166-3274	4287-4179	-	-	-	W
DW-20	1579945	2783505	7386.1	3223	4162	2938-3223	4447-4162	811.36	6574.74	5/2022	D-W
DW-21	1580165	2782966	7323.4	3184	4132	2873-3173	4443-4143	742.83	6580.57	5/2026	D-W
DW-22	1579900	2782460	7305.4	3195	4110	3019-3159	4286-4146	723.83	6581.57	5/2026	W
SM-24-38	1579116	2783008	7390.0 (b)	3535	3814	3107-3247	4324-4184	-	-	-	W
SM-24-43	1579029	2782948	7347.0 (b)	3535	3812	3064-3204	4283-4143	-	-	-	W
SM-24-89	1578964	2782908	7348.0 (b)	3121	4227			--	--	-	W
SM-15-59	1584519	2771754	7738.0 (b)	--	--			--	--	-	--
SM-13-74	1584233	2783313	7480.0	--	--			1518	5962	10/1991	--
SM-31-1-2D	1584519	2786914	7630.0	--	--			--	--	-	--
SM 24-23E	1579711	2783249	7342.0	3077	4265			796.41	6550.59	5/5/2022	D
14-Ft Shaft	1579520	2783065	7344.0	3340	4008			-	-	-	N/A
24-Ft Shaft	1579122	2782964	7342.0	3300	4043			766	6576	9/2019	N/A

(1) Well DW-2a supplies domestic water from the Pt. Lookout Sandstone
(2) PLH=Pt Lookout/Hosta, TH= Tres Hermanos, D= Dakota, W= Westwater
(3) -- = Well details unknown.
(4) - = Wells with no water level measurements are not accessible.
(a) Most wells were surveyed in 2023 except those indicated with a (b)
(b) Well was not included in the 2023 survey, survey date unknown

Table 1-3 Alluvial and Menefee Monitoring and Recovery Wells

Well No.	Well Coordinates (New Mexico State Plane West NAD 83)		Year Installed	Casing Diameter (Inches)	Casing Material	TOC Elevation (ft amsl)	Depth to Top of Screen (ft. bgs)	Screen Length (feet)	Closure Disposition
	Northing	Easting							
MW-1	1580484	2781541	1979	3	STEEL	7275.3	33.5	5	PL
MW-1C	1578341	2783120	2020	3	PVC	7395.5	84.0	10	PL
MW-1J	1579034	2782712	2020	3	PVC	7347.4	49.4	10	PL
MW-1M	1579255	2782392	2020	3	PVC	7339.0	38.0	10	RET
MW-2	1580191	2781538	1979	3	STEEL	7278.3	30.1	6	PL
MW-2F	1578553	2782577	2020	3	PVC	7348.0	42.0	20	PL
MW-3	1580976	2781545	1979	3	STEEL	7273.0	33.6	5	PL
MW-3A	1580976	2781546	2017	2	PVC	7272.0	39.0	10	PL
MW-4	1578580	2781050	2005	4	PVC	7284.2	31.5	15	RET
MW-4D	1578849	2782082	2020	3	PVC	7341.4	42.0	20	PL
MW-4H	1579335	2782029	2020	3	PVC	7322.5	51.5	10	PL
MW-5	1579062	2781556	2005	2	PVC	7303.4	22.5	10	PL
MW-6	1578620	2782243	2011	2	PVC	7341.5	15.0	20	PL
MW-11A	1578585	2781928	2020	3	PVC	7355.8	75.0	10	RET
WL-2	1578575	2782115	2017	6	PVC	7341.4	39.0	10	PL
WL-3	1578651	2782133	2017	6	PVC	7341.1	39.0	10	PL
WL-4	1578537	2782171	2017	6	PVC	7342.2	39.0	10	PL
WL-5	1578614	2782309	2017	6	PVC	7346.3	40.0	10	PL
WP-4	1578330	2781527	1982	4	PVC	7312.7	38.0	10	PL
WP-5	1578786	2781546	1982	4	PVC	7303.1	30.0	10	RET

Notes:

PL = Plug wells after utility for abatement is complete

RET = Retain for post-closure monitoring; plug wells after post-closure monitoring requirements are met

ft amsl = feet above mean sea level

ft bgs = feel below ground surface

SIP wells have been installed but are in the process of being developed, tested, or sampled. After completion of these activities, RGR will evaluate suitability for monitoring

Table 2-1 Water Quality Test Results for Mine Pool in Manway Shaft (14ft) and Production Shaft (24ft)

Sample ID	Date	As mg/L	Ba mg/L	Cl mg/L	F mg/L	Fe mg/L	Mo mg/L	pH	Ra-226 pCi/L	Se mg/L	SO_4 mg/L	TDS mg/L	U mg/L	Zn mg/L
20.6.2.3103 NMAC (1)		**0.01**	**2**	**250**	**1.6**	**1**	**1**	**6-9**	**5**	**0.05**	**600**	**1000**	**0.03**	**10**
MANWAY AND PRODUCTION SHAFT WATER QUALITY RESULTS														
14FT-SEEP-12 FTBGS	6/2/2021	-0.001	0.029	39	-0.5	-0.02	-0.02	8.65	--	-0.001	510	1130	-0.0005	0.011
14FT-PLSS-855FTBGS	10/1/2019	0.0012	0.22	3.2	1.2	-0.02	0.093	8.56	8.36	-0.001	25	353	0.021	0.018
14FT-MSH/DC-1635FTBGS	10/1/2019	0.0021	0.22	4.3	1.1	0.036	0.15	8.51	8.99	-0.001	38	343	0.036	0.019
14FT-THSS-2635FTBGS	10/1/2019	0.002	0.23	4.3	1.1	0.038	0.16	8.5	15.4	-0.001	38	347	0.036	0.026
14FT-WWSS-3110FTBGS	10/1/2019	0.0021	0.22	4.2	1	0.032	0.16	8.48	17.1	-0.001	37	344	0.036	0.021
24FT-PLSS-855FTBGS	10/1/2019	0.0012	0.26	3	0.91	0.024	0.094	8.48	8.19	-0.001	24	306	0.021	0.025
24FT-MSH/DC-1635FTBGS	10/1/2019	0.0022	0.22	4.4	1.1	0.037	0.16	8.48	12.2	-0.001	38	344	0.037	0.029
24FT-THSS-2635FTBGS	10/1/2019	0.0022	0.21	4.4	1.1	0.041	0.17	8.5	14.1	-0.001	39	349	0.037	0.024
24FT-WWSS-3110FTBGS	10/1/2019	0.0014	0.25	3.2	0.97	0.027	0.1	8.47	13.4	-0.001	26	308	0.023	0.018
24-FT SHAFT	9/28/2007	--	--	4	--	0.05	0.2	8.38	16.8	-0.001	44	--	0.071	-0.01

(1) Water quality standards for human health, domestic water supply, and irrigation use as listed in 20.6.2.3103 NMAC

Notes:

Yellow highlighted values indicate that the water quality result exceeds the standards of 20.6.2.3103 NMAC.

-0.001 - A negative sign in front of result indicates that the analyte was not detected above the Practical Quantitation Limit (PQL).

ND = Not Detected above the minimum activity count

-- = No analytical results available for the analyte

PLSS= Point Lookout Sandstone MSH/DC = Mancos Shale/Dilco Coal THSS = Tres Hermanos Sandstone WWSS – Westwater Sandstone

Table 2-2 Water Quality Test Results for Point Lookout/Hosta Aquifer Wells

Dewatering Wells Water Quality Data Summary		Well ID	DW1	DW1	DW1	DW1	DW1
		Depth (fbtoc)	785	785	785	785	785
		Sample Type	Sample	Sample	Sample	Sample	Sample
		Date Collected	4/21/2026	3/10/2026	12/09/2025	9/9/2025	10/03/2023
Analyte	**Units**	**New Mexico WQCC-3103**					
Arsenic	**mg/L**	**0.01**	<0.0040	<0.004	<0.010	<0.0025	--
Barium	**mg/L**	**2**	**0.35**	**0.38**	**0.34**	**0.34**	--
Beryllium	**mg/L**	**0.004**	<0.0040	<0.004	<0.004	<0.0020	--
Boron	**mg/L**	**0.75**	**0.065**	**0.072**	**0.064**	**0.068**	--
Calcium	**mg/L**		**5.0**	**5.3**	**5.1**	**4.9**	--
Chloride	**mg/L**	**250**	**0.62**	**0.64**	**0.62**	**0.71**	--
Fluoride	**mg/L**	**1.6**	**0.55**	**0.52**	**0.48**	**0.50**	--
Iron	**mg/L**	**1**	<0.20	**0.14**	<0.2	**0.078**	--
Lead	**mg/L**	**0.015**	<0.0020	<0.0020	--	<0.0025	--
Magnesium	**mg/L**		**1.6**	**1.8**	**1.7**	**1.6**	--
Manganese	**mg/L**	**0.2**	<0.020	<0.02	<0.02	**0.0074**	--
Mercury	**mg/L**	**0.002**	<0.00020	<0.0002	<0.0002	<0.00020	--
Molybdenum	**mg/L**	**1**	<0.010	<0.01	<0.01	<0.0080	--
Nitrate Nitrite as N	**mg/L**		<0.10	<0.5	<0.5	<1.0	--
Nitrite as N	**mg/L**	**1**	<0.10	<0.5	<0.5	<1.0	--
Nitrate as N	**mg/L**	**10**	<0.10	<0.5	<0.5	<1.0	--
Nitrogen, Ammonia	**mg/L**		<0.67	<0.67	<0.67	<0.67	--
Nitrogen, Total Kjeldahl	**mg/L**		<0.50	<0.5	<0.5	<0.50	--
Potassium	**mg/L**		**1.0**	**1.4**	**1.3**	**1.1**	--
Radium-226	**pCi/L**		**0.210**	**0.172**	**0.199**	**0.074**	--
Radium-228	**pCi/L**		**0.850**	**1.100**	**0.400**	**0.583**	--
Radium, Total	**pCi/L**	**5**	**1.06**	**1.272**	0.599	**0.657**	--
Selenium	**mg/L**	**0.05**	<0.0020	<0.002	<0.030	<0.0050	--
Sodium	**mg/L**		**66**	**75**	**66**	**72**	--
Sulfate	**mg/L**	**600**	**5.5**	**5.5**	**5.3**	**5.4**	--
Total Dissolved Solids	**mg/L**	**1000**	**120**	**230**	**160**	**190**	--
Uranium	**mg/L**	**0.03**	<0.0010	<0.001	--	<0.0025	--
Total Alkalinity as CaCO3	**mg/L**		**170**	**170**	**170**	**170**	--
Bicarbonate Alkalinity as CaCO3	**mg/L**		**170**	**170**	**170**	**170**	--
Carbonate Alkalinity as CaCO3	**mg/L**		**4.2**	**6.2**	**2.5**	<2.0	--
Benzene	**mg/L**	**0.005**	<0.001	<0.001	<0.001	<0.001	<0.00100
Ethylbenzene	**mg/L**	**0.7**	<0.001	<0.001	<0.001	<0.001	<0.00100
Toluene	**mg/L**	**1**	<0.001	<0.001	<0.001	<0.001	<0.00100
Xylenes, Total	**mg/L**	**0.62**	<0.0015	<0.0015	<0.0015	<0.0015	<0.00300
Notes					Uranium and lead results are unavailable due to a laboratory omission.	Depth was previously reported incorrectly. Sample was taken at 785 fbtoc	

Acronyms: Reporting Detection Limit (RDL), Feet Below Top of Casing (fbtoc), Quality Control (QC) Total Petroleum Hydrocarbons (TPH)

BOLD Bold numbers in cells indicates a concentration was measured above reporting detection limit (RDL)

BOLD-Italicize Bold-italicized indicates analytes detected above the reporting detection limit (RDL) in associated quality control samples

Yellow shading in cells indicates a concentration was measured above NMWQCC-3103 Standards

Footnotes:

1: The "less than" symbol "<" is a method to convey that the target analyte was not encountered above the RDL.

Table 2-2 Water Quality Test Results for Point Lookout/Hosta Aquifer Wells Continued

Dewatering Wells Water Quality Data Summary			Well ID	DW2a	DW2a	DW2a	DW2a	DW2a
			Depth (fbtoc)	Spigot	Spigot	Spigot	Spigot	Spigot
			Sample Type	Sample	Sample	Sample	Sample	Sample
			Date Collected	4/21/2026	3/11/2026	12/09/2025	9/9/2025	10/11/2023
Analyte	**Units**	**New Mexico WQCC-3103**						
Arsenic	**mg/L**	**0.01**	<0.0040	<0.004	<0.010	<0.0025	--
Barium	**mg/L**	**2**	**0.014**	**0.013**	**0.015**	**0.013**	--
Beryllium	**mg/L**	**0.004**	<0.0040	<0.004	<0.004	<0.0020	--
Boron	**mg/L**	**0.75**	**0.60**	**0.55**	**0.61**	**0.58**	--
Calcium	**mg/L**		**4.0**	**4.2**	**5.3**	**4.3**	--
Chloride	**mg/L**	**250**	**9.4**	**9.5**	**9.4**	**9.6**	--
Fluoride	**mg/L**	**1.6**	**2.7**	**2.6**	**2.5**	**2.6**	--
Iron	**mg/L**	**1**	<0.20	<0.2	<0.2	<0.020	--
Lead	**mg/L**	**0.015**	<0.0020	<0.002	--	<0.0025	--
Magnesium	**mg/L**		**1.6**	**1.7**	**2.2**	**1.8**	--
Manganese	**mg/L**	**0.2**	<0.020	<0.02	<0.02	<0.0020	--
Mercury	**mg/L**	**0.002**	<0.00020	<0.0002	<0.0002	<0.00020	--
Molybdenum	**mg/L**	**1**	<0.010	<0.01	<0.01	<0.0080	--
Nitrate Nitrite as N	**mg/L**		<0.5	<0.5	<0.5	<1.0	--
Nitrite as N	**mg/L**	**1**	<0.10	<0.1	<0.5	<1.0	--
Nitrate as N	**mg/L**	**10**	**0.18**	**0.19**	<0.5	<1.0	--
Nitrogen, Ammonia	**mg/L**		<0.67	<0.67	<0.67	<0.67	--
Nitrogen, Total Kjeldahl	**mg/L**		<0.50	<0.5	<0.5	<0.50	--
Potassium	**mg/L**		**0.85**	**0.91**	**1.1**	<1.0	--
Radium-226	**pCi/L**		**0.0641**	**0.216**	<1.00	<1.00	--
Radium-228	**pCi/L**		**0.0983**	**0.980**	**0.63**	**0.705**	--
Radium, Total	**pCi/L**	**5**	**0.162**	**1.196**	**0.63**	**0.705**	--
Selenium	**mg/L**	**0.05**	<0.0020	<0.002	<0.030	<0.0050	--
Sodium	**mg/L**		**230**	**230**	**230**	**250**	--
Sulfate	**mg/L**	**600**	**140**	**140**	**150**	**150**	--
Total Dissolved Solids	**mg/L**	**1000**	**620**	**620**	**540**	**620**	--
Uranium	**mg/L**	**0.03**	<0.0010	<0.001	--	<0.0025	--
Total Alkalinity as CaCO3	**mg/L**		**380**	**380**	**360**	**380**	--
Bicarbonate Alkalinity as CaCO3	**mg/L**		**340**	**340**	**330**	**340**	--
Carbonate Alkalinity as CaCO3	**mg/L**		**46**	**40**	**38**	**36**	--
Benzene	**mg/L**	**0.005**	<0.001	<0.001	<0.001	<0.001	<0.001
Ethylbenzene	**mg/L**	**0.7**	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	**mg/L**	**1**	<0.001	<0.001	<0.001	<0.001	<0.001
Xylenes, Total	**mg/L**	**0.62**	<0.0015	<0.0015	<0.0015	<0.0015	<0.003
Notes					Uranium and lead results are unavailable due to a laboratory omission.		

Acronyms: Reporting Detection Limit (RDL), Feet Below Top of Casing (fbtoc), Quality Control (QC) Total Petroleum Hydrocarbons (TPH)

BOLD Bold numbers in cells indicates a concentration was measured above RDL

BOLD-Italicize Bold-italicized indicates analytes detected above the reporting detection limit (RDL) in associated quality control samples

Yellow shading in cells indicates a concentration was measured above NMWQCC-3103 Standards

Footnotes:

1: The "less than" symbol "<" is a method to convey that the target analyte was not encountered above the RDL.

2: Sample from DW-2a was collected from spigot near well head.

Table 2-2 Water Quality Test Results for Point Lookout/Hosta Aquifer Wells Continued

Dewatering Wells Water Quality Data Summary		Well ID	DW3	DW3	DW3	DW3	DW3	DW3	DW3	DW3
		Depth (fbtoc)	821	896	1005	Water Interface, 607	821	896	1005	Water Interface, 608
		Sample Type	Sample	Sample	Sample	Sample	Sample	Sample	Sample	Sample
		Date Collected	4/23/2026	4/23/2026	4/23/2026	3/11/2026	3/11/2026	3/11/2026	3/12/2026	12/09/2025
Analyte	Units	New Mexico WQCC-3103								
Arsenic	mg/L	0.01	<0.0040	<0.0040	<0.0040	<0.004	<0.004	<0.004	<0.004	<0.010
Barium	mg/L	2	**0.45**	**0.47**	**0.46**	**0.39**	**0.40**	**0.40**	**0.45**	**0.43**
Beryllium	mg/L	0.004	<0.0040	<0.0040	<0.0040	<0.004	<0.004	<0.004	<0.004	<0.004
Boron	mg/L	0.75	**0.066**	**0.073**	**0.070**	**0.068**	**0.069**	**0.071**	**0.073**	**0.072**
Calcium	mg/L		**5.4**	**6.1**	**5.6**	**5.1**	**5.3**	**5.4**	**5.7**	**5.7**
Chloride	mg/L	250	**0.64**	**0.64**	**0.71**	**0.72**	**0.60**	**0.63**	**0.62**	**1.2**
Fluoride	mg/L	1.6	**0.50**	**0.49**	**0.52**	**0.48**	**0.50**	**0.48**	**0.49**	**0.45**
Iron	mg/L	1	<0.20	**0.21**	<0.20	**0.69**	<0.2	<0.2	<0.2	**0.76**
Lead	mg/L	0.015	<0.0020	<0.0020	<0.0020	<0.002	<0.002	<0.002	<0.002	--
Magnesium	mg/L		**1.7**	**2.0**	**1.8**	**1.7**	**1.7**	**1.7**	**1.7**	**1.9**
Manganese	mg/L	0.2	<0.020	<0.020	<0.020	<0.02	<0.02	<0.02	<0.02	**0.024**
Mercury	mg/L	0.002	<0.00020	<0.00020	<0.00020	<0.00020	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	mg/L	1	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01
Nitrate Nitrite as N	mg/L		<0.10	<0.10	<0.50	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrite as N	mg/L	1	<0.10	<0.10	<0.50	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrate as N	mg/L	10	<0.10	<0.10	<0.50	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrogen, Ammonia	mg/L		<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67
Nitrogen, Total Kjeldahl	mg/L		<0.50	<0.50	<0.50	<0.50	<0.5	<0.5	<0.67	<0.5
Potassium	mg/L		**1.2**	**1.3**	**1.3**	**1.3**	**1.1**	**1.2**	**1.2**	**1.3**
Radium-226	pCi/L		**0.161**	**0.367**	**0.352**	**0.805**	**0.277**	**0.318**	**0.45**	**0.478**
Radium-228	pCi/L		**0.717**	**0.247**	**0.659**	**0.975**	**1.620**	**1.160**	**0.768**	**1.04**
Radium, Total	pCi/L	5	**0.878**	**0.614**	1.011	**1.78**	**1.897**	**1.478**	**1.218**	**1.518**
Selenium	mg/L	0.05	<0.0020	<0.0020	<0.0020	<0.002	<0.002	<0.002	<0.002	<0.030
Sodium	mg/L		**74**	**78**	**75**	**73**	**67**	**69**	**73**	**73**
Sulfate	mg/L	600	**4.0**	**3.9**	**2.5**	<0.5	**4.0**	**3.8**	**2.4**	<0.5
Total Dissolved Solids	mg/L	1000	**170**	**200**	**160**	**190**	**180**	**180**	**200**	**190**
Uranium	mg/L	0.03	<0.0010	<0.0010	<0.0010	<0.0025	<0.001	<0.001	<0.001	--
Total Alkalinity as CaCO3	mg/L		**180**	**180**	**180**	**180**	**180**	**180**	**180**	**180**
Bicarbonate Alkalinity as CaCO3	mg/L		**180**	**170**	**180**	**180**	**170**	**170**	**180**	**180**
Carbonate Alkalinity as CaCO3	mg/L		**7.5**	**7.5**	**7.8**	**3.3**	**5.2**	**5.4**	**7.5**	<2
Notes						Depth reported as water level, sample taken 15 feet below				Samples for WI were taken 15 feet below.

Acronyms: Reporting Detection Limit (RDL), Feet Below Top of Casing (fbtoc), Quality Control (QC) Total Petroleum Hydrocarbons (TPH)

BOLD Bold numbers in cells indicates a concentration was measured above RDL

BOLD-Italicize Bold-italicized indicates analytes detected above the reporting detection limit (RDL) in associated quality control samples

Yellow shading in cells indicates a concentration was measured above NMWQCC-3103 Standards

Footnotes:

1: The "less than" symbol "<" is a method to convey that the target analyte was not encountered above the RDL.

2: The sample for 12/09/2025 did not have uranium tested due to laboratory omission

Table 2-2 Water Quality Test Results for Point Lookout/Hosta Aquifer Wells Continued

Dewatering Wells Water Quality Data Summary		Well ID	DW3	DW3	DW3	DW3	DW3	DW3	DW3
		Depth (fbtoc)	821	896	1005	Water Interface, 595	821	896	1005
		Sample Type	Sample	Sample	Sample	Sample	Sample	Sample	Sample
		Date Collected	12/10/2025	12/10/2025	12/10/2025	9/10/2025	9/10/2025	9/10/2025	9/10/2025
Analyte	Units	New Mexico WQCC-3103							
Arsenic	mg/L	0.01	<0.004	<0.004	<0.004	<0.0025	<0.0025	<0.0025	<0.0025
Barium	mg/L	2	0.42	0.42	0.44	0.43	0.41	0.40	0.41
Beryllium	mg/L	0.004	<0.004	<0.004	<0.004	<0.0020	<0.0020	<0.0020	<0.0020
Boron	mg/L	0.75	0.069	0.073	0.075	0.075	0.074	0.074	0.077
Calcium	mg/L		5.5	5.7	5.9	5.5	5.2	5.2	5.3
Chloride	mg/L	250	0.62	0.6	0.61	2.6	0.88	0.85	0.62
Fluoride	mg/L	1.6	0.46	0.51	0.51	0.46	0.47	0.46	0.48
Iron	mg/L	1	0.18	0.16	0.14	0.89	0.17	0.12	0.043
Lead	mg/L	0.015	--	--	--	<0.0025	<0.0025	<0.0025	<0.0025
Magnesium	mg/L		1.7	1.8	1.8	2.1	1.7	1.7	1.6
Manganese	mg/L	0.2	<0.02	<0.02	<0.02	0.024	0.0070	0.0051	0.0092
Mercury	mg/L	0.002	<0.0002	<0.0002	<0.0002	<0.00020	<0.00020	<0.00020	<0.00020
Molybdenum	mg/L	1	<0.01	0.013	<0.01	<0.0080	<0.0080	<0.0080	<0.0080
Nitrate Nitrite as N	mg/L		<0.1	<0.1	<0.1	<1.0	<1.0	<1.0	<1.0
Nitrite as N	mg/L	1	<0.1	<0.1	<0.1	<1.0	<1.0	<1.0	<1.0
Nitrate as N	mg/L	10	<0.1	<0.1	<0.1	<1.0	<1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L		<0.5	<0.67	<0.5	<0.67	<0.67	<0.67	<0.67
Nitrogen, Total Kjeldahl	mg/L		<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Potassium	mg/L		1.2	1.2	1.2	1.4	1.1	1.1	1.1
Radium-226	pCi/L		0.0129	0.317	0.404	0.790	0.330	0.361	0.578
Radium-228	pCi/L		0.416	0.81	0.847	0.857	1.85	0.987	1.06
Radium, Total	pCi/L	5	0.4289	1.127	1.251	1.647	2.18	1.348	1.638
Selenium	mg/L	0.05	<0.002	<0.002	<0.002	<0.0050	<0.0050	<0.0050	<0.0050
Sodium	mg/L		71	72	74	75	70	72	71
Sulfate	mg/L	600	3.9	3.7	2.2	0.52	4.1	3.8	2.4
Total Dissolved Solids	mg/L	1000	200	200	210	190	190	190	200
Uranium	mg/L	0.03	<0.001	<0.001	<0.001	<0.0025	<0.0025	<0.0025	<0.0025
Total Alkalinity as CaCO3	mg/L		180	180	180	180	180	180	180
Bicarbonate Alkalinity as CaCO3	mg/L		180	180	170	180	180	170	180
Carbonate Alkalinity as CaCO3	mg/L		4.4	5	7.3	<2.0	3.8	3.3	7.1
Notes						Depth reported as water level, sample taken 15 feet below			

Acronyms: Reporting Detection Limit (RDL), Feet Below Top of Casing (fbtoc), Quality Control (QC) Total Petroleum Hydrocarbons (TPH)

BOLD Bold numbers in cells indicates a concentration was measured above RDL

BOLD-Italicize Bold-italicized indicates analytes detected above the reporting detection limit (RDL) in associated quality control samples

Yellow shading in cells indicates a concentration was measured above NMWQCC-3103 Standards

Footnotes:

1: The "less than" symbol "<" is a method to convey that the target analyte was not encountered above the RDL.

2: The sample for 12/09/2025 did not have uranium tested due to laboratory omission

Table 2-2 Water Quality Test Results for Point Lookout/Hosta Aquifer Wells Continued

Dewatering Wells Water Quality Data Summary		Well ID	DW3	DW3	DW3	DW3	DW3	DW3	DW3
		Depth (fbtoc)	821	896	1005	Water Interface, 607	821	896	1005
		Sample Type	Sample	Sample	Sample	Sample	Sample	Sample	Sample
		Date Collected	4/23/2026	4/23/2026	4/23/2026	3/11/2026	3/11/2026	3/11/2026	3/12/2026
Analyte	**Units**	**New Mexico WQCC-3103**							
TPH, EPA Method 8015D									
Diesel Range Organics [C10-C28]	**mg/L**		<1	<1	<1	<1	**5.7**	**9.5**	<1
Gasoline Range Organics [C6 - C10]	**mg/L**		<0.05	<0.05	<0.05	<0.050	<0.05	**0.065**	<0.05
Motor Oil Range Organics [C28-C40]	**mg/L**		<5	<5	<5	<5.0	<5	<5	<5
VOC, EPA Method 8260B									
Benzene	**mg/L**	**0.005**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Ethylbenzene	**mg/L**	**0.7**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	**mg/L**	**1**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Xylenes, Total	**mg/L**	**0.62**	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015
PAH, EPA Method 8270-SIM									
1-Methylnaphthalene	**mg/L**	**0.03**	<0.0002	**0.00074**	**0.00035**	**0.0048**	**0.0030**	**0.0081**	**0.0014**
2-Methylnaphthalene	**mg/L**	**0.03**	<0.0002	**0.00068**	**0.00033**	**0.0045**	**0.0031**	**0.0072**	**0.0011**
Acenaphthene	**mg/L**		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Acenaphthylene	**mg/L**		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	**0.00023**	<0.0002
Anthracene	**mg/L**		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzo[a]anthracene	**mg/L**		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzo[a]pyrene	**mg/L**	**0.0002**	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
Benzo[g,h,i]perylene	**mg/L**		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzo[b]fluoranthene	**mg/L**		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chrysene	**mg/L**		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Dibenz(a,h)anthracene	**mg/L**		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Fluoranthene	**mg/L**		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Fluorene	**mg/L**		<0.0002	<0.0002	<0.0002	**0.00075**	**0.00095**	**0.0018**	**0.00032**
Indeno[1,2,3-cd]pyrene	**mg/L**		<0.0002	**0.00026**	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Naphthalene	**mg/L**	**0.03**	<0.0002	<0.0002	<0.0002	**0.00053**	<0.0002	**0.0004**	<0.0002
Phenanthrene	**mg/L**		**0.00077**	**0.00055**	**0.00032**	**0.00084**	**0.0012**	**0.0021**	**0.00056**
Pyrene	**mg/L**		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Notes						Depth reported as water level, sample taken 15 feet below			

Acronyms: Reporting Detection Limit (RDL), Feet Below Top of Casing (fbtoc), Quality Control (QC) Total Petroleum Hydrocarbons (TPH)

BOLD Bold numbers in cells indicates a concentration was measured above RDL

BOLD-Italicize Bold-italicized indicates analytes detected above the reporting detection limit (RDL) in associated quality control samples

Yellow shading in cells indicates a concentration was measured above NMWQCC-3103 Standards

Footnotes:

1: The "less than" symbol "<" is a method to convey that the target analyte was not encountered above the RDL.

Table 2-2 Water Quality Test Results for Point Lookout/Hosta Aquifer Wells Continued

Dewatering Wells Water Quality Data Summary		Well ID	DW3	DW3	DW3	DW3	DW3	DW3	DW3
		Depth (fbtoc)	Water Interface, 608	821	896	1005	Water Interface, 595	821	896
		Sample Type	Sample	Sample	Sample	Sample	Sample	Sample	Sample
		Date Collected	12/09/2025	12/10/2025	12/10/2025	12/10/2025	9/10/2025	9/10/2025	9/10/2025
Analyte	**Units**	**New Mexico WQCC-3103**							
TPH, EPA Method 8015D									
Diesel Range Organics [C10-C28]	**mg/L**		**1.4**	<1	<1	<1			
Gasoline Range Organics [C6 - C10]	**mg/L**		<0.050	<0.05	<0.05	<0.05			
Motor Oil Range Organics [C28-C40]	**mg/L**		<5.0	<5	<5	<5			
VOC, EPA Method 8260B									
Benzene	**mg/L**	**0.005**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Ethylbenzene	**mg/L**	**0.7**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	**mg/L**	**1**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Xylenes, Total	**mg/L**	**0.62**	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.002
PAH, EPA Method 8270-SIM									
1-Methylnaphthalene	**mg/L**	**0.03**	**0.0056**	<0.0002	<0.0002	0.00039			
2-Methylnaphthalene	**mg/L**	**0.03**	**0.0052**	<0.0002	**0.00024**	0.00034			
Acenaphthene	**mg/L**		**0.00093**	<0.0002	<0.0002	<0.0002			
Acenaphthylene	**mg/L**		<0.0002	<0.0002	<0.0002	<0.0002			
Anthracene	**mg/L**		<0.0002	<0.0002	<0.0002	<0.0002			
Benzo[a]anthracene	**mg/L**		<0.0002	<0.0002	<0.0002	<0.0002			
Benzo[a]pyrene	**mg/L**	**0.0002**	<0.00007	<0.00007	<0.00007	<0.00007			
Benzo[g,h,i]perylene	**mg/L**		<0.0002	<0.0002	<0.0002	<0.0002			
Benzo[b]fluoranthene	**mg/L**		<0.0002	<0.0002	<0.0002	<0.0002			
Chrysene	**mg/L**		<0.0002	<0.0002	<0.0002	<0.0002			
Dibenz(a,h)anthracene	**mg/L**		<0.0002	<0.0002	<0.0002	<0.0002			
Fluoranthene	**mg/L**		<0.0002	<0.0002	<0.0002	<0.0002			
Fluorene	**mg/L**		**0.00099**	<0.0002	<0.0002	<0.0002			
Indeno[1,2,3-cd]pyrene	**mg/L**		<0.0002	<0.0002	<0.0002	<0.0002			
Naphthalene	**mg/L**	**0.03**	**0.00054**	<0.0002	<0.0002	<0.0002			
Phenanthrene	**mg/L**		**0.00098**	<0.0002	<0.0002	<0.0002			
Pyrene	**mg/L**		<0.0002	<0.0002	<0.0002	<0.0002			
Notes			Depth reported as water level, sample taken 15 feet below				Depth reported as water level, sample taken 15 feet below		

Acronyms: Reporting Detection Limit (RDL), Feet Below Top of Casing (fbtoc), Quality Control (QC) Total Petroleum Hydrocarbons (TPH)

BOLD Bold numbers in cells indicates a concentration was measured above RDL

BOLD-Italicize Bold-italicized indicates analytes detected above the reporting detection limit (RDL) in associated quality control samples

Yellow shading in cells indicates a concentration was measured above NMWQCC-3103 Standards

Footnotes:

1: The "less than" symbol "<" is a method to convey that the target analyte was not encountered above the RDL.

Table 2-2 Water Quality Test Results for Point Lookout/Hosta Aquifer Wells Continued

Dewatering Wells Water Quality Data Summary		Well ID	DW3	DW3	DW3	DW3
		Depth (fbtoc)	1005	596	896	1005
		Sample Type	Sample	Sample	Sample	Sample
		Date Collected	9/10/2025	10/11/2023	10/11/2023	10/11/2023
Analyte	**Units**	**New Mexico WQCC-3103**				
TPH, EPA Method 8015D						
Diesel Range Organics [C10-C28]	**mg/L**			**1.37**	**0.62**	**2.3**
Gasoline Range Organics [C6 - C10]	**mg/L**					
Motor Oil Range Organics [C28-C40]	**mg/L**			**0.147**	**0.158**	**0.347**
VOC, EPA Method 8260B						
Benzene	**mg/L**	**0.005**	<0.001	<0.001	<0.001	<0.001
Ethylbenzene	**mg/L**	**0.7**	<0.001	<0.001	<0.001	<0.001
Toluene	**mg/L**	**1**	<0.001	<0.001	<0.001	<0.001
Xylenes, Total	**mg/L**	**0.62**	<0.002	<0.003	<0.003	<0.003
PAH, EPA Method 8270-SIM						
1-Methylnaphthalene	**mg/L**	**0.03**		**0.0105**	<0.00025	**0.000599**
2-Methylnaphthalene	**mg/L**	**0.03**		**0.0118**	<0.00025	**0.000701**
Acenaphthene	**mg/L**			**0.000477**	<0.00005	**0.000104**
Acenaphthylene	**mg/L**			<0.00005	<0.00005	<0.00005
Anthracene	**mg/L**			<0.00005	<0.00005	<0.00005
Benzo[a]anthracene	**mg/L**			<0.00005	<0.00005	<0.00005
Benzo[a]pyrene	**mg/L**	**0.0002**		<0.00005	<0.00005	<0.00005
Benzo[g,h,i]perylene	**mg/L**			<0.00005	<0.00005	<0.00005
Benzo[b]fluoranthene	**mg/L**			<0.00005	<0.00005	<0.00005
Chrysene	**mg/L**			<0.00005	<0.00005	<0.00005
Dibenz(a,h)anthracene	**mg/L**			<0.00005	<0.00005	<0.00005
Fluoranthene	**mg/L**			<0.0001	<0.0001	<0.0001
Fluorene	**mg/L**			**0.00161**	**0.0000566**	**0.000183**
Indeno[1,2,3-cd]pyrene	**mg/L**			<0.00005	<0.00005	<0.00005
Naphthalene	**mg/L**	**0.03**		**0.00134**	<0.00025	<0.00025
Phenanthrene	**mg/L**			**0.00181**	**0.0000815**	**0.000245**
Pyrene	**mg/L**			<0.00005	<0.00005	<0.00005
Notes				Depth reported as water level, sample taken 15 feet below		

Acronyms: Reporting Detection Limit (RDL), Feet Below Top of Casing (fbtoc), Quality Control (QC) Total Petroleum Hydrocarbons (TPH)

BOLD Bold numbers in cells indicates a concentration was measured above RDL

BOLD-Italicize Bold-italicized indicates analytes detected above the reporting detection limit (RDL) in associated quality control samples

Yellow shading in cells indicates a concentration was measured above NMWQCC-3103 Standards

Footnotes:

1: The "less than" symbol "<" is a method to convey that the target analyte was not encountered above the RDL.

Table 2-2 Water Quality Test Results for Point Lookout/Hosta Aquifer Wells Continued

Dewatering Wells Water Quality Data Summary			Well ID	DW6	DW6	DW6	DW6	DW6
			Depth (fbtoc)	Spigot	Spigot	Spigot	Spigot	Spigot
			Sample Type	Sample	Sample	Sample	Sample	Sample
			Date Collected	4/23/2026	3/10/2026	12/10/2025	9/10/2025	10/10/2023
Analyte	Units	New Mexico WQCC-3103						
Arsenic	mg/L	0.01	<0.0040	<0.004	<0.004	<0.0025	--
Barium	mg/L	2	0.44	0.40	0.5	0.38	--
Beryllium	mg/L	0.004	<0.0040	<0.004	<0.004	<0.0020	--
Boron	mg/L	0.75	0.055	<0.05	0.053	0.059	--
Calcium	mg/L		5.5	4.9	5.9	5.0	--
Chloride	mg/L	250	0.89	0.87	0.86	0.86	--
Fluoride	mg/L	1.6	0.52	0.65	0.5	0.49	--
Iron	mg/L	1	<0.20	0.035	0.13	0.21	--
Lead	mg/L	0.015	<0.0020	<0.0020	--	<0.0025	--
Magnesium	mg/L		1.8	1.6	1.9	1.7	--
Manganese	mg/L	0.2	<0.020	<0.02	<0.02	0.010	--
Mercury	mg/L	0.002	<0.00020	<0.0002	<0.0002	<0.00020	--
Molybdenum	mg/L	1	<0.010	<0.01	<0.01	<0.0080	--
Nitrate Nitrite as N	mg/L		<0.10	<0.5	<1.0	<1.0	--
Nitrite as N	mg/L	1	<0.10	<0.5	<1.0	<1.0	--
Nitrate as N	mg/L	10	<0.10	<0.5	<1.0	<1.0	--
Nitrogen, Ammonia	mg/L		<0.67	<0.67	<0.67	<0.67	--
Nitrogen, Total Kjeldahl	mg/L		<0.50	<0.5	<0.5	<0.50	--
Potassium	mg/L		1.2	1.3	1.3	1.1	--
Radium-226	pCi/L		0.347	0.176	0.418	0.323	--
Radium-228	pCi/L		1.04	0.854	0.98	0.566	--
Radium, Total	pCi/L	5	1.387	1.03	1.398	0.889	--
Selenium	mg/L	0.05	<0.0020	<0.002	<0.002	<0.0050	--
Sodium	mg/L		66	64	64	68	--
Sulfate	mg/L	600	6.9	6.9	6.6	7.0	--
Total Dissolved Solids	mg/L	1000	190	130	170	170	--
Uranium	mg/L	0.03	<0.0010	<0.001	<0.001	<0.0025	--
Total Alkalinity as CaCO3	mg/L		160	160	160	160	--
Bicarbonate Alkalinity as CaCO3	mg/L		160	150	160	160	--
Carbonate Alkalinity as CaCO3	mg/L		6.8	9.1	7.2	4.2	--
Benzene	mg/L	0.005	<0.001	<0.001	<0.001	<0.001	<0.001
Ethylbenzene	mg/L	0.7	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	mg/L	1	<0.001	<0.001	<0.001	0.0013	<0.001
Xylenes, Total	mg/L	0.62	<0.0015	<0.0015	<0.0015	<0.0015	<0.003
Notes					Lead result unavailable due to a laboratory omission.		

Acronyms: Reporting Detection Limit (RDL), Feet Below Top of Casing (fbtoc), Quality Control (QC) Total Petroleum Hydrocarbons (TPH)

BOLD Bold numbers in cells indicates a concentration was measured above RDL

BOLD-Italicize Bold-italicized indicates analytes detected above the reporting detection limit (RDL) in associated quality control samples

Yellow shading in cells indicates a concentration was measured above NMWQCC-3103 Standards

Footnotes:

1: The "less than" symbol "<" is a method to convey that the target analyte was not encountered above the RDL.

2: Sample for DW-6 was collected from spigot near well head

Table 2-2 Water Quality Test Results for Point Lookout/Hosta Aquifer Wells Continued

Dewatering Wells Water Quality Data Summary			Well ID	DW8[2]	DW8[2]	DW8[2]	DW8	DW8	DW8	DW8
			Depth (fbtoc)	830	830	830	830	961	840	961
			Sample Type	Sample	Sample	Sample	Sample	Sample	Sample	Sample
			Date Collected	4/21/2026	3/10/2026	12/09/2025	9/9/2025	9/9/2025	10/09/2023	10/09/2023
Analyte	Units	New Mexico WQCC-3103								
Arsenic	mg/L	0.01	<0.0040	<0.004	<0.010	<0.0025	<0.0025	--	--
Barium	mg/L	2	0.40	0.39	0.33	0.36	0.33	--	--
Beryllium	mg/L	0.004	<0.0040	<0.004	<0.004	<0.0020	<0.0020	--	--
Boron	mg/L	0.75	0.073	0.072	0.081	0.068	0.09	--	--
Calcium	mg/L		5.3	5.3	5.5	4.6	5.5	--	--
Chloride	mg/L	250	0.80	0.78	0.73	0.8	2.4	--	--
Fluoride	mg/L	1.6	0.57	0.53	0.7	0.54	0.66	--	--
Iron	mg/L	1	<0.20	<0.2	<0.2	0.021	0.031	--	--
Lead	mg/L	0.015	<0.0020	<0.0020	--	<0.0025	<0.0025	--	--
Magnesium	mg/L		1.8	1.8	1.7	1.6	2.1	--	--
Manganese	mg/L	0.2	<0.020	<0.02	<0.02	0.0049	0.0066	--	--
Mercury	mg/L	0.002	<0.00020	<0.0002	<0.0002	<0.00020	<0.00020	--	--
Molybdenum	mg/L	1	<0.010	<0.01	<0.01	<0.0080	<0.0080	--	--
Nitrate Nitrite as N	mg/L		<0.10	<0.5	<0.5	<1.0	<1.0	--	--
Nitrite as N	mg/L	1	<0.10	<0.5	<0.5	<1.0	<1.0	--	--
Nitrate as N	mg/L	10	<0.10	<0.5	<0.5	<1.0	<1.0	--	--
Nitrogen, Ammonia	mg/L		<0.67	<0.67	<0.67	<0.67	<0.67	--	--
Nitrogen, Total Kjeldahl	mg/L		<0.50	<0.5	<0.5	<0.50	<0.50	--	--
Potassium	mg/L		1.1	1.3	1.2	1.1	1.2	--	--
Radium-226	pCi/L		0.206	0.329	0.28	0.296	0.148	--	--
Radium-228	pCi/L		0.517	0.022	0.965	0.581	0.515	--	--
Radium, Total	pCi/L	5	0.723	0.351	1.245	0.877	0.663	--	--
Selenium	mg/L	0.05	<0.0020	<0.002	<0.030	<0.0050	<0.0050	--	--
Sodium	mg/L		70	73	67	70	73	--	--
Sulfate	mg/L	600	5.6	5.5	6.4	5.2	6.8	--	--
Total Dissolved Solids	mg/L	1000	190	100	190	190	210	--	--
Uranium	mg/L	0.03	<0.0010	<0.001	--	<0.0025	<0.0025	--	--
Total Alkalinity as CaCO3	mg/L		170	170	180	170	180	--	--
Bicarbonate Alkalinity as CaCO3	mg/L		160	160	170	170	170	--	--
Carbonate Alkalinity as CaCO3	mg/L		11	13	4.6	8.7	4.0	--	--
Benzene	mg/L	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Ethylbenzene	mg/L	0.7	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	mg/L	1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Xylenes, Total	mg/L	0.62	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.003	<0.003
Notes			Depth was taken at 830' not 961'		Uranium and lead results are unavailable due to a laboratory omission.				

Acronyms: Reporting Detection Limit (RDL), Feet Below Top of Casing (fbtoc), Quality Control (QC) Total Petroleum Hydrocarbons (TPH)

BOLD Bold numbers in cells indicates a concentration was measured above RDL

BOLD-Italicize Bold-italicized indicates analytes detected above the reporting detection limit (RDL) in associated quality control samples

Yellow shading in cells indicates a concentration was measured above NMWQCC-3103 Standards

Footnotes:

1: The "less than" symbol "<" is a method to convey that the target analyte was not encountered above the RDL.

2: RGR received verbal confirmation that a single discrete sample was sufficent for DW-8. During a site visit by Corey Dimond on 12-9-2025, this sampling schedule was verified.

Table 2-2 Water Quality Test Results for Point Lookout/Hosta Aquifer Wells Continued

Dewatering Wells Water Quality Data Summary		Well ID	DW10	DW10	DW10	DW10	DW10	DW10
		Depth (fbtoc)	Water Interface, 479	781	865	Water Interface, 479	781	865
		Sample Type	Sample	Sample	Sample	Sample	Sample	Sample
		Date Collected	4/21/2026	4/21/2026	4/21/2026	3/10/2026	3/10/2026	3/11/2026
Analyte	**Units**	**New Mexico WQCC-3103**						
Arsenic	**mg/L**	**0.01**	<0.0040	<0.0040	<0.0040	<0.004	<0.004	<0.004
Barium	**mg/L**	**2**	**0.012**	**0.012**	**0.018**	**0.012**	**0.011**	**0.019**
Beryllium	**mg/L**	**0.004**	<0.0040	<0.0040	<0.0040	<0.004	<0.004	<0.004
Boron	**mg/L**	**0.75**	**0.64**	**0.65**	**0.63**	**0.61**	**0.57**	**0.59**
Calcium	**mg/L**		**1.2**	**1.3**	**1.6**	**1.2**	**1.6**	**2.2**
Chloride	**mg/L**	**250**	**5.4**	**5.4**	**5.4**	**5.1**	**5.2**	**5.2**
Fluoride	**mg/L**	**1.6**	**2.7**	**2.7**	**2.7**	**2.4**	**2.4**	**2.5**
Iron	**mg/L**	**1**	<0.20	<0.20	<0.20	<0.2	<0.2	**0.19**
Lead	**mg/L**	**0.015**	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Magnesium	**mg/L**		<0.20	**0.20**	**0.28**	<0.2	**0.28**	**0.37**
Manganese	**mg/L**	**0.2**	<0.020	<0.020	<0.020	<0.02	<0.02	<0.02
Mercury	**mg/L**	**0.002**	<0.00020	<0.00020	<0.00020	<0.0002	<0.0002	<0.0002
Molybdenum	**mg/L**	**1**	**0.011**	<0.010	<0.010	<0.01	**0.013**	<0.01
Nitrate Nitrite as N	**mg/L**		**0.12**	<0.10	<0.10	<0.5	<0.5	<0.1
Nitrate as N	**mg/L**	**1**	**0.12**	<0.10	<0.10	<0.1	<0.1	<0.1
Nitrite as N	**mg/L**	**10**	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1
Nitrogen, Ammonia	**mg/L**		<0.67	<0.67	<0.67	<0.67	<0.67	<0.67
Nitrogen, Total Kjeldahl	**mg/L**		<0.50	<0.50	<0.50	<1.3	<0.5	<0.5
Potassium	**mg/L**		**0.85**	**0.85**	**0.80**	**0.90**	**0.79**	**0.82**
Radium-226	**pCi/L**		**0.0324**	**0.00541**	<1.00	**0.009**	**0.049**	**0.127**
Radium-228	**pCi/L**		**0.772**	**0.483**	**0.0984**	**0.161**	**0.719**	**0.069**
Radium, Total	**pCi/L**	**5**	**0.804**	**0.488**	**0.0984**	**0.170**	**0.768**	**0.196**
Selenium	**mg/L**	**0.05**	<0.0020	<0.0020	<0.0020	<0.002	<0.002	<0.002
Sodium	**mg/L**		**220**	**220**	**210**	**230**	**210**	**200**
Sulfate	**mg/L**	**600**	**64**	**64**	**64**	**63**	**63**	**63**
Total Dissolved Solids	**mg/L**	**1000**	**520**	**510**	**510**	**510**	**480**	**480**
Uranium	**mg/L**	**0.03**	**0.0011**	**0.0071**	**0.0097**	**0.002**	**0.011**	**0.017**
Total Alkalinity as CaCO3	**mg/L**		**410**	**420**	**420**	**410**	**420**	**420**
Bicarbonate Alkalinity as CaCO3	**mg/L**		**370**	**370**	**370**	**370**	**370**	**360**
Carbonate Alkalinity as CaCO3	**mg/L**		**46**	**47**	**51**	**44**	**48**	**51**
Notes			Depth reported as water level, sample taken 15 feet below			Depth reported as water level, sample taken 15 feet below		

Acronyms: Reporting Detection Limit (RDL), Feet Below Top of Casing (fbtoc), Quality Control (QC) Total Petroleum Hydrocarbons (TPH)

BOLD Bold numbers in cells indicates a concentration was measured above RDL

BOLD-Italicize Bold-italicized indicates analytes detected above the reporting detection limit (RDL) in associated quality control samples

Yellow shading in cells indicates a concentration was measured above NMWQCC-3103 Standards

Footnotes:

1: The "less than" symbol "<" is a method to convey that the target analyte was not encountered above the RDL.

Table 2-2 Water Quality Test Results for Point Lookout/Hosta Aquifer Wells Continued

Dewatering Wells Water Quality Data Summary		Well ID	DW10	DW10	DW10	DW10	DW10	DW10
		Depth (fbtoc)	Water Interface, 468	781	865	Water Interface, 468	781	865
		Sample Type	Sample	Sample	Sample	Sample	Sample	Sample
		Date Collected	12/10/2025	12/10/2025	12/10/2025	9/10/2025	9/10/2025	9/9/2025
Analyte	**Units**	**New Mexico WQCC-3103**						
Arsenic	**mg/L**	**0.01**	<0.004	<0.004	<0.004	<0.0025	<0.0025	<0.0025
Barium	**mg/L**	**2**	**0.01**	***0.011***	**0.012**	**0.013**	**0.0094**	**0.0085**
Beryllium	**mg/L**	**0.004**	<0.004	<0.004	<0.004	<0.0020	<0.0020	<0.0020
Boron	**mg/L**	**0.75**	**0.58**	**0.62**	**0.58**	**0.61**	**0.59**	**0.58**
Calcium	**mg/L**		**1.4**	**1.7**	**1.5**	**1.6**	**1.4**	**1.3**
Chloride	**mg/L**	**250**	**5**	**5**	**5.1**	**13**	**6.0**	**5.4**
Fluoride	**mg/L**	**1.6**	**2.6**	**2.6**	**2.6**	**2.5**	**2.5**	**2.5**
Iron	**mg/L**	**1**	**0.094**	**0.18**	**0.18**	**0.094**	**0.20**	**0.089**
Lead	**mg/L**	**0.015**	--	--	--	<0.0025	<0.0025	<0.0025
Magnesium	**mg/L**		**0.22**	**0.28**	**0.27**	**1.6**	<1.0	<1.0
Manganese	**mg/L**	**0.2**	<0.02	<0.02	<0.02	**0.0049**	**0.0029**	<0.0020
Mercury	**mg/L**	**0.002**	<0.0002	<0.0002	<0.0002	<0.00020	<0.00020	<0.00020
Molybdenum	**mg/L**	**1**	<0.01	<0.01	<0.01	<0.0080	<0.0080	<0.0080
Nitrate Nitrite as N	**mg/L**		<0.1	<0.1	<0.1	<1.0	<1.0	<1.0
Nitrate as N	**mg/L**	**1**	<0.1	<0.1	<0.1	<1.0	<1.0	<1.0
Nitrite as N	**mg/L**	**10**	<0.1	<0.1	<0.1	<1.0	<1.0	<1.0
Nitrogen, Ammonia	**mg/L**		<0.5	<0.5	<0.5	<0.67	<0.67	<0.67
Nitrogen, Total Kjeldahl	**mg/L**		<0.5	<0.5	<0.5	<0.50	<0.50	<0.50
Potassium	**mg/L**		**0.76**	**0.88**	**0.91**	**1.5**	<1.0	<1.0
Radium-226	**pCi/L**		**0.0485**	**0.181**	**0.192**	**0.0389**	**0.297**	**0.167**
Radium-228	**pCi/L**		**0.483**	**0.106**	**0.244**	**1.08**	**1.34**	**0.775**
Radium, Total	**pCi/L**	**5**	0.5315	**0.287**	**0.436**	**1.1189**	**1.637**	**0.942**
Selenium	**mg/L**	**0.05**	<0.002	<0.002	<0.002	<0.0050	<0.0050	<0.0050
Sodium	**mg/L**		**200**	**210**	**200**	**220**	**210**	**220**
Sulfate	**mg/L**	**600**	**62**	**62**	**63**	**62**	**63**	**61**
Total Dissolved Solids	**mg/L**	**1000**	**560**	**550**	**540**	**270**	**510**	**520**
Uranium	**mg/L**	**0.03**	**0.0037**	**0.0097**	**0.012**	**0.0030**	**0.011**	**0.0096**
Total Alkalinity as CaCO3	**mg/L**		**420**	**420**	**420**	**410**	**410**	**410**
Bicarbonate Alkalinity as CaCO3	**mg/L**		**370**	**370**	**370**	**370**	**360**	**360**
Carbonate Alkalinity as CaCO3	**mg/L**		**45**	**45**	**45**	**43**	**40**	**46**
Notes			Sample taken 15' below WI. Lead unavailable due to a lab omission.	Lead unavailable due to a laboratory omission.		Depth reported as water level, sample taken 15 feet below		

Acronyms: Reporting Detection Limit (RDL), Feet Below Top of Casing (fbtoc), Quality Control (QC) Total Petroleum Hydrocarbons (TPH)

BOLD Bold numbers in cells indicates a concentration was measured above RDL

BOLD-Italicize Bold-italicized indicates analytes detected above the reporting detection limit (RDL) in associated quality control samples

Yellow shading in cells indicates a concentration was measured above NMWQCC-3103 Standards

Footnotes:

1: The "less than" symbol "<" is a method to convey that the target analyte was not encountered above the RDL.

Table 2-2 Water Quality Test Results for Point Lookout/Hosta Aquifer Wells Continued

Dewatering Wells Water Quality Data Summary			Well ID	DW10	DW10	DW10	DW10	DW10	DW10	DW10
			Depth (fbtoc)	Water Interface, 479	781	865	Water Interface, 479	781	865	Water Interface, 468
			Sample Type	Sample	Sample	Sample	Sample	Sample	Sample	Sample
			Date Collected	4/21/2026	4/21/2026	4/21/2026	3/10/2026	3/10/2026	3/11/2026	12/10/2025
Analyte	**Units**	**New Mexico WQCC-3103**								
TPH, EPA Method 8015D										
Diesel Range Organics [C10-C28]	**mg/L**			<1	<1	<1	<1	<1	<1	<1
Gasoline Range Organics [C6 - C10]	**mg/L**			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Motor Oil Range Organics [C28-C40]	**mg/L**			<5	<5	<5	<5	<5	<5	<5
VOC, EPA Method 8260B										
Benzene	**mg/L**	**0.005**		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Ethylbenzene	**mg/L**	**0.7**		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	**mg/L**	**1**		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Xylenes, Total	**mg/L**	**0.62**		<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015
PAH, EPA Method 8270-SIM										
1-Methylnaphthalene	**mg/L**	**0.03**		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
2-Methylnaphthalene	**mg/L**	**0.03**		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Acenaphthene	**mg/L**			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Acenaphthylene	**mg/L**			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Anthracene	**mg/L**			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzo[a]anthracene	**mg/L**			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzo[a]pyrene	**mg/L**	**0.0002**		<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
Benzo[g,h,i]perylene	**mg/L**			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzo[b]fluoranthene	**mg/L**			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chrysene	**mg/L**			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Dibenz(a,h)anthracene	**mg/L**			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Fluoranthene	**mg/L**			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Fluorene	**mg/L**			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Indeno[1,2,3-cd]pyrene	**mg/L**			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Naphthalene	**mg/L**	**0.03**		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Phenanthrene	**mg/L**			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Pyrene	**mg/L**			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Notes				Depth reported as water level, sample taken 15 feet below			Depth reported as water level, sample taken 15 feet below			Depth reported as water level, sample taken 15 feet below

Acronyms: Reporting Detection Limit (RDL), Feet Below Top of Casing (fbtoc), Quality Control (QC) Total Petroleum Hydrocarbons (TPH)

BOLD Bold numbers in cells indicates a concentration was measured above RDL

BOLD-Italicize Bold-italicized indicates analytes detected above the reporting detection limit (RDL) in associated quality control samples

Yellow shading in cells indicates a concentration was measured above NMWQCC-3103 Standards

Footnotes:

1: The "less than" symbol "<" is a method to convey that the target analyte was not encountered above the RDL.

Table 2-2 Water Quality Test Results for Point Lookout/Hosta Aquifer Wells Continued

Dewatering Wells Water Quality Data Summary		Well ID	DW10	DW10	DW10	DW10	DW10	DW10	DW10	DW10
		Depth (fbtoc)	781	865	Water interface, 468	781	865	Water Interface, 463	781	865
		Sample Type	Sample	Sample	Sample	Sample	Sample	Sample	Sample	Sample
		Date Collected	12/10/2025	12/10/2025	9/10/2025	9/10/2025	9/9/2025	10/09/2023	10/09/2023	10/06/2023
Analyte	**Units**	**New Mexico WQCC-3103**								
TPH, EPA Method 8015D										
Diesel Range Organics [C10-C28]	**mg/L**		<1	<1				**0.518**	**0.112**	**0.395**
Gasoline Range Organics [C6 - C10]	**mg/L**		<0.05	<0.05						
Motor Oil Range Organics [C28-C40]	**mg/L**		<5	<5				**0.871**	**0.236**	**0.74**
VOC, EPA Method 8260B										
Benzene	**mg/L**	**0.005**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Ethylbenzene	**mg/L**	**0.7**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	**mg/L**	**1**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Xylenes, Total	**mg/L**	**0.62**	<0.0015	<0.0015	<0.0015	<0.0015	<0.002	<0.003	<0.003	<0.003
PAH, EPA Method 8270-SIM										
1-Methylnaphthalene	**mg/L**	**0.03**	<0.0002	<0.0002				<0.00025	<0.00025	<0.00025
2-Methylnaphthalene	**mg/L**	**0.03**	<0.0002	<0.0002				<0.00025	<0.00025	<0.00025
Acenaphthene	**mg/L**		<0.0002	<0.0002				<0.00005	<0.00005	<0.00005
Acenaphthylene	**mg/L**		<0.0002	<0.0002				<0.00005	<0.00005	<0.00005
Anthracene	**mg/L**		<0.0002	<0.0002				<0.00005	<0.00005	<0.00005
Benzo[a]anthracene	**mg/L**		<0.0002	<0.0002				<0.00005	<0.00005	<0.00005
Benzo[a]pyrene	**mg/L**	**0.0002**	<0.00007	<0.00007				<0.00005	<0.00005	<0.00005
Benzo[g,h,i]perylene	**mg/L**		<0.0002	<0.0002				<0.00005	<0.00005	<0.00005
Benzo[b]fluoranthene	**mg/L**		<0.0002	<0.0002				<0.00005	<0.00005	<0.00005
Chrysene	**mg/L**		<0.0002	<0.0002				<0.00025	<0.00025	<0.00025
Dibenz(a,h)anthracene	**mg/L**		<0.0002	<0.0002				<0.00005	<0.00005	<0.00005
Fluoranthene	**mg/L**		<0.0002	<0.0002				<0.00005	<0.00005	<0.00005
Fluorene	**mg/L**		<0.0002	<0.0002				<0.0001	<0.0001	<0.0001
Indeno[1,2,3-cd]pyrene	**mg/L**		<0.0002	<0.0002				<0.00005	<0.00005	<0.00005
Naphthalene	**mg/L**	**0.03**	<0.0002	<0.0002				<0.00025	<0.00025	<0.00025
Phenanthrene	**mg/L**		<0.0002	<0.0002				<0.00005	<0.00005	<0.00005
Pyrene	**mg/L**		<0.0002	<0.0002				<0.00005	<0.00005	<0.00005
Notes					Depth reported as water level, sample taken 15 feet below			Depth reported as water level, sample taken 15 feet below		

Acronyms: Reporting Detection Limit (RDL), Feet Below Top of Casing (fbtoc), Quality Control (QC) Total Petroleum Hydrocarbons (TPH)

BOLD Bold numbers in cells indicates a concentration was measured above RDL

BOLD-Italicize Bold-italicized indicates analytes detected above the reporting detection limit (RDL) in associated quality control samples

Yellow shading in cells indicates a concentration was measured above NMWQCC-3103 Standards

Footnotes:

1: The "less than" symbol "<" is a method to convey that the target analyte was not encountered above the RDL.

Table 2-2(a) Alluvial and Menefee WQCC Analyte Exceedances During the 2Q 2026 Sampling Event[1]

Analyte	WQCC Standard	Wells in Exceedance
Arsenic	0.01 mg/L	MW-2F, MW-6
Boron	0.75 mg/L	MW-4, WL-2
Chloride	250 mg/L	MW-1M, MW-4D, MW-6, WP-5
Iron	1 mg/L	MW-3, MW-6, MW-4H
Manganese	0.2 mg/L	MW-1M, MW-11A, MW-3, MW-6, MW-4H
Nitrogen, Nitrate	10 mg/L	MW-1M, WP-5
pH	6-9	MW-1J, MW-2F
Selenium	0.05 mg/L	MW-1M, MW-5, WP-5
Sulfate	600 mg/L	MW-1M, MW-4D, MW-4H, MW-11A, MW-4, MW-5, MW-6, WP-5, WL-2, WL-3, WL-4
TDS	1000 mg/L	MW-1M, MW-4D, MW-4H, MW-11A, MW-3, MW-4*, MW-5*, MW-6, WP-4, WP-5, WL-2, WL-3, WL-4
Uranium	0.03 mg/L	MW-1M, MW-11A, MW-4, MW-5, MW-6, WP-5

*There were not enough sample water available to sample for this analyte; however, historical data indicate that concentrations at these locations have consistently exceeded the applicable standard.

WQCC = Water Quality Control Commission

[1]EA, *2026b.*

Table 2-3 Post-Closure Disposition of Mine Dewatering, Site Water Use, and Observation Wells

Well No.	Closure Disposition (2)	State Plane Coordinates (NAD 83)		Aquifer in Screened Interval (3, 4, 5)
		N	E	
DW-1	PCMP, PMLU	1579422	2782632	PLH
DW-2	Plug	1579121	2782606	TH/D
DW-2a(1)	PMLU	1579202	2782709	PLH
DW-3	Plug	1579011	2782801	PLH
DW-4	Plug	1578965	2783021	PLH
DW-5	Plug	1580374	2785615	PLH
DW-6(1)	PMLU	1579214	2783407	PLH
DW-7	PMLU	1579461	2783387	PLH
DW-8(1)	PMLU	1579673	2783247	PLH
DW-9	Plug	1579721	2782987	TH
DW-10	Plug	1579621	2782740	PLH
DW-11	Plug	1578849	2783250	TH/D
DW-12	Plug	1579423	2783445	TH/D
DW-13	Plug	1579382	2782073	WWC
DW-14	PCMP, PMLU	1578850	2782188	WWC
DW-15	Plug	1578491	2782501	WWC
DW-16	Plug	1578335	2783004	WWC
DW-17	Plug	1578576	2783571	WWC
DW-18	Plug	1578908	2783788	WWC
DW-19	Plug	1580829	2786130	WWC
DW-20	Plug	1579947	2783511	D/ WWC
DW-21	Plug	1580168	2782974	D/ WWC
DW-22	Plug	1579902	2782468	WWC
SM-24-38(6)	Plug	1579132	2783007	WWC
SM-24-43(6)	Plug	1579029	2782948	WWC
SM-24-89(6)	Plug	1578964	2782908	WWC
SM-15-59(6)	Plug	1584519	2771754	--
SM-13-74(6)	Plug	1584233	2783313	--
SM-31-1-2D(6)	Plug	1584519	2786914	--
SM 24-23E(6)	Plug	1579711	2783249	D

(1) Wells DW-2a, DW-6, DW-7, and DW-8 will supply water from the PLH for site uses.

(2) PMLU= post-mining land use, PCMP=Post-Closure Monitoring Plan

(3) All well casings are steel: 8-5/8" ID in Pt Lookout/Hosta, 9-5/8" ID in Tres Hermanos and Dakota, 10-¾" ID with 7" liner in Westwater

(4) PLH=Pt Lookout/Hosta, TH= Tres Hermanos, D= Dakota, WWC = Westwater Canyon

(5) -- = Well details unknown

(6) Observation Wells

Table 2-4 As-Built Capacities of MWTU Ponds #2 and #3

Pond Number	Operating Pool Elevation (ft)		Water Surface Area at Pool Elevation (ft^2)	Volume (cy)	Volume (acre feet)
2	Max	7300	31,605	11,237	6.97
3	Max	7300	50,178	18,227	11.23

Note: Calculations based on as-built survey of Ponds #2 and #3 by CSTI surveyors in November 2019 after removal of contaminated sediments and soil.

Table 3-1(a) Radiological Survey Results for PMLU Habitable Structures

PMLU Habitable Structure (Figure 1-2B Map ID)	Interior Surface Alpha Activity (dpm/100 cm^2)		Exterior Surface Alpha Activity (dpm/100 cm2)	
	Average	Maximum*	Average	Maximum*
Hoist House (06)[1]	322	471	-	-
Rocky's Shop (06) [2]	538	1,100	246	600
Guard House (Security Building) (18)[1]	3	11	-	-
Service Building (Office and Warehouse) (07)[1]	294	1,189	-	-
Core Storage Building (20)[2]	113	6,273	166	455
Ion Exchange Plant (32) [2]	388	5,330	173	870
Electrical Building (11)[2]	112	278	120	200

*Regulatory Limit for Equipment Release, per *Radiation Protection Program Manual Mount Taylor Mine* (ERG, 2021): 5,000 dpm/100 cm^2

[1]Surveys conducted in July 2012 by Stan Fitch, CHP

[2]Surveys conducted in 2021 by ERG

Table 3-1(b) Status of Release Surveys for Other PMLU Structures

Other PMLU Structures	Release Survey Status	Applicable Release Survey Type		
		Surface Alpha Activity	Volumetric Sampling	Gamma Survey
Water Tank	TBD	X		
Septic Tank and Leach Field	TBD	X	X	
Dewatering Wells	TBD	X		
Storm Drain System	TBD		X	X
Capacitor Building	TBD			
South Storm Water Pond	Completed		X	X
MWTU Pond 2	Completed		X	X
MWTU Pond 3	Completed		X	X

TBD = To be determined

Table 3-1(c) Summary of Radiological Survey Results for Non-PMLU Buildings

Non-PMLU Building (Figure 1-2B Map ID)	Date Surveyed	Interior Surfaces Alpha Activity (dpm/100 cm^2)		Exterior Surfaces Alpha Activity (dpm/100 cm^2)	
		Average	Maximum*	Average	Maximum*
Carpenter Shop (14) [1]	7/14/2020	54	290	123	210
Water Treatment Building (09) [2]	7/15/2020	253	1,680	221	940
Chiller Pump Building (25)[3]	7/20/2020	1,200	7,570	347	1,860
York Chiller Building (17) [4]	7/16/2020	238	1,200	100	330
Fire Equipment Building (19) [5]	7/28/2020	193	690	199	340
Fuel Pump Building (13) [6]	7/29/2020	63	160	53	80
Glycol Heat Exchanger (05)[7]	7/29/2020	679	8,150	1,475	10,425
Flocculant Treatment Facility (34) [8]	1/18/2021	966	3,853	203	263
Trailer House (48) [9]	1/18/2021	96	290	129	210
Mine Water Treatment Pump House MCC (36) [10]	1/19/2021	69	170	363	1,716
Barium Chloride Treatment Facility (31)[11]	1/20/2021	84	180	257	1,270
Shaft Heating Building (04A)[12]	1/21/2021	408	1,290	100	237
Storage Building/Quonset Hut (04B) [13]	1/20/2021	227	620	221	360
Emergency Hoist House (04C) [1]	8/19/2021	256	732	87	134
Compressor Building (10) [15]	8/19/2021	175	526	106	250

* Regulatory Limit for Equipment Release, per *Radiation Protection Program Manual Mount Taylor Mine* (ERG, 2021): 5,000 dpm/100 cm^2

[1]ERG, *Radiological survey results to inform the disposition of legacy Carpenter Shop building*, August 10, 2021
[2]ERG, *Radiological survey results to inform the disposition of legacy Water Treatment building*, October 7, 2020
[3]ERG, *Radiological survey results to inform the disposition of legacy Chiller Pump building*, January 25, 2021
[4]ERG, *Radiological survey results to inform the disposition of legacy York Chiller building*, July 16, 2020
[5]ERG, *Radiological survey results to inform the disposition of legacy Fire Equipment building*, January 25, 2021
[6]ERG, *Radiological survey results to inform the disposition of legacy Fuel Pump building*, January 25, 2021
[7]ERG, *Radiological survey results to inform the disposition of legacy Glycol Heat Exchanger building*, January 28, 2021
[8]ERG, *Radiological survey results to inform the disposition of legacy Flocculant Building*, February 15, 2021
[9]ERG, *Radiological survey results to inform the disposition of legacy Trailer House*, February 3, 2021
[10]ERG, *Radiological survey results to inform the disposition of legacy Auxiliary Mine Water Treatment Pump House MCC*, February 3, 2021
[11]ERG, *Radiological survey results to inform the disposition of legacy Barium Chloride Building*, February 3, 2021
[12]ERG, *Radiological survey results to inform the disposition of legacy Shaft Heat building*, August 17, 2021
[13]ERG, *Radiological survey results to inform the disposition of legacy Storage Building/Quonset Hut building*, August 17, 2021
[14]ERG, *Radiological survey results to inform the disposition of legacy Emergency Hoist building*, December 31, 2021
[15]ERG, *Radiological survey results to inform the disposition of legacy Compressor building*, January 18, 2022

Table 4-1 Potential Contaminants on Site and in Use

DESCRIPTION	SAFETY DATA Sheets (SDS), Chemical Abstracts Service Registry Number (CAS #)		
Antifreeze/Coolant	107-21-1		
Coherex	64742-34-3	64742-11-6	
Diesel Fuel #2	68476-34-6	64742-80-9	64741-44-2
	91-20-3		
Engine Oil	68649-42-3		
	86290-81-5	71-43-2	108-88-3
Gasoline Fuel	110-54-3	110-82-7	108-87-2
	637-92-3	994-05-8	142-82-5
Grease	686-42-3	Mixture	
Holeplug 3/8	14464-46-1	15468-32-3	1302-78-9
Hydraulic Oil	Mixture		
Insulating Oil	64741-97-5	64742-53-6	
Lubricant - Gear	Mixture		
Transmission Fluid	Mixture		
Windshield Wiper Fluid	UN120 50/50 67-56-1		
Simple Green	7732-18-5		
Kerosene	8008-20-6		
DEF Fluid	57-13-6	7732-18-5	

Table 4-2 Mine Facility Disposition at Closeout

Number[*5]	Facility Name	Facility Type	Dimensions	Closeout Status Disposition as of September 2026		
				Structure and Removal Date	Foundation	Retain for PMLU
W	Phase I Water Wells[*1]	Steel casing and screen		To be plugged/ abandoned[*1*3]		√
W	Phase II Water Wells	Steel casing and screen		To be plugged/ abandoned[*3]		
W	Phase III Water Wells[*2]	Steel casing and screen		To be plugged/ abandoned[*2*3]		
01	Manway Shaft	Reinforced concrete liner	3340'	To be plugged		
01A	Manway Shaft Headframe	Structural steel	75' high	Removed (1/22)		
02	Production Shaft	Reinforced concrete liner	3300'	To be plugged		
02A	Production Shaft Headframe	Structural steel	180' high	Removed (12/22)		
03	Mine Ventilation Structure	Evase' (steel), frame and fan		Removed (1/22)		
04A	Shaft Heating Buildings	Steel frame and siding	50' X 30' X 16'	Removed (12/21)	Covered with soil (retain as part of shaft plug)	√
04B	Storage Building	Steel frame and siding	28' X 30' X 16'	Removed (12/21)	Retain for storage	√
04C	Emergency Hoist House	Steel frame and siding	Unknown	Removed (date unknown)	Retain for storage	√
05	Glycol Heat Exchanger	Steel frame and siding	50’ X 30’ X 16’	Removed (10/20)	Retain for storage	√
06	Hoist House & Rocky’s Shop	Steel frame and siding	162' X 120' X 40'			√
07	Service Building (Office and Warehouse)	Steel frame and siding	194' X 138' X 24'			√

Table 4-2 Mine Facility Disposition at Closeout Continued

Number*5	Facility Name	Facility Type	Dimensions	Closeout Status Disposition as of September 2026		
				Structure and Removal Date	Foundation	Retain for PMLU
08	Capacitor Building	Steel frame and siding	27’ X 24’ X 16’			√
09	Water Treatment & Boiler Building	Steel frame and siding	62' X 50' X 16'	Removed (9/20)	Rubblized and removed	
10	Compressor Building	Steel frame and siding	40'4" X 40'2" X 16'	Removed (12/21)	Rubblized and removed	
11	Electrical Building	Steel frame and siding	62' X 30' X 16'			√
12	Portable Building	Steel frame and siding	12' X 12' X 8'	Removed (11/20)	Rubblized and removed	
13	Fuel Pump House	Steel frame and siding	10' X 15' X 8'	Removed (4/21)	Rubblized and removed	
14	Carpenter Shop	Steel frame and siding	45' X 24' X 16'	Removed (10/20)	Rubblized and removed	
15	Fuel Storage Tanks	Steel	5’ X 30' X 6'	Removed (2/20)	Rubblized and removed	
16	Water Tank	Steel				√
17	York Chiller Building	Steel frame and siding	100' X 50' X 30'	Removed (4/21)	Rubblized, to be covered with soil	
18	Guard House (Security Building)	Steel frame and siding	63' X 20'6" X 16'			√
19	Fire Equipment Building (Fire House)	Steel frame and siding	27' X 24' X 16'	Removed (3/21)	Concrete foundation slab to be retained for parking & storage	√
20	Core Storage Building	Steel frame and siding	100' X 38' X 16'			√
21	Shaft Sump Cleanout Bin	Concrete	Unknown		To be rubblized and removed	
22	Fan Shop	Steel frame and siding	40' X 30' X 12'			√
23	Car (Maintenance) Shop	Steel frame and siding	150' X 100' X 30'	Removed (3/26)	Rubblized and removed	

Table 4-2 Mine Facility Disposition at Closeout Continued

Number*5	Facility Name	Facility Type	Dimension	Closeout Status Disposition as of September 2026		
				Structure and Removal Date	Foundation	Retain for PMLU
24	CMP Utility Tunnel	Concrete	10'X 8' X 700'	To be removed or flowable filled		
25	Chiller Pump Building	Steel frame and siding	40' X 24' X 16'	Removed (12/21)	Rubblized and covered with soil	
26	Cooling Tower	Steel frame and siding	75' X 25' X 25'	Removed (12/21)	Rubblized, to be removed	
27	Chlorine Building	Concrete block	23' X 50'6" X 20'	Removed (8/21)	Rubblized, to be covered with soil	
28	Conduits	11.5-inch diameter steel pipe	3100'-3200' deep	To be plugged/ abandoned		
29	Access/Utility Tunnels	Concrete				√
30	Ore Car Rails	Steel (with wood and concrete ties)	6750'	Removed (2021)		
31	Barium Chloride Treatment Facility	Steel frame and siding	40' X 25' X 16'	Removed (3/21)	Rubblized, to be covered with soil	
33	Ion Exchange Plant	Steel frame and siding	140' X 70' X 40'			√
34	Flocculant Treatment Facility	Steel frame and siding	30' X 23' X 12'	Removed (3/21)	Rubblized, to be removed	
35	Treated Water Discharge Pipeline	24-inch diameter steel pipe, concrete trust blocks	4.3 miles	Removed (2025)		
36	Mine Water Treatment Pump House	Steel frame and siding	20' x 12' x 8'	Removed (2021)	Removed	
37	Ore Loading Pad and Wash Bay	Steel, concrete	5,664 sf base, 400' X 4' X 1' walls	To be removed	To be removed	

Table 4-2 Mine Facility Disposition at Closeout Continued

Number[*5]	Facility Name	Facility Type	Dimensions	Closeout Status Disposition as of September 2026		
				Structure and Removal Date	Foundation	Retain for PMLU
38	Sanitary Treatment Plant	Concrete; steel	70' X 30' X 6'; 40' X 20' X 8'	To be removed		
39	Septic Tank and Leach Field	Various (concrete, plastic, gravel)				√
40	Chiller Building Electrical Room	Steel frame and siding	30' X 20' X 30'	Removed (4/21)	Rubblized, to be removed	
41	Storm Drain System	Steel and concrete culverts	various			√
42	Ore Pad	Earthen pad	6.8 acres	To be removed, then regraded		
43	Ore Pad Storm Water Retention Pond	Earthen basin	0.9 acre	To be removed, then regraded		
44	MWTU ponds 1,4,5,6,7,8	Earthen basins and hydraulic control structures	various	Hydraulic structures removed, ponds to be backfilled		
45A	MWTU Pond 2[*4]	Double HDPE liner system	0.73 acre	Hydraulic structures removed, pond to be backfilled		√
45B	MWTU Pond 3[*4]	Double HDPE liner system	0.93 acre	Hydraulic structures removed, pond to be backfilled		√
46	South Storm Water Pond	Earthen basin	2.67 acres			√
47	Plant and Refrigeration Water Pipelines	Pipeline	Unknown	To be removed or flowable filled		

Table 4-2 Mine Facility Disposition at Closeout Continued

Number*5	Facility Name	Facility Type	Dimensions	Closeout Status Disposition as of September 2026		
				Structure and Removal Date	Foundation	Retain for PMLU
48	Trailer Houses	Modular home	Unknown	Removed (date unknown)		

*1 Phase I wells to be used for post-mining land use or post-closure groundwater monitoring: DW-1, DW-2a, DW-6, DW-7, and DW-8
*2 Phase III well to be used for post-closure groundwater monitoring and backup site water use: DW-14
*3 All other Phase I, II, and III wells to be plugged and abandoned
*4 MWTU Ponds 2 and 3 maintained until Abatement Plan (Metric,2010) and Post-Closure Monitoring Plan (EA, 2026d) programs are complete
*5 "Number" matches "Numbers" on Figure 1-2b

Table 4-3 Earthwork Balance

EXCAVATION/CUT - CLEAN SOIL		
LOCATION	**Volume, LCY**	**Destination**
Borrow Area C (clayey soil, clayey sand, clay)	58,102	Expanded Disposal Cell - Clay Cover and Liner
Borrow Area C (sand, sandy clay, in-situ soil)	70,620	Expanded Disposal Cell – 28-inch In-Situ Soil Layer
MWTU Area	141,900	Establishing MWTU area final grades
Ore Pad and North Diversion Channel	12,600	Establishing Ore Pad area final grades
Service and Support Area including chiller bench and north parking lot	56,000	Fill in Service and Support area
Final Grading Around the Car Shop (Cut existing grades by 2 to 3 feet)	9,300	Fill for north side of Disposal Cell
Disposal Cell Expansion Pit	44,000	Waste Pile/ Disposal Cell - loam cover
Total	**392,252**	
FILL - CLEAN SOIL		
LOCATION	**Volume, LCY**	**Sources**
MWTU Area	141,900	Rough grading for final grades
Ore Pad and North Diversion channel	12,600	Rough grading for final grades
Service and Support Area	52,700	Chiller Bench and North Parking lot
Fill For Shaft Plugs and Other Miscellaneous Structures	3,400	Chiller Bench and North Parking lot
Fill Needed for Disposal Cell Berms, Liners, and Cover	121,700	Borrow Area C
Total	**332,300**	
FINAL GRADING		
LOCATION	**Area, SY**	
Borrow area C north of Marquez Arroyo	104,850	
Ore Pad	58,225	
Ore Pad Runoff Retention Pond	9,640	
Borrow Area A	38,270	
Borrow Area B	29,800	
MWTU Area	198,416	
County Road 334	35,150	
Mine Access Road	0	
Old Ore Load-out Pit	17,850	
Shaft Areas	18,375	
Service and Support Area (less building areas)	46,082	
Chiller Bench	20,116	
Compressor Bench	21,958	
Car (Maintenance) Shop Area	30,693	
Waste Rock Pile / Disposal Pit	93,412	
Substation	4,400	
Total	**797,986**	

Table 4-3 Earthwork Balance Continued

Notes:

(1) Volumes associated with the former lagoon are included per NMED request. It is not likely that the material will be excavated and transferred to the disposal cell

Table 4-4 Summary of Materials Scheduled for the Disposal Cell

Excavation – Contaminated Soil, Waste Rock, and Limestone	
Location	**Volumes (yd^3)**
Surface and Subsurface Soil Radiological Characterization (August 14, 2023)[1] w/ Addendum (April 1, 2025)[2]	
Windblown Area	2,135
Southern Mine Compound Area	60,100
Ore Pad Soils	70,911
Buried Ore Pad Runoff Retention Pond, Filled with Waste Rock	35,556
Treatment Pond Radiologic Characterization (June 4, 2024)[3]	
Leftover Soils in Ponds 1, 4, 5, 6, and 7	3,000
Two Pond Sediment Pile Removal from Adjacent to Borrow Area A (December 19, 2024)[4]	
Waste Pond Sediment Piles Near Borrow Source Area A	28
North Controlled Area Soil Radiologic Characterization (June 5, 2025)[5]	
North Contaminated Soil[1] with Non-Ore Pad Retention Pond	53,000
Final Status Survey, Impacted Soil/Limestone Material Removal Area (October 20, 2025)[6]	
Treated Water Discharge Pipeline (TWDP) Corridor	440
South Controlled Area Soil Radiologic Characterization (February 2026)[7]	
South Controlled Area Contaminated Soil, including County Road 334	26,560
Other Estimated Areas	
Limestone at Point of Discharge in San Lucas Canyon	18,000
Disposal Cell Expansion Pit Area	9,300
SSWP Area	3,000
Diesel-Contaminated Soil[8]	7,400
Continental Divide Coop Substation	1,850
Sediment and Waste Rock in the Former Lagoon	10,680
Total	**301,959**
Removal - Buildings	
Location	**Volumes (yd^3)**
Chiller Pump Building	319
Chlorine Building	112
Shaft Heating Building	335
Glycol Heat Exchanger	328
Cooling Tower	1,597
Car (Maintenance) Shop	10,000
Water Treatment and Boiler Building	344

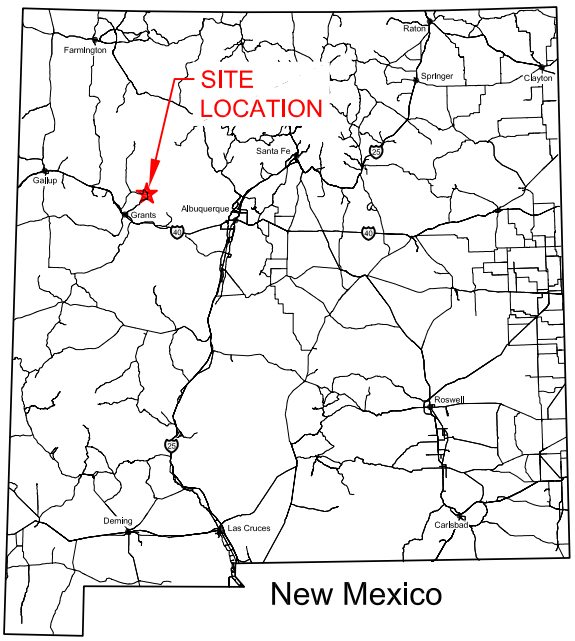
Table 4-4 Summary of Materials Scheduled for the Disposal Cell Continued

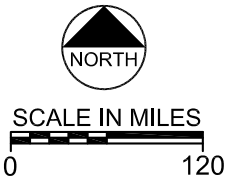
Flocculant Treatment Facility	77
Barium Chloride Treatment Facility	111
Fuel Pump House	34
Mine Water Treatment Pump House	28
Mine Ventilation Structure	702
24-Foot Shaft Headframe	8,633
Total	**32,862**
Removal – Other Debris	
Location	**Volumes (yd^3)**
Mine Car Rails	22
Mine Carts	32
Ore Load Pad and Wash Bay	718
Sanitary Treatment Plant	493
MWTU Pipes	109
BACL Tanks	39
South Laydown Yard Debris	16,311
South Laydown Yard Soil	5,392
9 Truck Trailers Filled with Waste	1,350
Car Shop Yard	4,762
Treated Water Discharge Pipe	600
MWTU Pond 2	1,178
MWTU Pond 3	1,500
MWTU Ponds (1,4,5,6,7, 8)	4,272
Total	**36,778**
Total Volumes (yd^3)	
Remaining Material Volume Scheduled for the Disposal Cell	**371,599**
20% Contingency	**74,320**
Remaining Material Volume Scheduled for the Disposal Cell Plus 20% Contingency	**445, 919**
Existing and Proposed Disposal Cell Capacity at 25-Acres	**1,093,840**
Existing Disposal Cell Volume Used	**99,300**
Excess Capacity in Disposal Cell at 25-acres	**548,621**

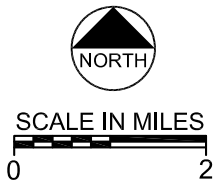
Footnotes:
[1] AVM Environmental Services, Inc., *Surface and Subsurface Soil Radiologic Characterization, Windblown Area, Ore Pad Area, and Mine Compound,* August 14, 2023.
[2] AVM Environmental Services, Inc., *Surface and Subsurface Soil Radiologic Characterization, Windblown Area, Ore Pad Area, and Mine Compound Addendum,* April 1, 2025.
[3] AVM Environmental Services, Inc., *Treatment Pond Radiologic Characterization,* June 4, 2024.

Table 4-4 Summary of Materials Scheduled for the Disposal Cell Continued

[4] AVM Environmental Services Inc., *Gamma Scan Survey Resus Summary, Two pond sediment pile removal from adjacent to Borrow Area A,* December 19, 2024.
[5] AVM Environmental Services Inc., *North Controlled Area Soil Radiologic Characterization,* June 5, 2025.
[6] AVM Environmental Services Inc., *Final Status Survey, Impacted Soil/Limestone Material Removal Area,* October 20, 2025.
[7] AVM Environmental Services Inc., *South Controlled Area Soil Radiologic Characterization*, February 2026.
[8] Ensero Solutions, Inc., *Mt. Taylor Mine Diesel Release Corrective Action Plan*, November 2021.







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Project No. 111360

September 2026

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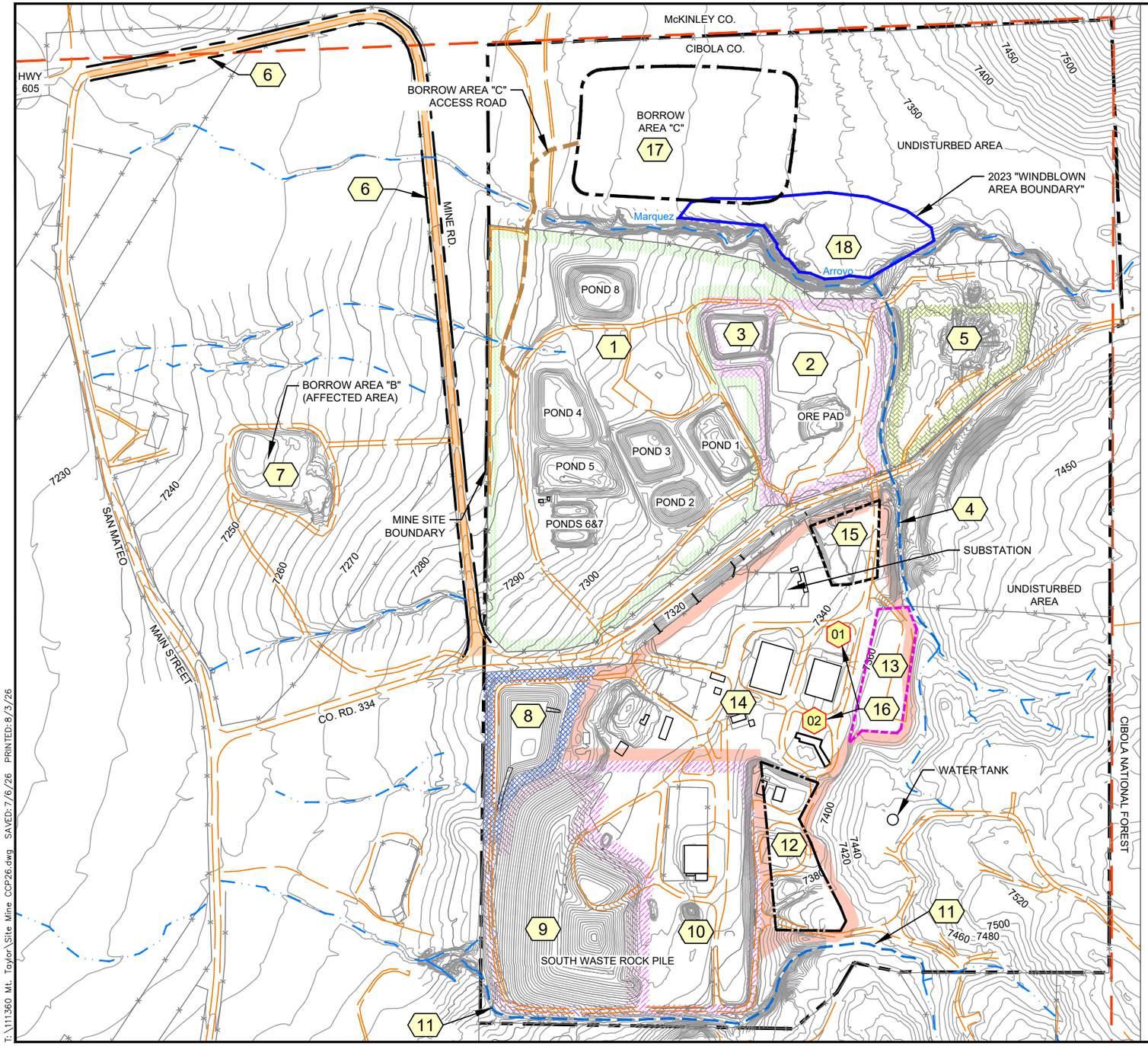
FIGURE 1-1
SITE LOCATION MAP
MT. TAYLOR MINE



MINE UNITS AND OTHER AREAS:

1	MINE WATER TREATMENT AREA	10	DISPOSAL CELL EXPANSION AREA
2	ORE PAD	11	SOUTH DIVERSION CHANNEL
3	ORE PAD RUNOFF RETENTION POND	12	COMPRESSOR BENCH AREA
4	NORTH DIVERSION CHANNEL	13	CHILLER BENCH AREA
5	BORROW AREA "A"	14	SERVICE AND SUPPORT AREA
6	MINE ACCESS ROAD	15	OLD ORE LOADING AREA
7	BORROW AREA "B"	01	16 MINE SHAFTS
8	SOUTH STORM WATER POND	17	BORROW AREA "C"
9	EXISTING WASTE ROCK PILE/ DISPOSAL AREA	18	WINDBLOWN AREA

LEGEND:

- MINE SITE AREA
- SECTION 24 BOUNDARY
- ROADWAY
- BORROW AREA "C" ACCESS ROAD
- FENCE
- EXISTING TOPOGRAPHY
- DRAINAGE PATHWAYS
- MINE BUILDINGS (PRIOR TO REMOVAL ACTIVITIES)

GENERAL NOTES:

G.1 THE MINE PERMIT AREA INCLUDES THE RIGHT OF WAY ALONG THE TREATED WATER DISCHARGE PIPELINE AND A 50' WIDE CORRIDOR FOR AN ACCESS ROAD (SEE FIGURE 1-3).

G.2 AFFECTED AREAS INCLUDE BUT ARE NOT LIMITED TO BORROW AREA "B." EVALUATION OF OTHER POSSIBLE AFFECTED AREAS IS ONGOING.

G.3 THIS DRAWING SHOWS THE SITE CONDITIONS AS OF JULY 2025. SEE FIGURE 1-2B AND TABLE 4.2 FOR DETAILED FACILITY DISPOSITION INFORMATION.

G.4 TOPOGRAPHY BASED ON A 2012 AERIAL SURVEY BY THOMAS R. MANN AND ASSOCIATES AND 2021 SURVEYS BY SOUTHWEST SURVEYING SOLUTIONS (S3).

NORTH

SCALE IN FEET
0 500'

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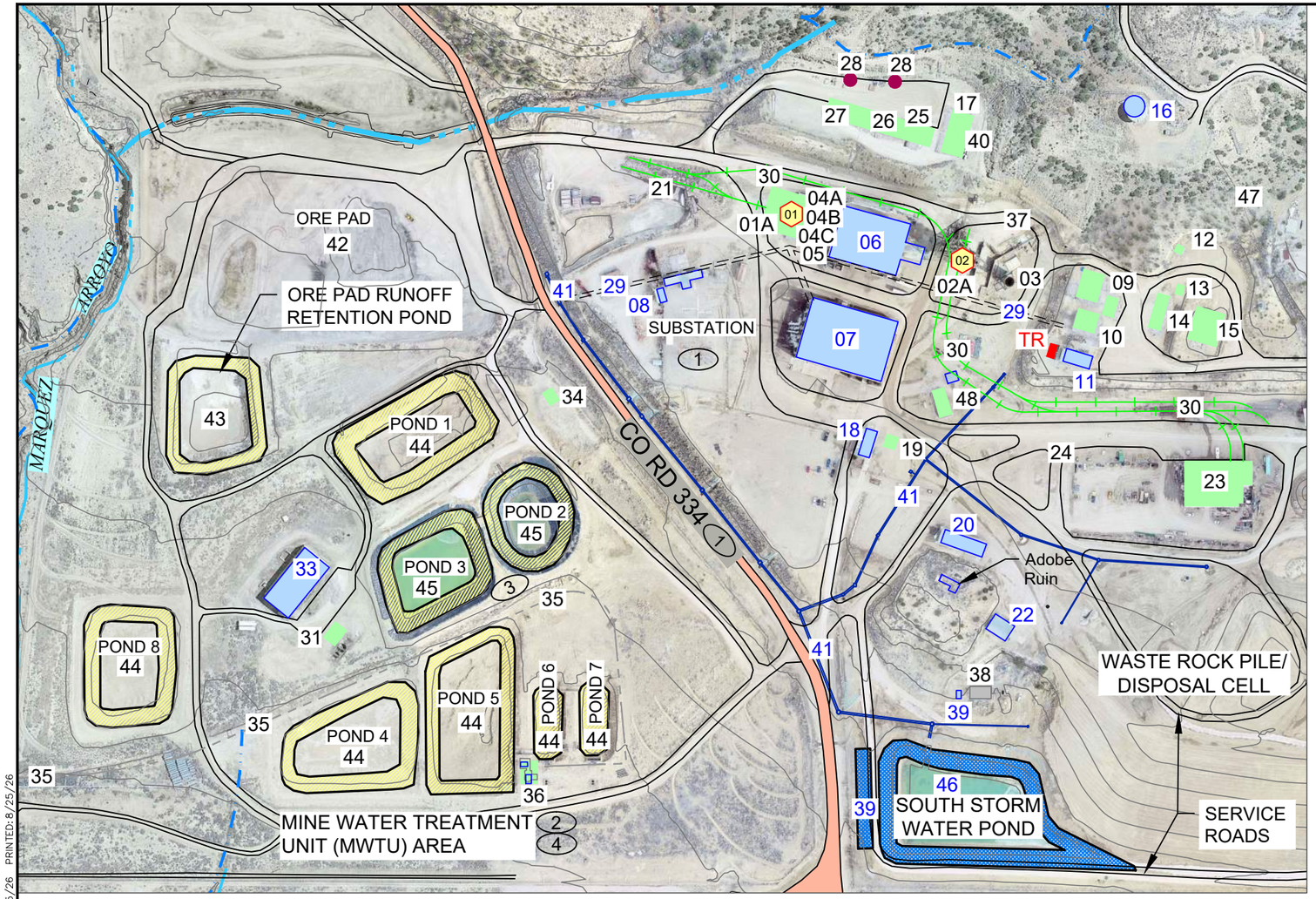
FIGURE 1-2
MINE SITE AND AFFECTED AREAS
MT. TAYLOR MINE



NOTES:

1. COUNTY ROAD 334, POWER POLES AND TRANSMISSION LINES, AND SUBSTATION ARE FACILITIES OWNED BY OTHERS AND ARE NOT WITHIN PERMIT. OTHER THAN CLEANUP OF CONTAMINATED SOILS, THESE FACILITIES ARE NOT SUBJECT TO CLOSEOUT.
2. DEWATERING AND PROCESS WATER PIPELINES (PARTLY SHOWN) TO BE REMOVED AND PROPERLY DISPOSED OF IF NOT NEEDED FOR PMLU WATER MANAGEMENT.
3. MWTU PONDS 2 AND 3 TO REMAIN UNTIL ABATEMENT ACTIVITIES ARE COMPLETED. ALL OTHER MWTU PONDS AND THE ORE PAD POND TO BE REGRADED.
4. CONCRETE FOUNDATIONS: EXCEPT WHERE OTHERWISE NOTED, REMOVAL OF THE STRUCTURES INCLUDES RUBBLIZATION OF THE CONCRETE SLAB AND FOUNDATIONS. ANY CONTAMINATED CONCRETE SHALL BE REMOVED AND PLACED IN THE DISPOSAL CELL. CLEAN RUBBLIZED CONCRETE CAN EITHER BE REMOVED AND PLACED IN THE DISPOSAL CELL, OR COVERED BY 24" OF CLEAN SOIL AT THE DISCRETION OF RGR.

LEGEND

- PONDS TO RETAIN
- PONDS TO BE REGRADED
- FACILITIES REMOVED AS OF 9-01-26
- FACILITIES TO BE REMOVED
- FACILITIES RETAINED FOR PMLU
- TR — ELECTRICAL TRANSFORMERS TO BE RETAINED
- STORM DRAINAGE SYSTEM
- 01 — MINE SHAFTS
- CONDUITS

NORTH

SCALE IN FEET
0 300'

FACILITIES AND FOUNDATIONS REMOVAL PENDING (4)

NO.	FACILITY NAME
21	Shaft Sump Cleanout Bin
37	Ore Loading Pad and Wash Bay
38	Sanitary Treatment Plant

SHAFTS AND CONDUITS

NO.	FACILITY NAME	DISPOSITION
01	Manway Shaft	To Be Plugged
02	Production Shaft	
28	Conduits (2)	

PONDS

NO.	FACILITY NAME	DISPOSITION
43	Ore Pad Storm Water Retention Pond	To Be Regraded
44	MWTU Ponds 1,4,5,6,7,8	
45	Ponds 2 & 3	PMCP*
46	South Storm Water Pond	PMLU**

*POST-MINING LAND USE
**POST-CLOSURE MONITORING PLAN

OTHER

NO.	FACILITY NAME	DISPOSITION
47	Plant and Refrigeration Water Pipelines (Not Shown) (2)	To Be Removed or Flowable Filled
24	CMP Utility Tunnel	
42	Ore Pad	To Be Removed
03	Mine Ventilation Structure	Above-Grade Structure Removed (No Foundation) Vent Raise to be Plugged

WELLS

Wells are Not Shown on This Figure. See Figures 1-4, 1-6, and 1-7 for Well Locations and Dispositions.

FACILITIES REMOVED, FOUNDATION REMOVAL PENDING (4)

NO.	FACILITY NAME
26	Cooling Towers
27	Chlorine Building
31	Barium Chloride Treatment Facility
40	Chiller Building Electrical Room

FACILITIES TO BE RETAINED FOR PMLU

NO.	FACILITY NAME
06	Hoist House & Rocky's Shop
07	Service Building (Office and Warehouse)
08	Capacitor Building
11	Electrical Building
16	Water Tank
18	Guard House (Security Building)
20	Core Storage Building
22	Fan Shop
29	Access/Utility Tunnel
33	Ion Exchange Plant
39	Septic Tank and Leach Field
W	DW-1, DW-2a, DW-6, DW-7, DW-8, DW-14, and B-516-POD4
46	South Storm Water Pond
41	Storm Drain System
45	MWTU Pond 2 (3)
45	MWTU Pond 3 (3)

FACILITIES REMOVED, ONLY FOUNDATIONS TO BE RETAINED

NO.	FACILITY NAME
01A	Manway Shaft Headframe
02A	Production Shaft Headframe
04A	Shaft Heating Building
04B	Storage Building
04C	Emergency Hoist House
05	Glycol Heat Exchanger
19	Fire Equipment Building

FACILITIES AND FOUNDATIONS REMOVED

NO.	FACILITY NAME (4)
09	Water Treatment and Boiler Building
10	Compressor Building
12	Portable Building
13	Fuel Pump House
14	Carpenter Shop
15	Fuel Storage Tanks
17	York Chiller Building
23	Car (Maintenance) Shop
25	Chiller Pump Building
30	Ore Car Rails
34	Flocculent Treatment Facility
35	Treated Water Discharge Pipeline
36	Mine Water Treatment Pump House
48	Trailer House (No Foundation)

T:\111360 Mt. Taylor\Mine at Closeout.dwg SAVED:8/25/26 PRINTED:8/25/26

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FIGURE 1-2B
MINE FACILITIES DISPOSITION AT CLOSEOUT
MT. TAYLOR MINE

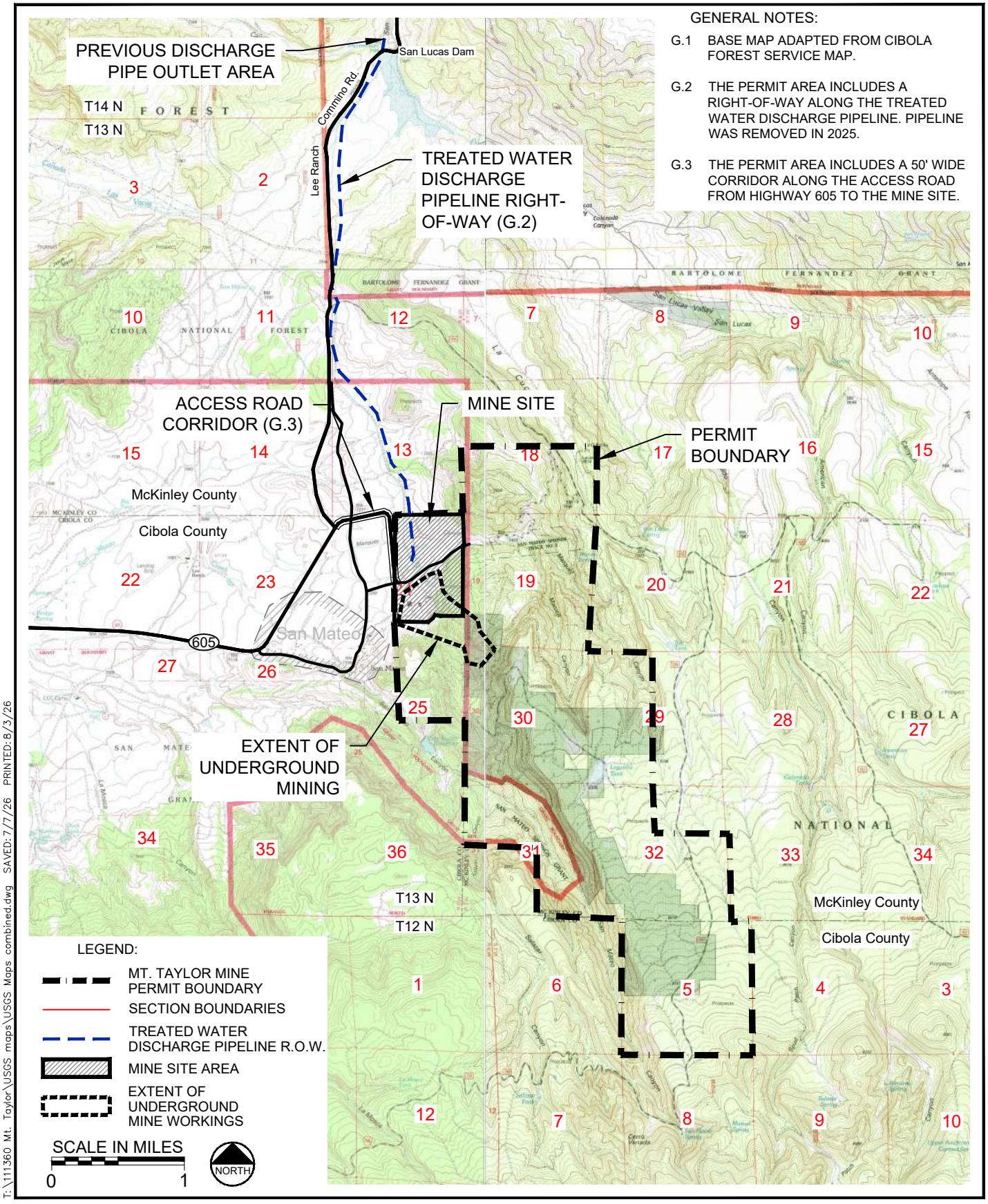

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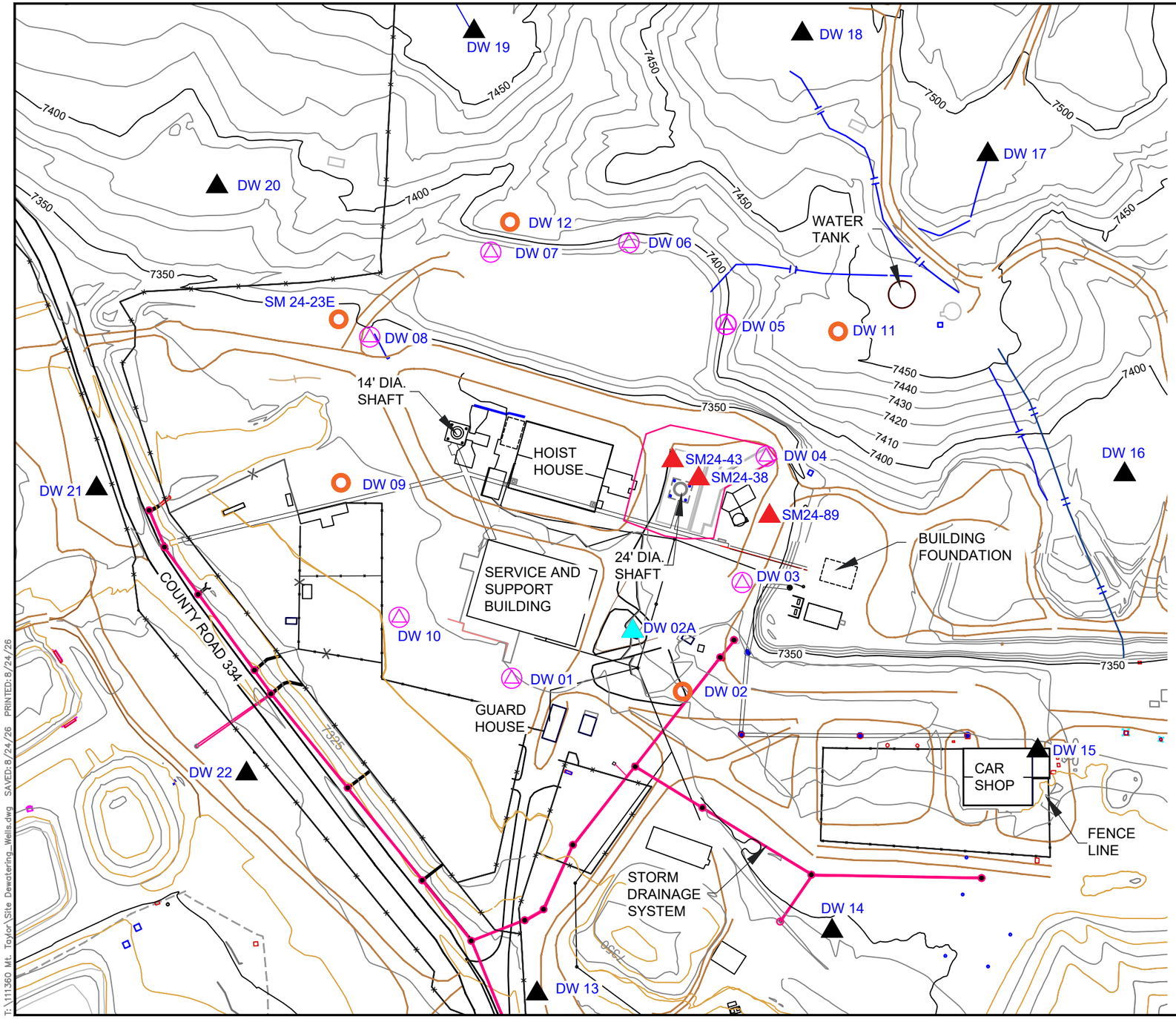
FIGURE 1-3
MINE PERMIT AREA
MT. TAYLOR MINE



Phase and Geologic Formation of Screen	Well No	Well Coordinates (NM West NAD 83) Northing	Easting	Top of Casing Elevation (Feet AMSL)	Depth From Surface (*Feet*)	Screen Interval (*Feet*)	Closure Disposition (See Notes)
▲ (*Domestic Water Supply*)	DW-2A	1579202	2782709	7347.0	925	750-900	PMLU [3]
1 △ Point Lookout	DW-1	1579419	2782626	7342.0	1118	740-890	PCMP [2], PMLU [3]
	DW-4	1578965	2783021	7349.0	1130	750-900	Abandon[1]
	DW-5	1579038	2783256	7403.4	1172	852-1002	
	DW-6	1579210	2783402	7384.7	1190	845-995	PMLU [3]
	DW-7	1579455	2783384	7376.3	1125	825-995	
	DW-8	1579672	2783240	7342.7	1044	791-941	
	DW-3	1579008	2782795	7350.1	1150	737-891	Abandon[1]
	DW-10	1579619	2782734	7339.7	1065	738-888	
2 ○ Tres Hermanos/ Dakota	SM 24-23E[5]	1579711	2783249	7342.0	933	833-933	Abandon[1]
	DW-2	1579121	2782606	7337.6	2920	2550-2920	
	DW-9	1579723	2782973	7337.6	2845	2538-2840	
	DW-11	1578845	2783245	7445.0	3028	2819-3028	
	DW-12	1579421	2783439	7418.9	2940	2791-2940	
3 ▲ Westwater	DW-13	1579378	2782065	7322.3	3185	3045-3185	Abandon[1]
	DW-15	1578491	2782501	7393.5	3205	3056-3196	
	DW-16	1578334	2782995	7393.6	3275	3105-3245	
	DW-17	1578570	2783563	7496.8	3342	3209-3342	
	DW-18	1578902	2783778	7497.7	3314	3212-3314	
	DW-19	1579493	2783781	7453.2	3274	3166-3274	
	DW-20	1579945	2783505	7386.1	3223	2938-3223	
	DW-21	1580165	2782966	7323.4	3184	2873-3173	
	DW-22	1579900	2782460	7305.4	3195	3019-3159	
	DW-14	1578847	2782182	7342.3	3205	3048-3188	PCMP [2], PMLU [3]
Other [5] ▲ Westwater	SM24-38	1579116	2783008	7390.0	3535	3107-3247	Abandon[1]
	SM24-43	1579029	2782948	7347.0	3535	3064-3204	
	SM24-89	1578964	2782908	7348.0	3121		
Off-Site Wells [4,5]	SM15-59	1584519	2771754	7738.0			Abandon[1]
	SM13-74	1584233	2783313	7480.0			
	SM31-1-2D	1584519	2786914	7630.0			

NOTES

1. WELLS PLUGGED AND ABANDONED AS PART OF CLOSURE ACTIVITIES.
2. WELLS RETAINED FOR POST-CLOSURE MONITORING PLAN (PCMP) THEN PLUGGED AND ABANDONED WHEN PCMP IS COMPLETE.
3. WELLS RETAINED FOR POST-MINING LAND USE (PMLU).
4. OFF-SITE WELLS ARE SHOWN ON FIGURE 1-7.
5. THE "SM" WELLS WERE OBSERVATION WELLS NOT DEWATERING WELLS.

NORTH

SCALE IN FEET
0 200'

GENERAL NOTE

G1. DEPTHS TO BOTTOM OF WELLS AND TO GEOLOGICAL FORMATIONS ARE APPROXIMATE.

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FIGURE 1-4
DEWATERING WELL LOCATIONS AND DESCRIPTIONS
MT. TAYLOR MINE

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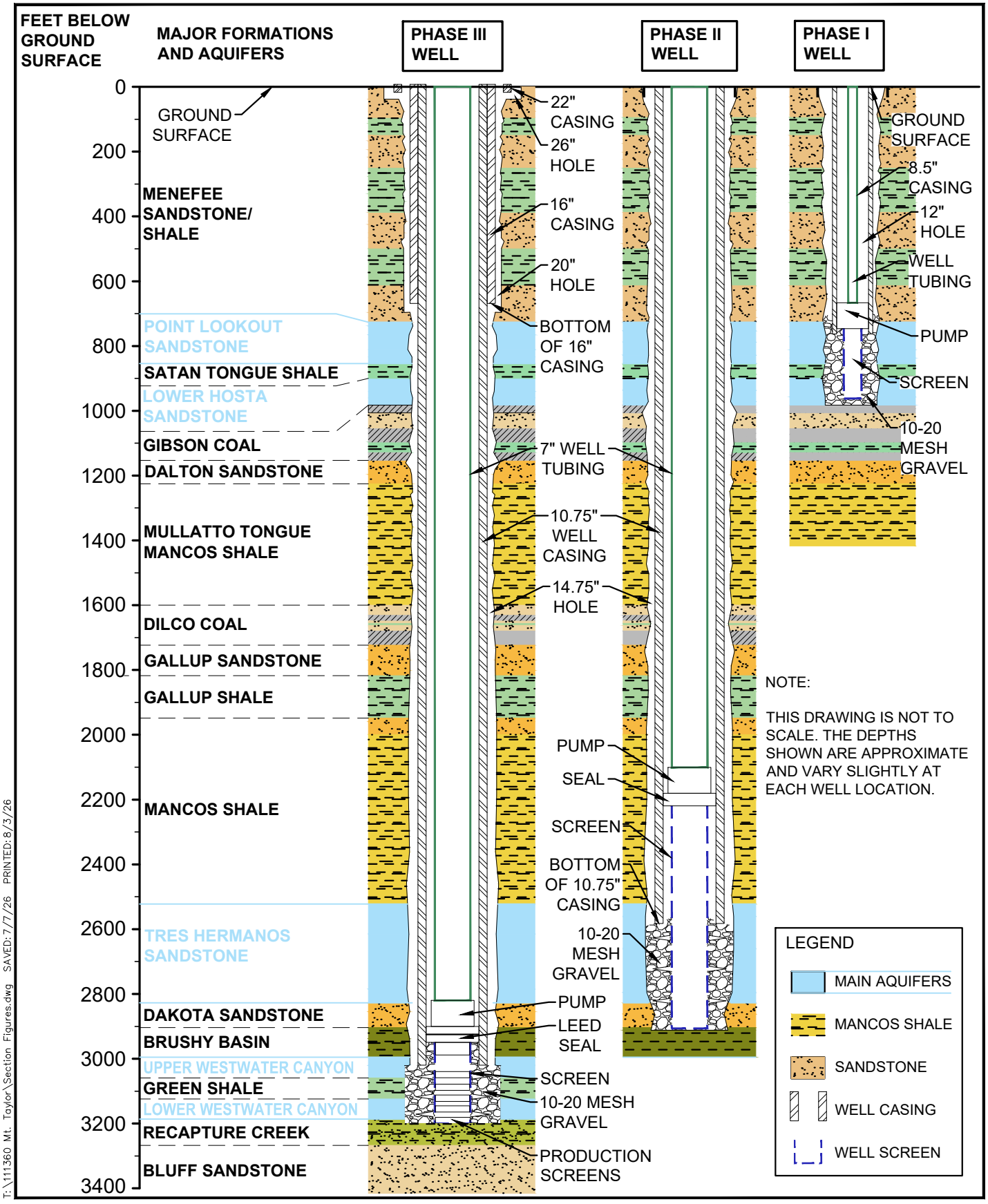

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FIGURE 1-5
TYPICAL SECTION OF DEWATERING WELLS
MT. TAYLOR MINE

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LEGEND

- MINE SITE AREA
- PUBLIC GRAVEL ROADS
- MINE GRAVEL ROADS
- MINE BUILDINGS
- FENCE LINES
- 10' CONTOURS
- SHALLOW AQUIFER MONITORING WELLS
- 2026 SIP WELLS
- 2026 SIP BORINGS

SCALE IN FEET
0 400'
NORTH

GENERAL NOTES:

G.1 TOPOGRAPHY BASED ON A 2012 AERIAL SURVEY BY THOMAS R. MANN AND ASSOCIATES AND 2021 SURVEYS BY SOUTHWEST SURVEYING SOLUTIONS (S3).

G.2 CONTOUR LINES REPRESENT 10 FOOT VERTICAL INCREMENTS.

G.3 WELL LOCATIONS SURVEYED BY S3 SURVEYORS AND BY RGR RECORDS. SIP WELLS ARE IN THE PROCESS OF FINAL SURVEY.

G.4 SIP WELLS HAVE BEEN INSTALLED, DEVELOPED, TESTED, AND SAMPLED. RGR WILL EVALUATE SUITABILITY FOR MONITORING.

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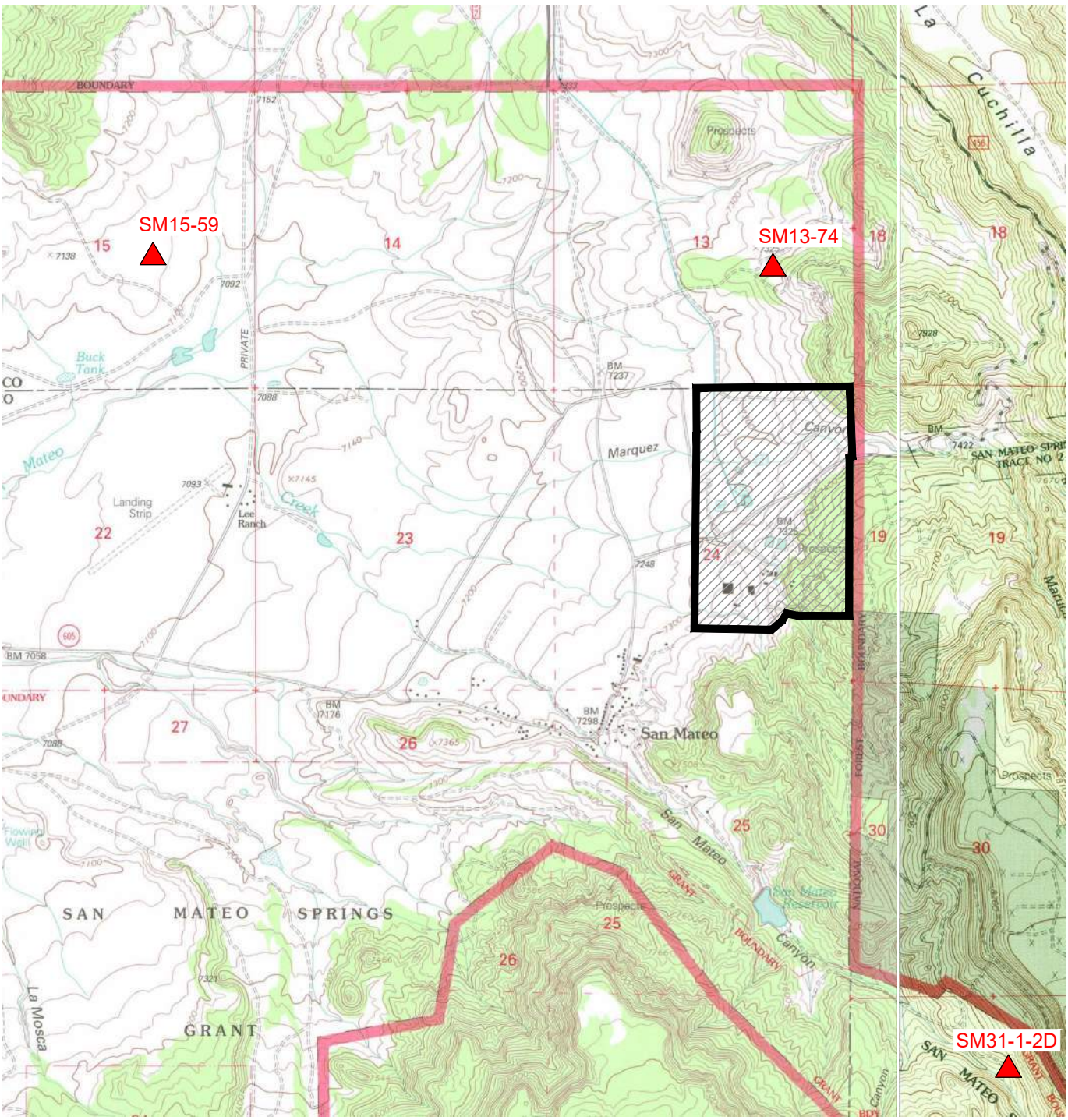
FIGURE 1-6
MINE SITE ALLUVIAL AND MENEFEE MONITORING AND RECOVERY WELLS
MT. TAYLOR MINE



LEGEND:

- MT. TAYLOR MINE SITE AREA
- SECTION BOUNDARIES
- WELL LOCATIONS

SCALE IN MILES

0 1/2

NORTH

GENERAL NOTES:

G.1 BASE MAP ADAPTED FROM USGS QUAD MAP.

G.2 ALL OFF-SITE WELLS TO BE ABANDONED.

Well No	Well Coordinates (NM West NAD 83)		Collar Elevation (Feet AMSL)
	Northing	Easting	
SM15-59	1584519	2771754	7738
SM13-74	1584233	2783313	7480
SM31-1-2D	1584519	2786914	7630

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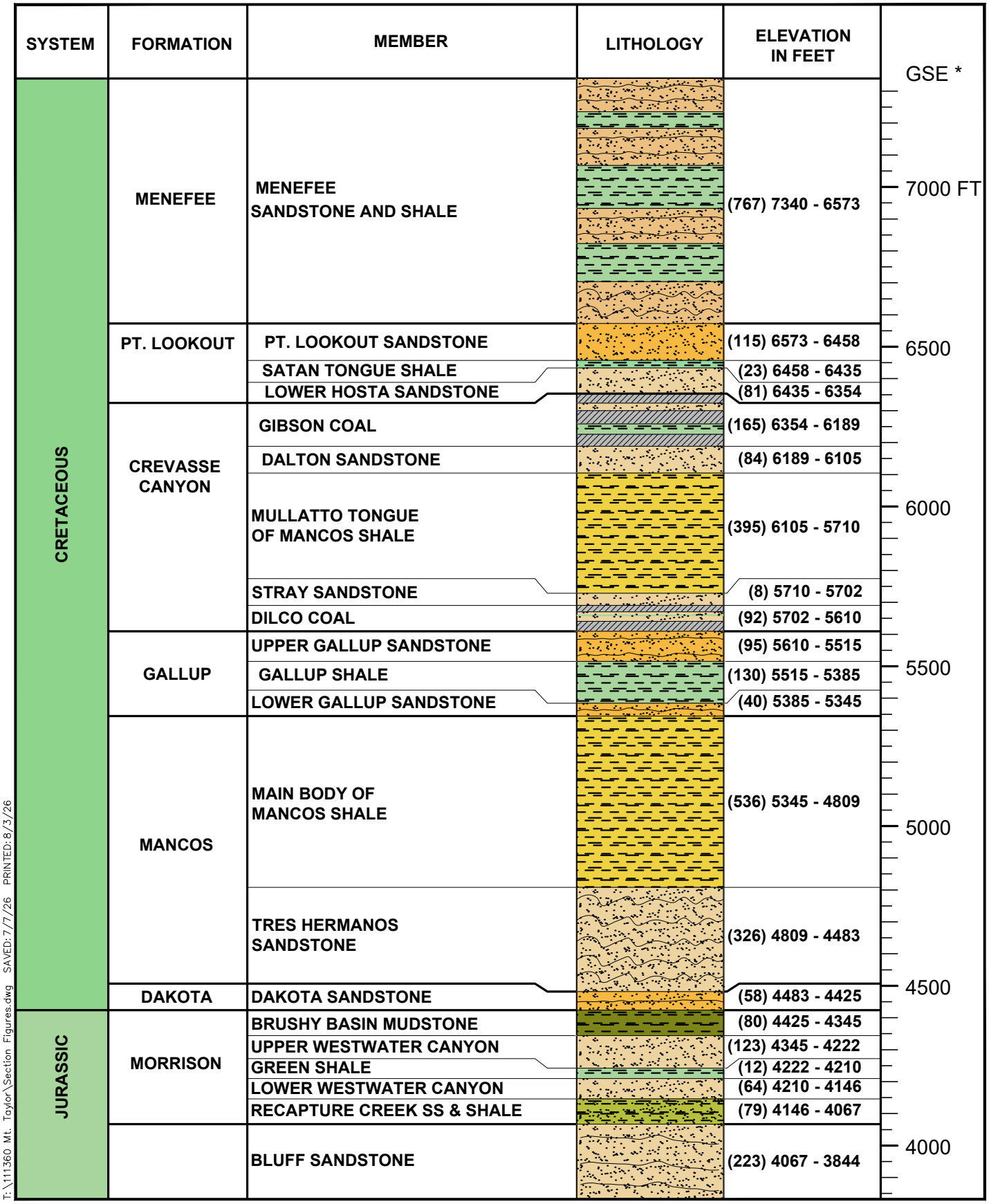
FIGURE 1-7
OBSERVATION WELLS (OFF-SITE)
MT. TAYLOR MINE



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NOTES:

1. GSE* = GROUND SURFACE ELEVATION. THE GSE FOR THE MINE SITE VARIES FROM 7280' TO 7400'.
2. (#) INDICATES THICKNESS OF GEOLOGIC UNIT IN FEET AT THE MINE SHAFT.
3. THE ELEVATIONS SHOWN ON THIS FIGURE ARE IN FEET ABOVE MEAN SEA LEVEL.

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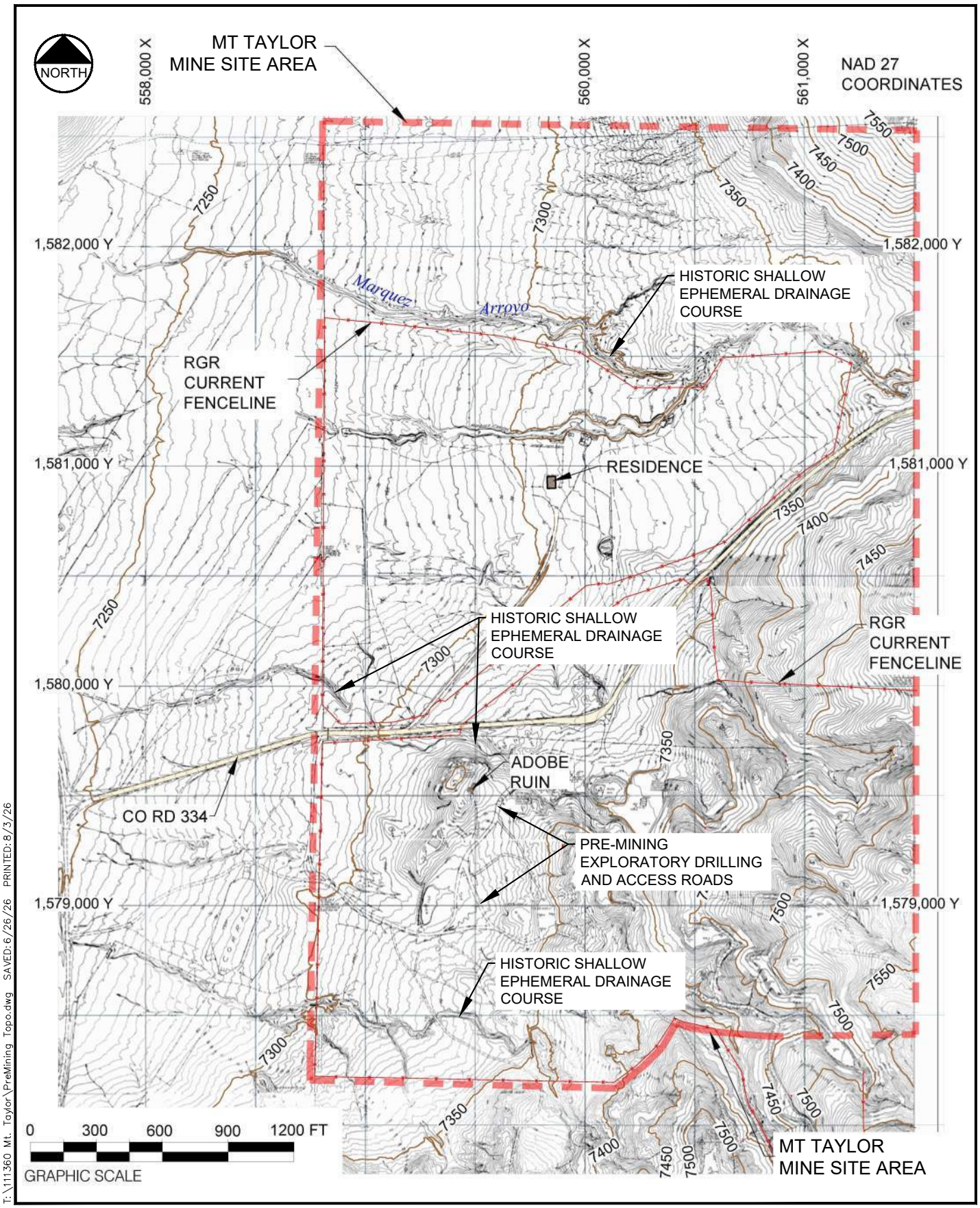
FIGURE 2-1
GEOLOGIC SECTION
MT. TAYLOR MINE



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NOTE:
THIS MAP IS BASED ON THE WILLIAM MATOTAN & ASSOCIATES ENGINEERS SURVEY THAT WAS BASED ON AERIAL PHOTOGRAPHY DATED 9-6-1974.

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FIGURE 2-2
PRE-MINING TOPOGRAPHY
MT. TAYLOR MINE

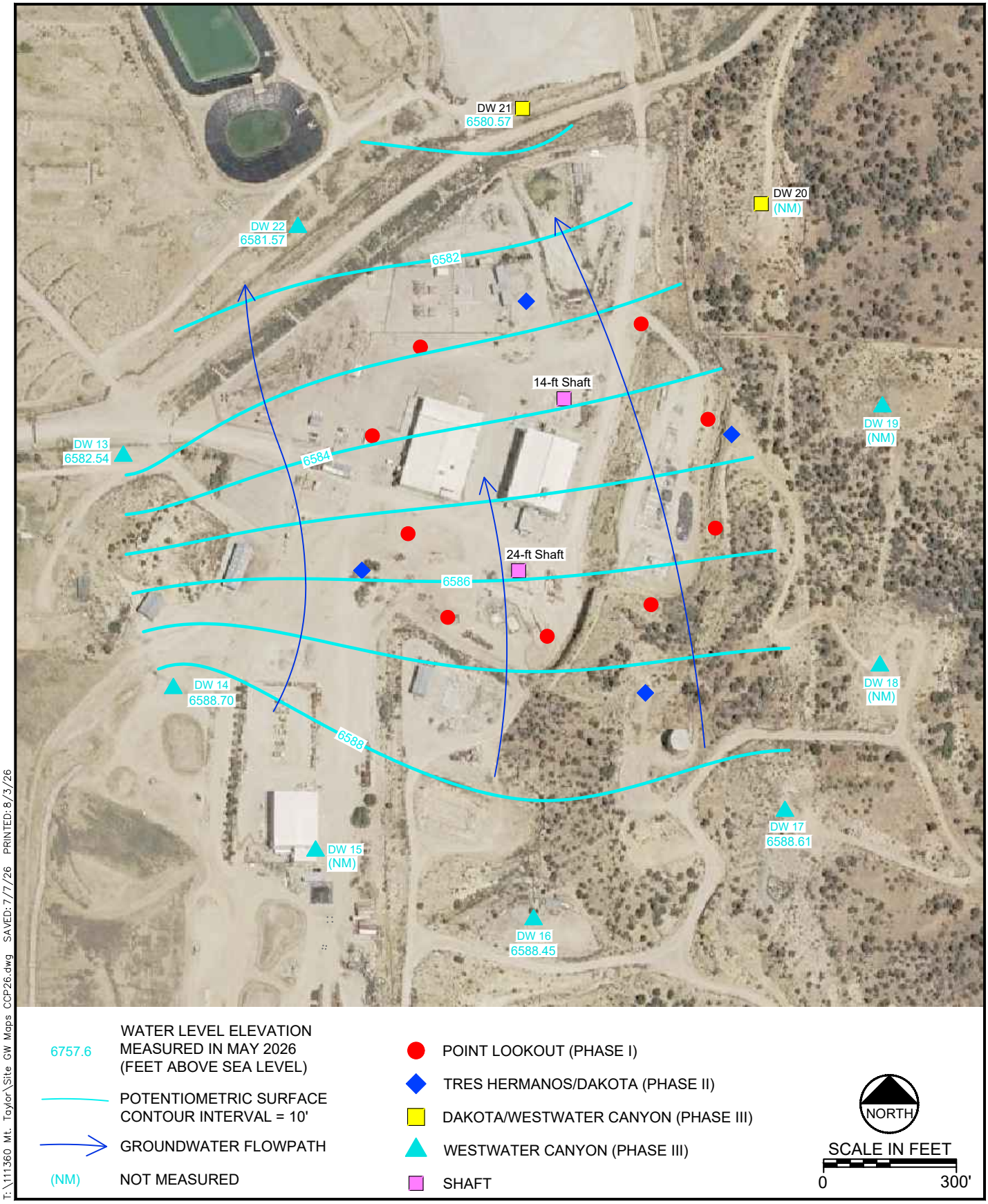

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FIGURE 2-3
WESTWATER CANYON AQUIFER POTENTIOMETRIC SURFACE MAP
WESTWATER CANYON AQUIFER
MT. TAYLOR MINE

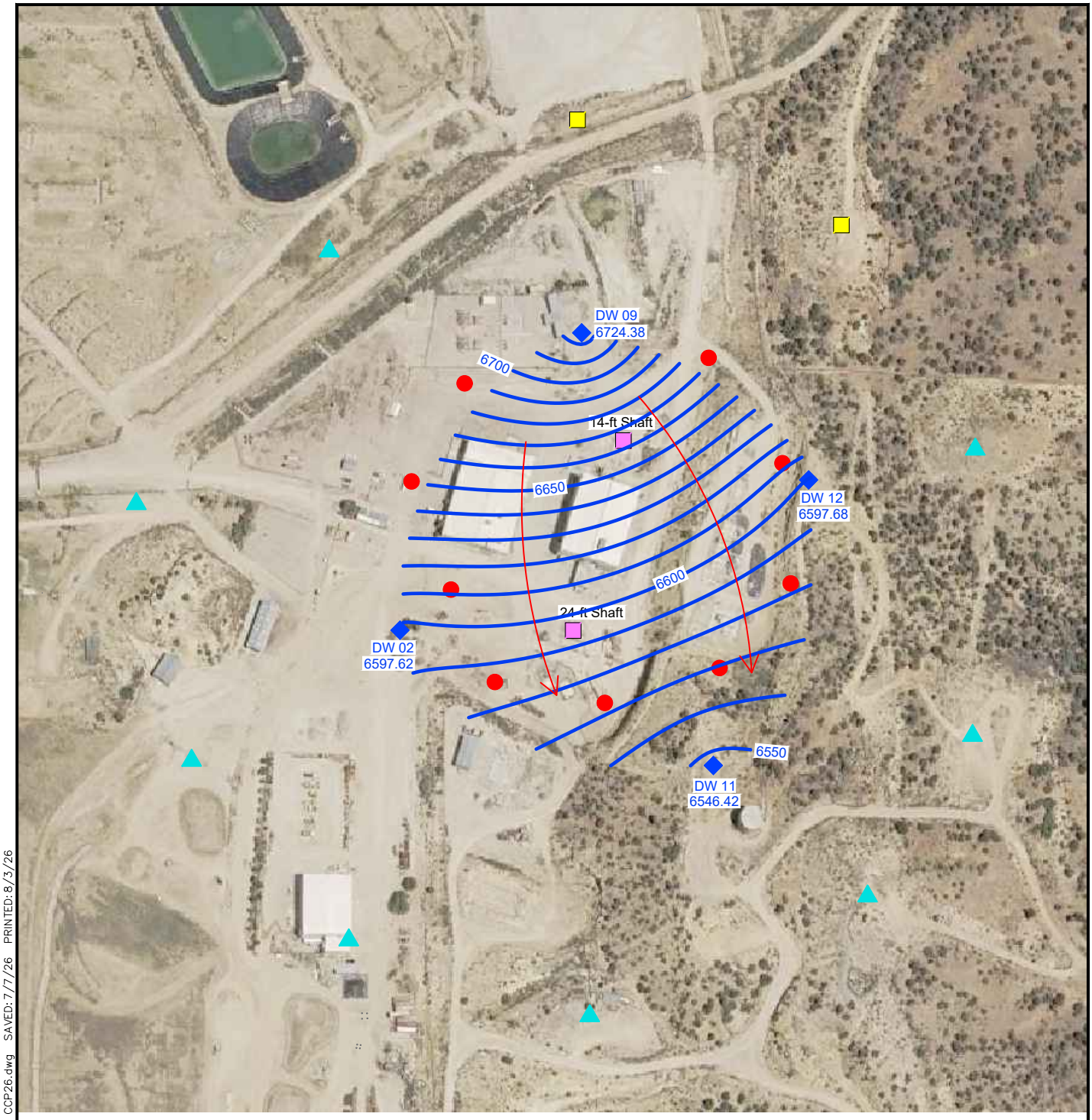

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FIGURE 2-4
TRES HERMANOS/ DAKOTA AQUIFER POTENTIOMETRIC SURFACE MAP
TRES HERMANOS/ DAKOTA AQUIFER
MT. TAYLOR MINE

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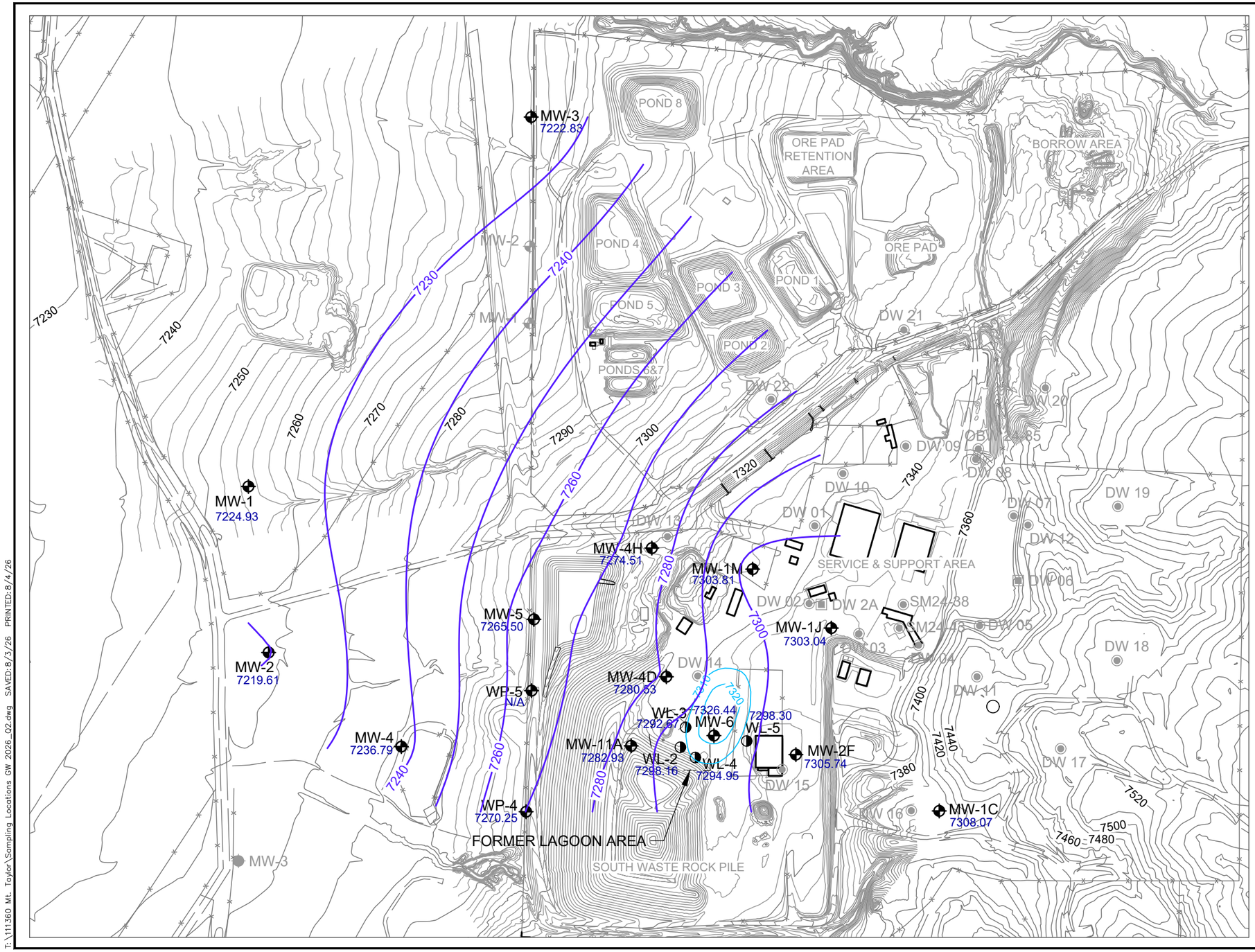
FIGURE 2-5
POINT LOOKOUT/HOSTA AQUIFER POTENTIOMETRIC SURFACE MAP
POINT LOOKOUT/HOSTA AQUIFER
MT. TAYLOR MINE



MONITOR WELL

DRY WELL (PLUGGED AND ABANDONED)

RECOVERY WELL

DEWATERING WELL

FACILITY WATER SUPPLY

STORMWATER DRAINAGE

FENCE

ROADWAY

POTENTIOMETRIC CONTOURS (10 FT) IN THE ALLUVIUM AND BEDROCK

WATER LEVEL ELEVATION CONTOURS IN THE WASTE ROCK PILE

(N/A) WATER LEVEL NOT RECORDED DUE TO PUMP IN WELL

7301.10 GROUNDWATER ELEVATION MEASURED JUNE 2, 2026

NORTH

SCALE IN FEET

0 400'

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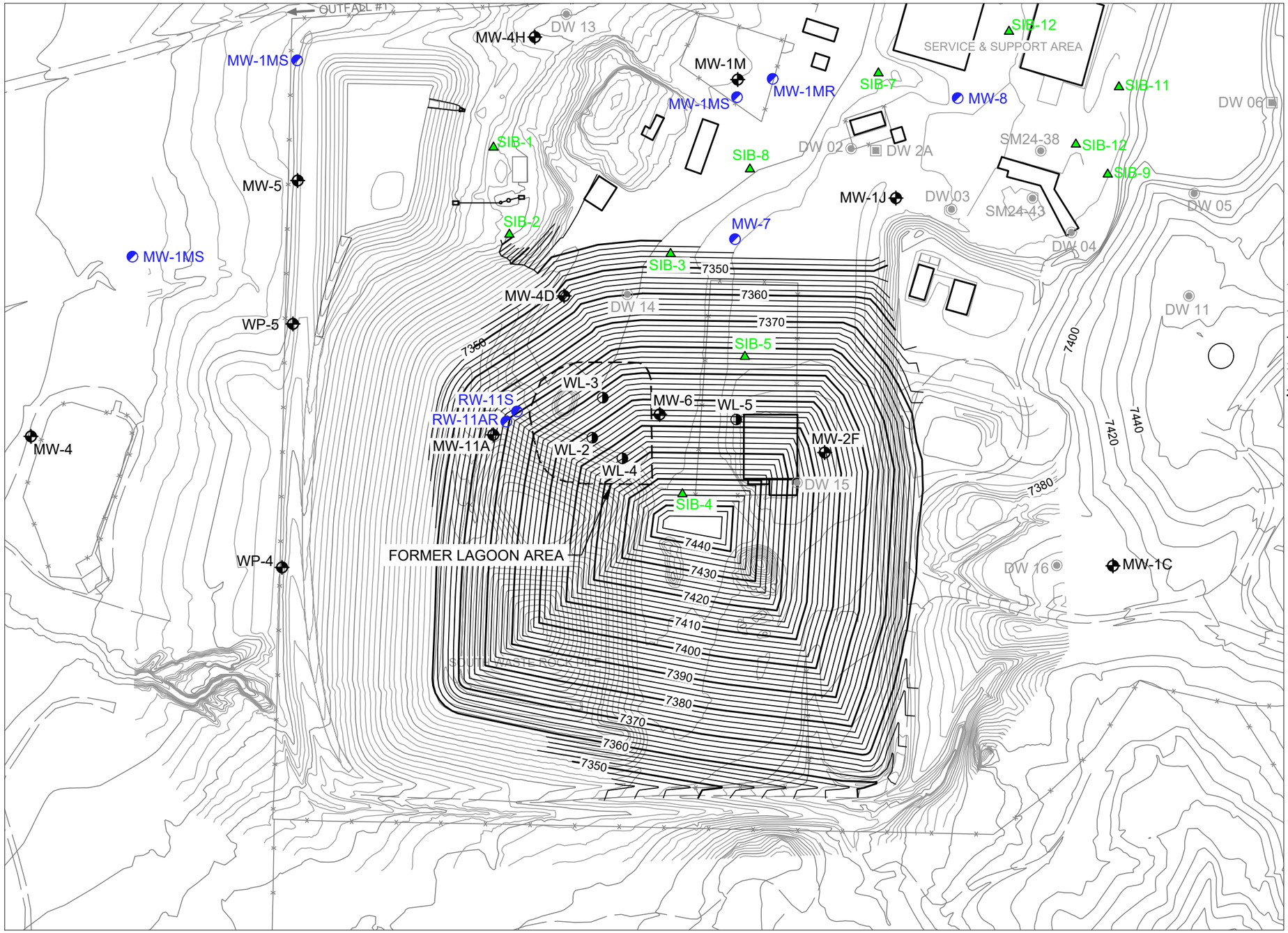
FIGURE 2-6
SHALLOW AQUIFER POTENTIOMETRIC MAP
ALLUVIAL AND MENEFEE AQUIFERS
MT. TAYLOR MINE



- MONITOR WELL
- DRY WELL (PLUGGED AND ABANDONED)
- RECOVERY WELL
- DEWATERING WELL
- FACILITY WATER SUPPLY
- 2026 SIP WELL
- 2026 SIP BORING
- STORMWATER DRAINAGE
- FENCE
- ROADWAY
- FORMER LAGOON AREA
- EXISTING TOPOGRAPHY
- PROPOSED TOPOGRAPHY

NOTE:
MAX DEPTH AT HIGHEST POINT;

Current El	Proposed El	Height
7344'	7444'	100'

EXPANDED VOLUME
(Compared to original disposal cell volume)

CUT	FILL	NET
1,000	1,103,200	1,102,200

in cubic yards

NORTH

SCALE IN FEET
0 200'

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FIGURE 4-1
EXPANDED DISPOSAL CELL WITH SITE TOPOGRAPHY, AND CURRENT WELLS
MT. TAYLOR MINE

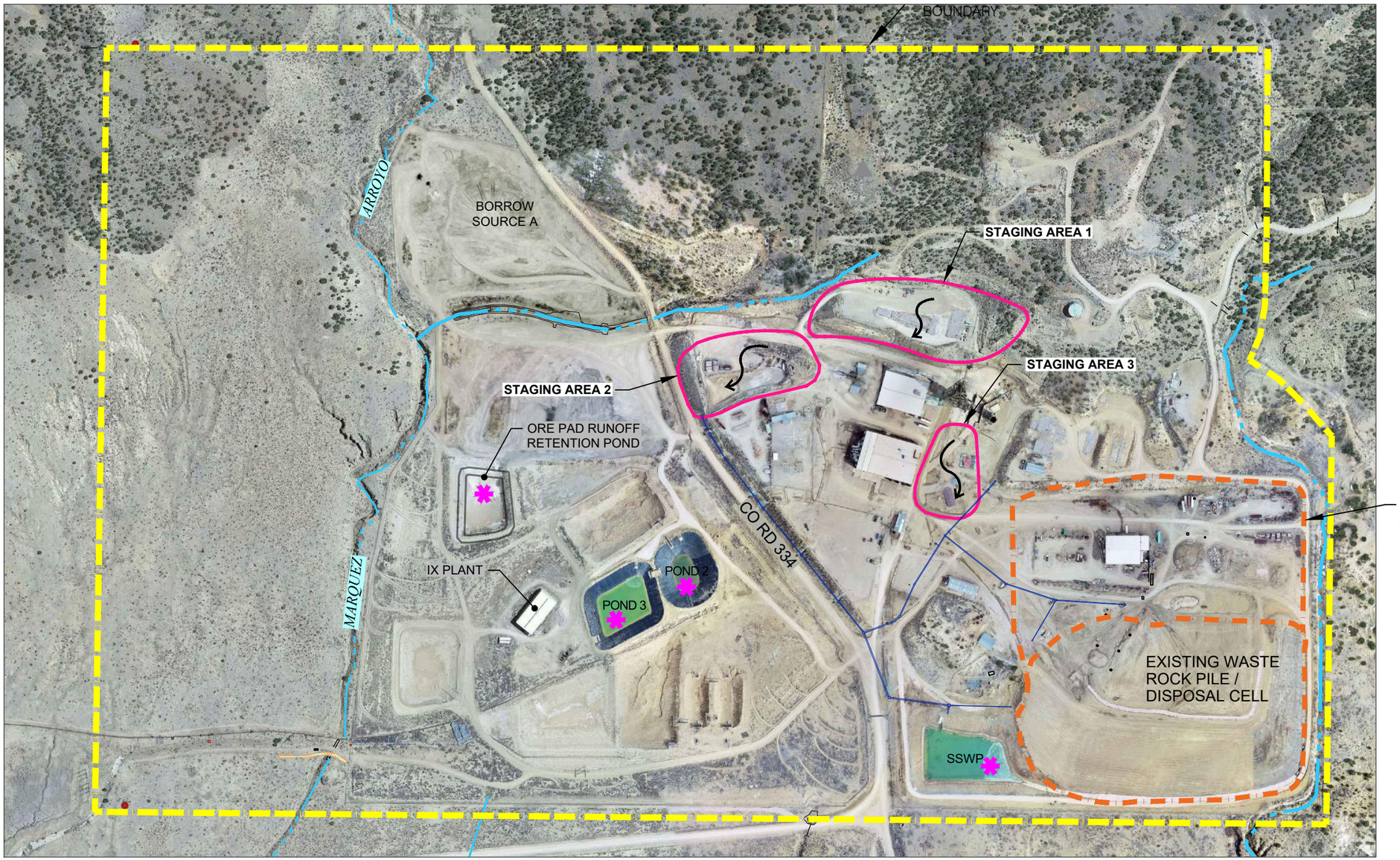

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FIGURE 4-2
APPROVED STAGING AREAS
MT. TAYLOR MINE

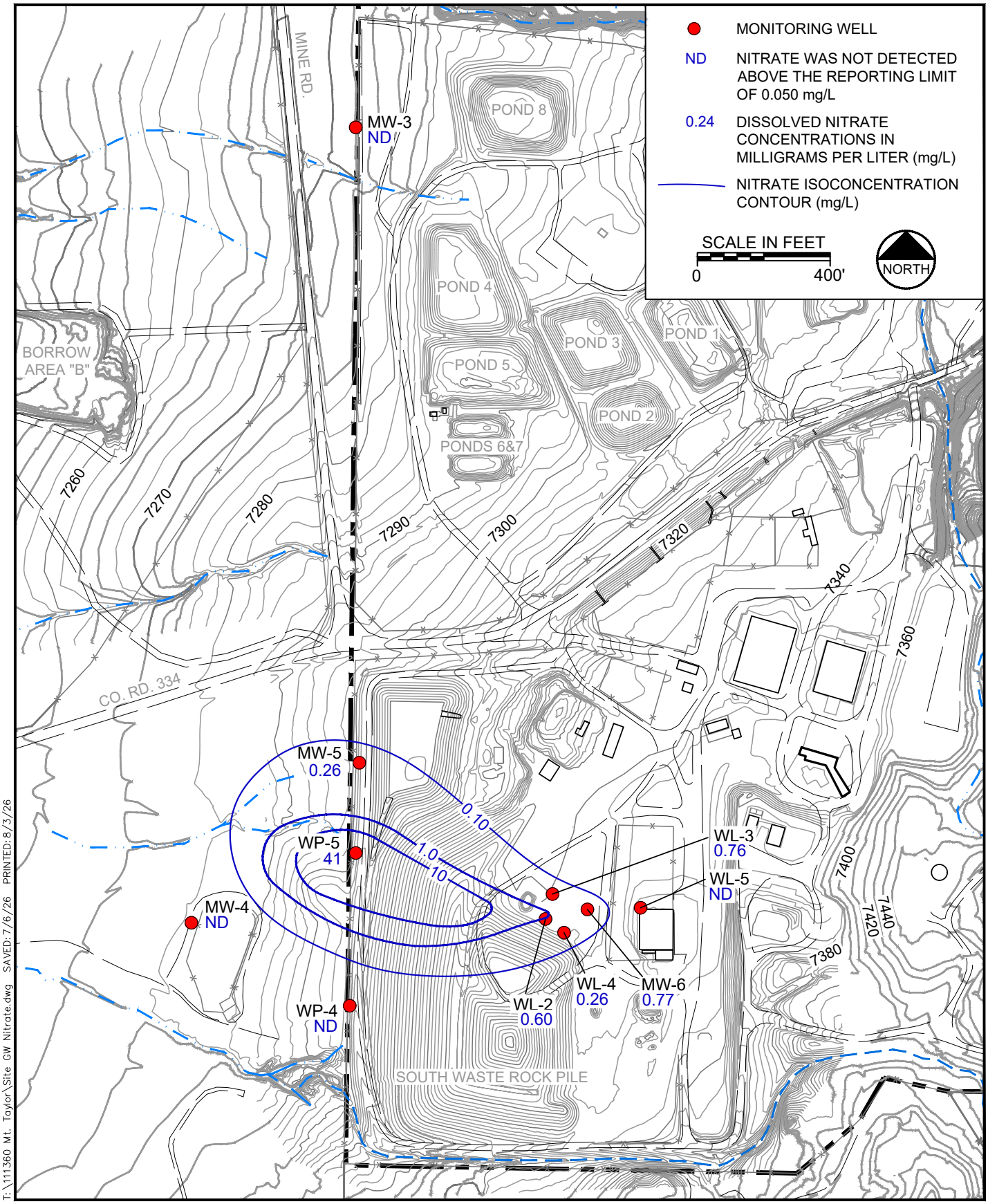

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FIGURE 5-1
NITRATE DISTRIBUTION IN ALLUVIAL AND UPPER MENEFEE GROUNDWATER (AUGUST 2018)
MT. TAYLOR MINE

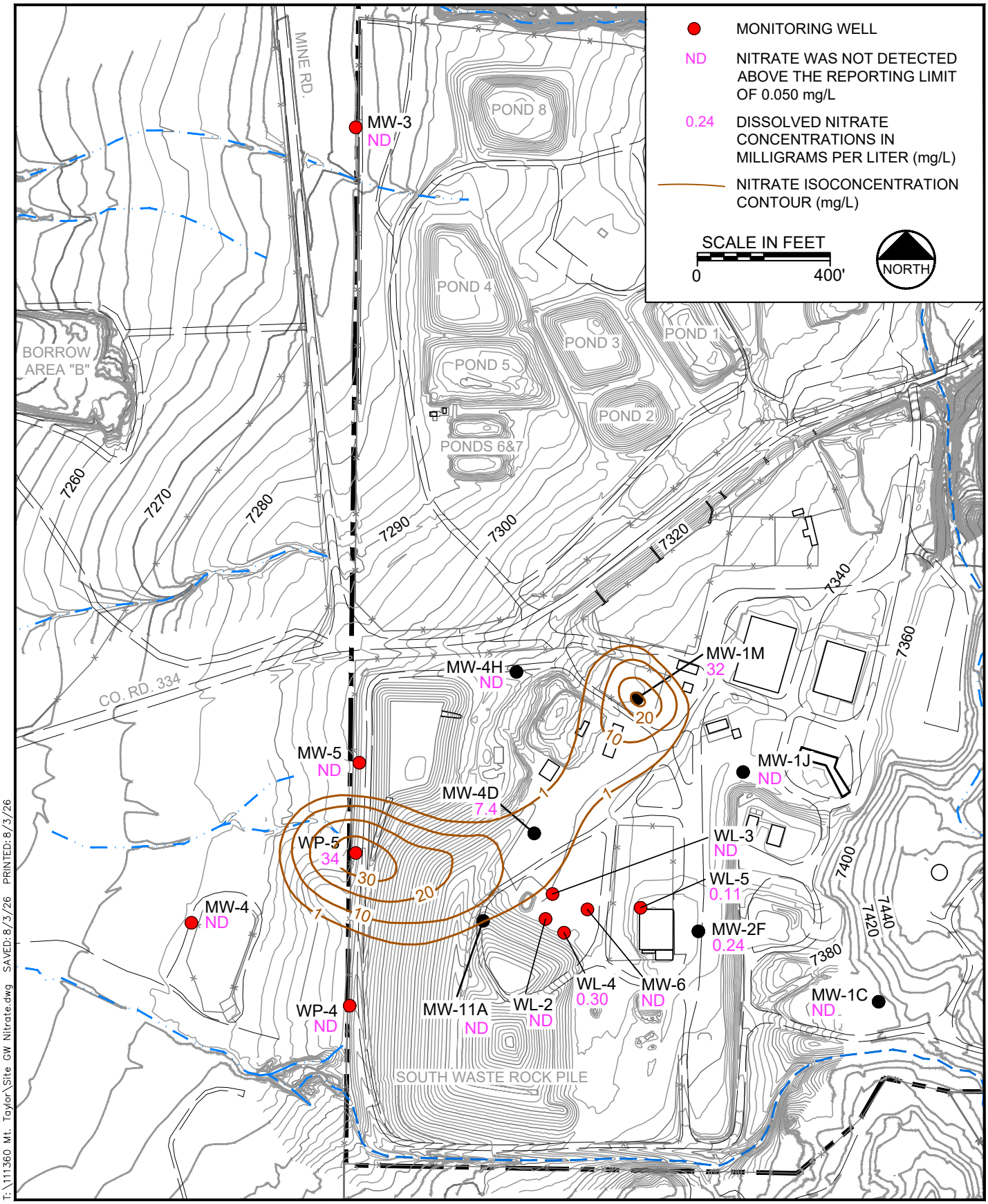

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FIGURE 5-2
NITRATE DISTRIBUTION IN ALLUVIAL AND UPPER MENEFEE GROUNDWATER (2Q 2026)
MT. TAYLOR MINE

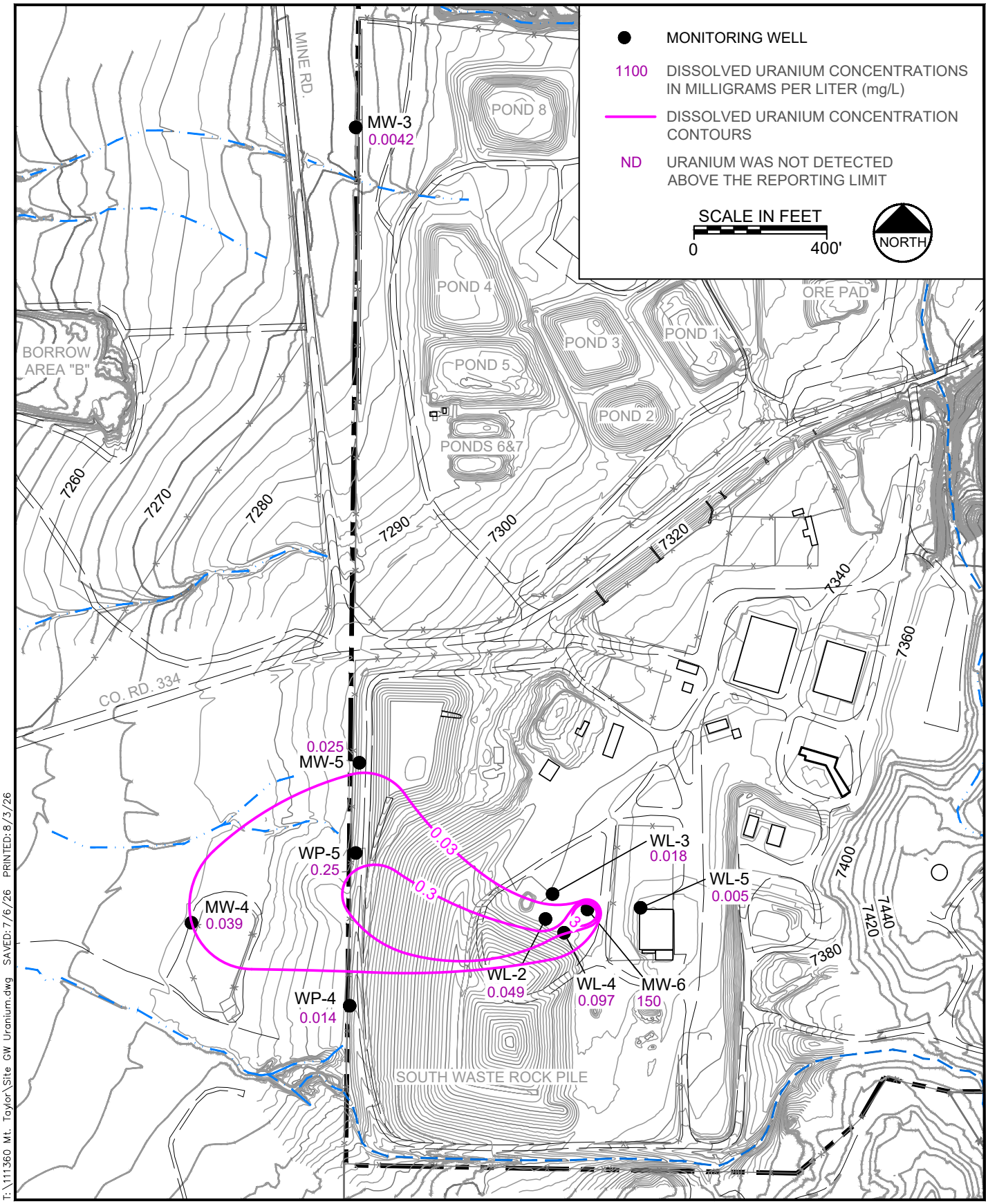

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FIGURE 5-3
URANIUM DISTRIBUTION IN ALLUVIAL AND UPPER MENEFEE GROUNDWATER (AUGUST 2018)
MT. TAYLOR MINE

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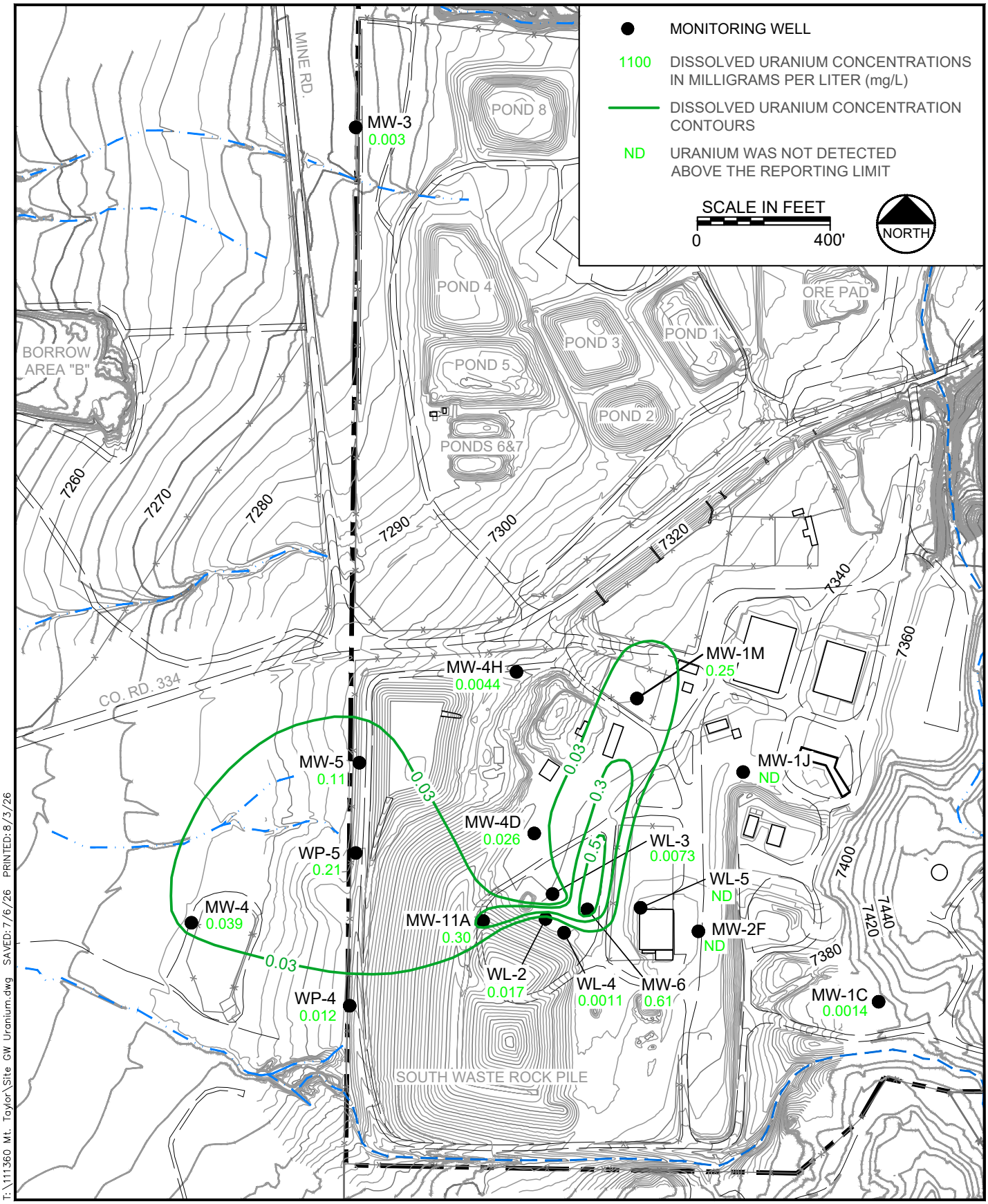

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FIGURE 5-4
URANIUM DISTRIBUTION IN ALLUVIAL AND UPPER MENEFEE GROUNDWATER (2Q 2026)
MT. TAYLOR MINE

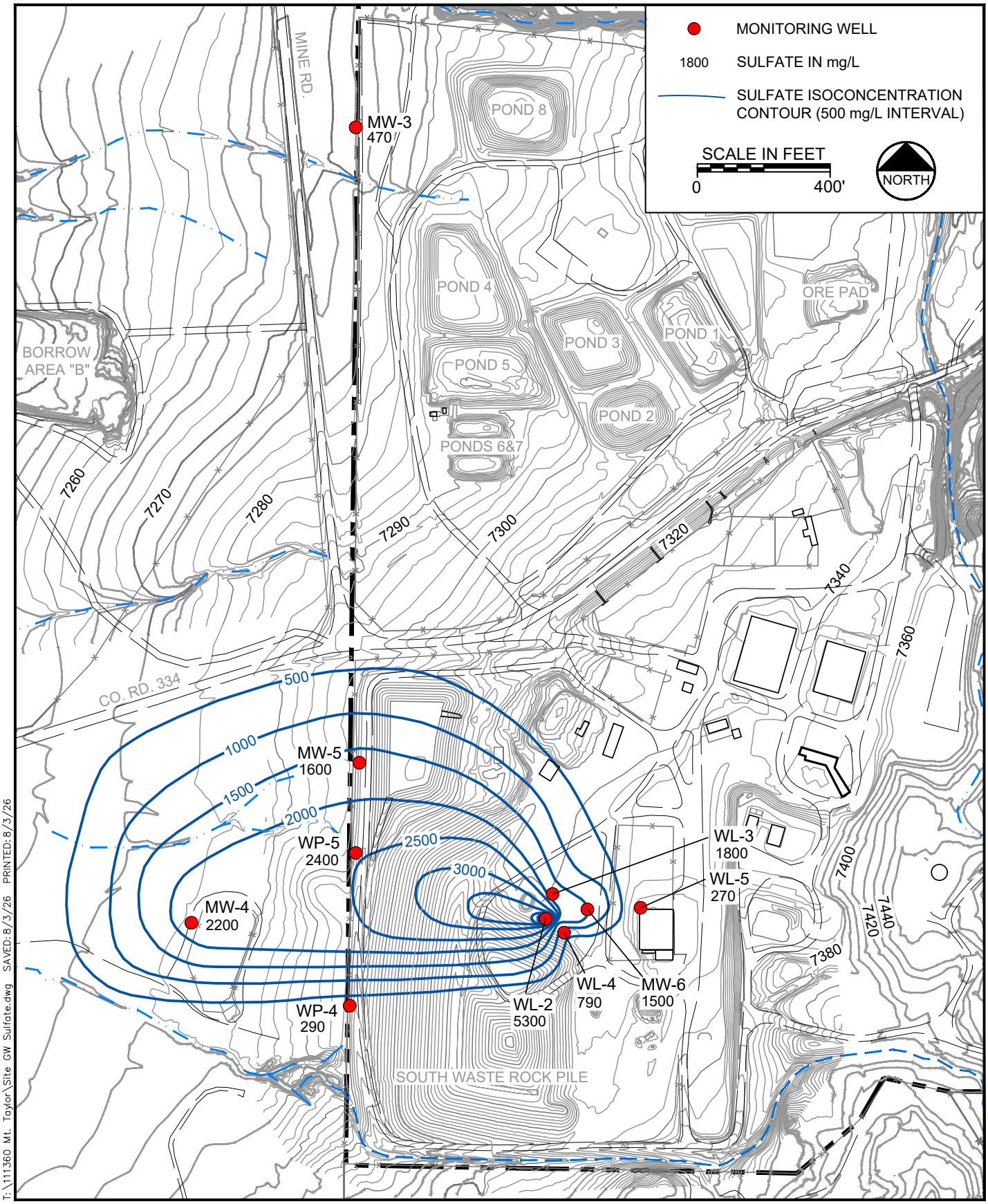

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FIGURE 5-5
SULFATE DISTRIBUTION IN ALLUVIAL AND UPPER MENEFEE GROUNDWATER (MAY 2018)
MT. TAYLOR MINE

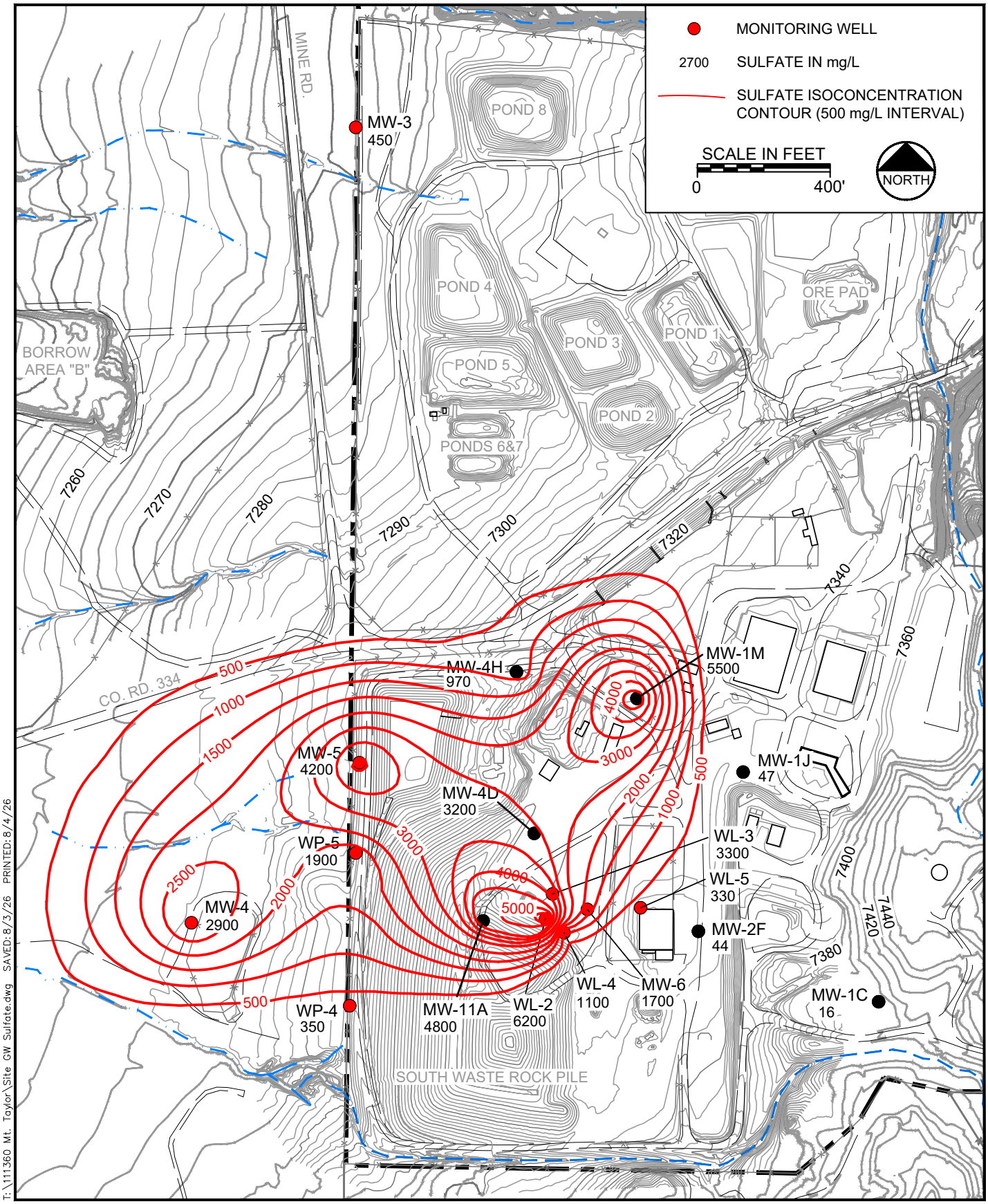

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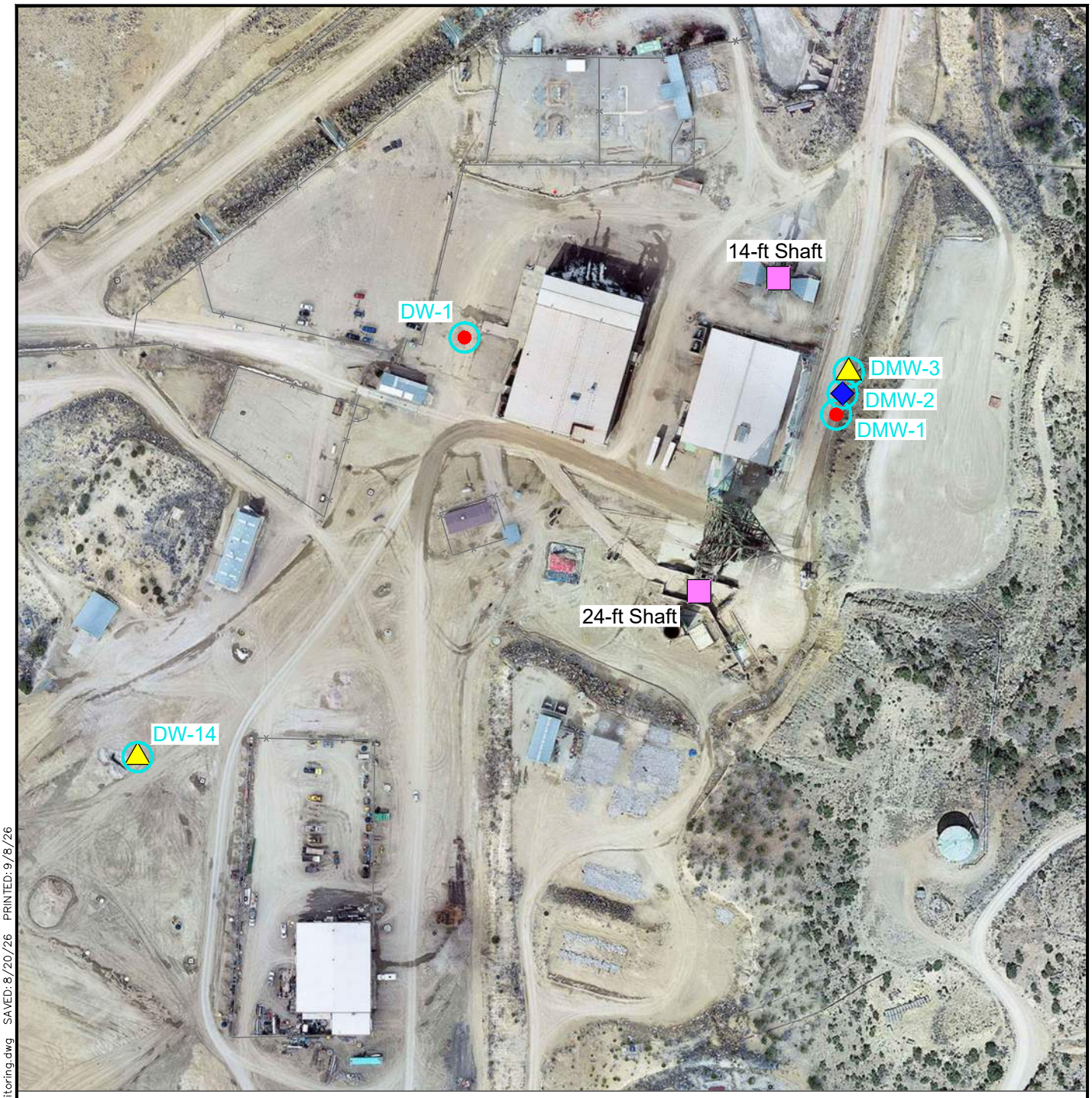
FIGURE 5-6
SULFATE DISTRIBUTION IN ALLUVIAL AND UPPER MENEFEE GROUNDWATER (2Q 2026)
MT. TAYLOR MINE



Note:
The proposed locations shown for DMW-1, DMW-2, and DMW-3 are for reference only. Actual well locations will be selected based on well pad requirements, avoidance of underground site workings, and coordination with the regulatory agencies.

NORTH

SCALE IN FEET
0 200'

DW WELL COMPLETION
- POINT LOOKOUT (PHASE I)
- TRES HERMANOS/DAKOTA (PHASE II)
- WESTWATER CANYON (PHASE III)

POINT OF COMPLIANCE WELLS FOR
- POST-CLOSURE MONITORING PLAN

T:\111360 Mt. Taylor\Post-Closure Monitoring.dwg SAVED: 8/20/26 PRINTED: 9/8/26

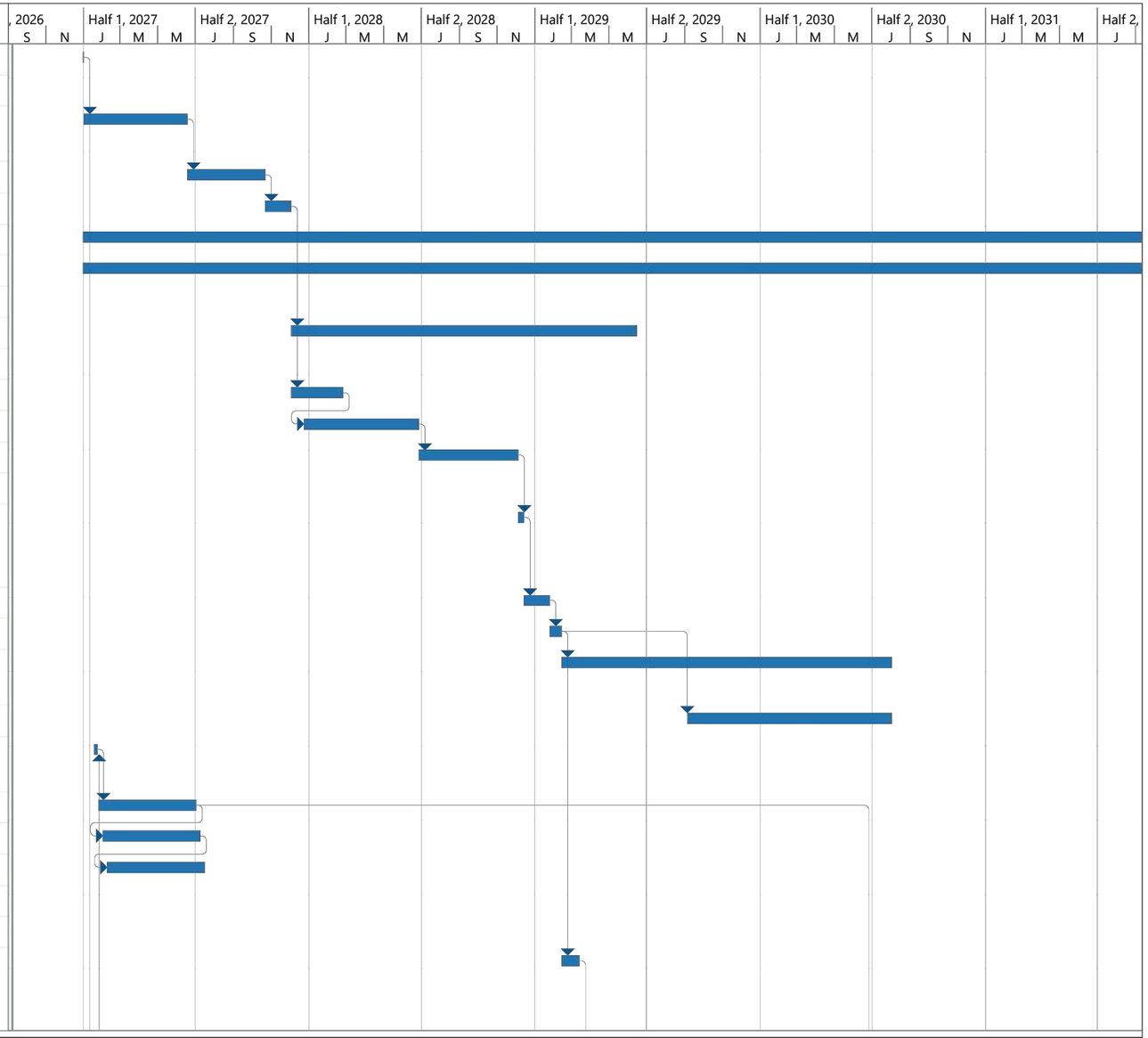
Project No. 111360

September 2026

Engineering Analytics, Inc.
*Now Part of **MacKay***

FIGURE 5-7
LOCATION OF WELLS FOR POST-CLOSURE MONITORING OF DEEP AQUIFERS
MT. TAYLOR MINE

ID	Task Name	Duration	Start	Finish	Predecessors
1	CCP Approval (Estimated)	1 day	Thu 12/31/26	Thu 12/31/26	
2	**Project Management**				
3	Workplan Development and Approval	120 days	Fri 1/1/27	Thu 6/17/27	1
4	Bids and Contracts	90 days	Fri 6/18/27	Thu 10/21/27	3
5	Mobilization	30 days	Fri 10/22/27	Thu 12/2/27	4
6	Documentation	1245 days	Thu 12/31/26	Wed 10/8/31	
7	Quality Control	1245 days	Thu 12/31/26	Wed 10/8/31	
8	**Facility Removal**				
9	Well and Conduit Plugging	400 days	Fri 12/3/27	Thu 6/14/29	5
10	**Surface Facilities**				
11	Building Removal	60 days	Fri 12/3/27	Thu 2/24/28	5
12	Concrete Removal	132 days	Fri 12/24/27	Mon 6/26/28	11FS-45 days
13	Pipe Removal	115 days	Tue 6/27/28	Mon 12/4/28	12
14	**Disposal Cell**				
15	Disposal Cell Expansion Pit Area Contaminated Soil Removal	7 days	Tue 12/5/28	Wed 12/13/28	13
16	Clearing & Grubbing Cell Pad	30 days	Thu 12/14/28	Wed 1/24/29	15
17	Placement of Bottom Liner	13 days	Thu 1/25/29	Mon 2/12/29	16
18	Placement of Demolished Site Materials	383 days	Tue 2/13/29	Thu 8/1/30	17
19	Placement of Contaminated Soil	237 days	Wed 9/5/29	Thu 8/1/30	17
20	Clearing and Grubbing Borrow Area	5 days	Mon 1/18/27	Fri 1/22/27	37
21	Cover Placement	114 days	Mon 1/25/27	Thu 7/1/27	20
22	Haul and Blend Rock Mulch	114 days	Mon 2/1/27	Thu 7/8/27	21FS-109 days
23	Erosion Control	114 days	Mon 2/8/27	Thu 7/15/27	22FS-109 days
24	**Earthwork**				
25	**Contaminated Soil Removal**				
26	Limestone at Point of Outfall 001 Discharge in San Lucas Canyon	21 days	Tue 2/13/29	Tue 3/13/29	17



Project: CCP Schedule
Date: Tue 9/8/26

Task
Split
Milestone
Summary
Project Summary
Inactive Task
Inactive Milestone
Inactive Summary
Manual Task
Duration-only
Manual Summary Rollup
Manual Summary
Start-only
Finish-only
External Tasks
External Milestone
Deadline
Progress
Manual Progress

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Engineering Analytics, Inc.
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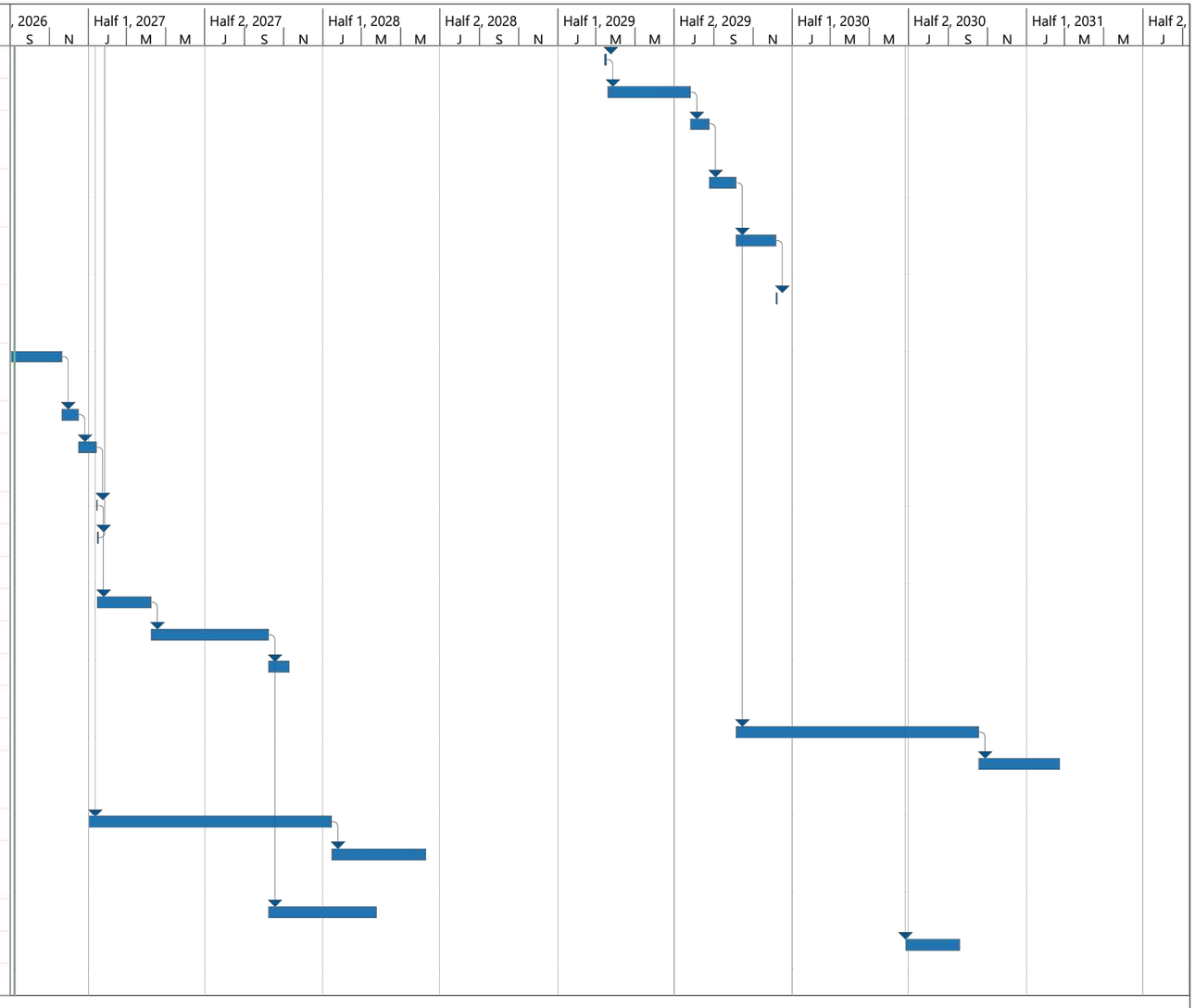
FIGURE 6-1
CLOSEOUT/CLOSURE SCHEDULE - PAGE 1 OF 2
MT. TAYLOR MINE

ID	Task Name	Duration	Start	Finish	Predecessors
27	Windblown Area	3 days	Wed 3/14/29	Fri 3/16/29	26
28	Ore Pad Soils	93 days	Mon 3/19/29	Wed 7/25/29	27
29	Ore Pad Runoff Retention Pond, Buried Waste Rock	21 days	Thu 7/26/29	Thu 8/23/29	28
30	North Contaminated Soil with Non-Ore Pad Retention Pond	30 days	Fri 8/24/29	Thu 10/4/29	29
31	Southern Mine Compound Area	44 days	Fri 10/5/29	Wed 12/5/29	30
32	Leftover Soils in Ponds 1, 4, 5, 6, & 7	2 days	Thu 12/6/29	Fri 12/7/29	31
33	South Controlled Area plus County Road 334	139 days	Mon 5/11/26	Thu 11/19/26	
34	Diesel-Contaminated Soil	18 days	Fri 11/20/26	Tue 12/15/26	33
35	Sediment and Waste Rock in the Former Lagoon	20 days	Wed 12/16/26	Tue 1/12/27	34
36	Continental Divide Coop Substat	1 day	Wed 1/13/27	Wed 1/13/27	35
37	SSWP Area	2 days	Thu 1/14/27	Fri 1/15/27	36
38	**Final Site Earthwork**				
39	Final Status Survey	60 days	Thu 1/14/27	Wed 4/7/27	36
40	Final Grading	131 days	Thu 4/8/27	Thu 10/7/27	39
41	Revegetation	22 days	Fri 10/8/27	Mon 11/8/27	40
42	**Surface Water**				
43	North Ditch Survey and Design	270 days	Fri 10/5/29	Thu 10/17/30	30
44	North Ditch Contractor Acquisitions and Construction	90 days	Fri 10/18/30	Thu 2/20/31	43
45	South Ditch Survey and Design	270 days	Fri 1/1/27	Thu 1/13/28	1
46	South Ditch Contractor Acquisitions and Construction	105 days	Fri 1/14/28	Thu 6/8/28	45
47	**Shaft Plugging**	120 days	Fri 10/8/27	Thu 3/23/28	40
48	**PCMP DMW Well Installation**	60 days	Wed 6/26/30	Tue 9/17/30	21
49					



Project: CCP Schedule
Date: Tue 9/8/26

Task	Project Summary	Manual Task	Start-only	Deadline			
Split	Inactive Task	Duration-only	Finish-only	Progress			
Milestone	Inactive Milestone	Manual Summary Rollup	External Tasks	Manual Progress			
Summary	Inactive Summary	Manual Summary	External Milestone				

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FIGURE 6-1
CLOSEOUT/CLOSURE SCHEDULE - PAGE 2 OF 2
MT. TAYLOR MINE

APPENDIX A

Mt. Taylor Mine Closeout/Closure Plan Drawings

CL 05 Shaft Closure – Manway Vent

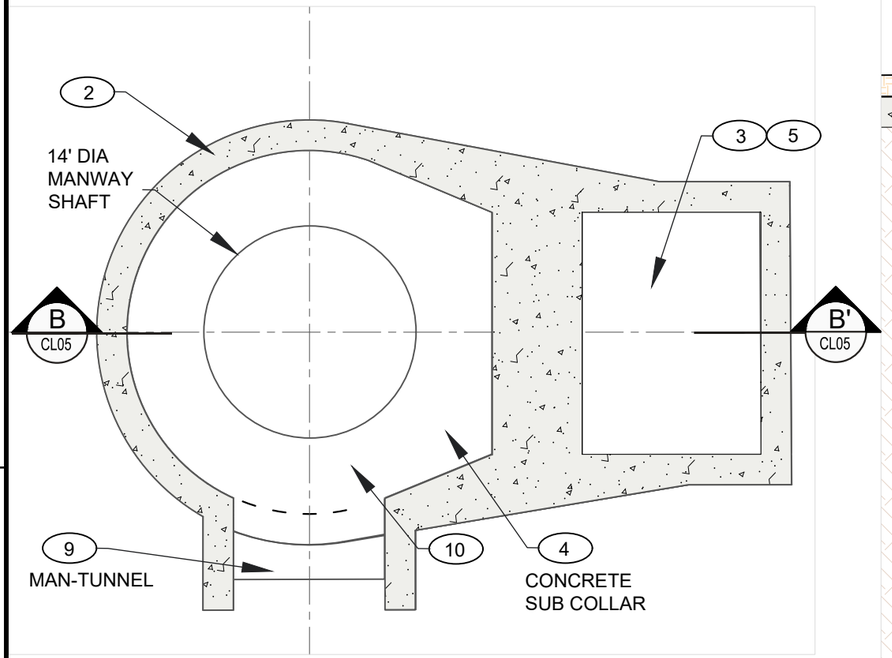
CL 06 Shaft Closure – Production Shaft

CL 07A Final Grading Plan Mine Water Treatment Unit

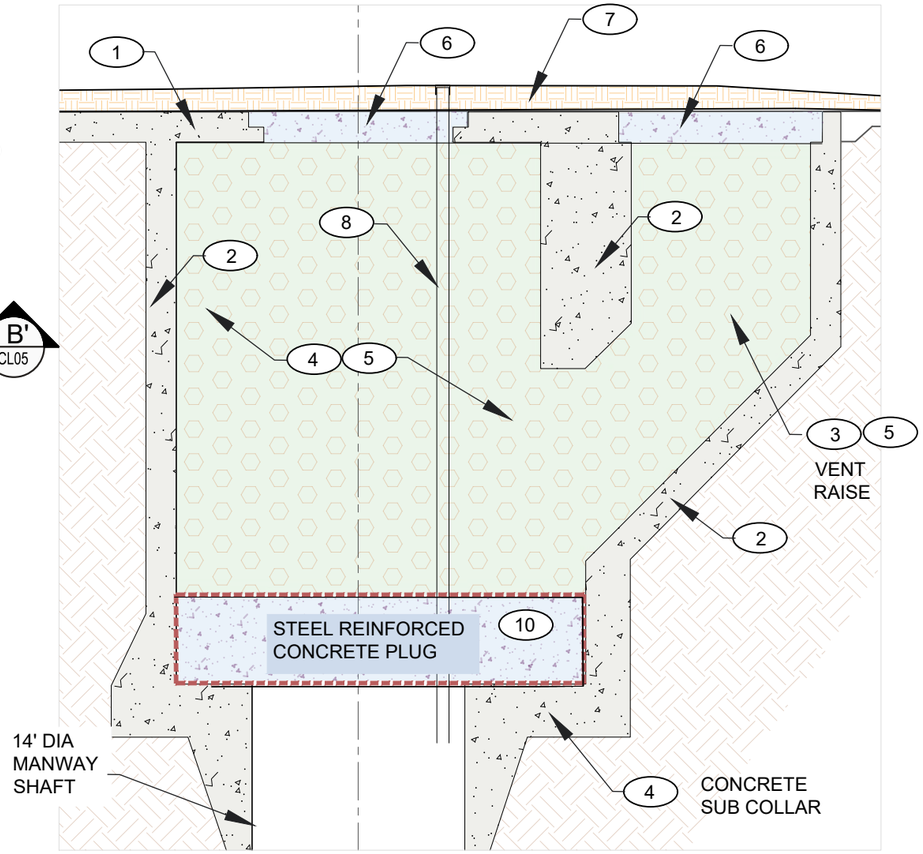
CL 07B Final Grading Plan Service and Support Area

CL 08 Details – Backfill in Pond Areas

CL 14 Final Drainage Plan



AA'
CL05
SECTION AA' - PLAN VIEW



BB'
CL05
SECTION BB'

NOTES:

1. EXISTING CONCRETE SLAB TO REMAIN.
2. EXISTING CONCRETE SHAFT COLLAR WALLS TO REMAIN.
3. EXISTING VENT RAISE TO REMAIN AS PART OF SHAFT PLUG STRUCTURE. THE VENT RAISE TO BE BACKFILLED WITH FLOWABLE CEMENTITIOUS FILL.
4. REMOVE AND DROP ALL EQUIPMENT, FITTINGS, AND UTILITIES BETWEEN COLLAR TO SUB COLLAR LEVEL AND CLEAN SUB COLLAR OF ANY DEBRIS.
5. FLOWABLE CEMENTITIOUS BACKFILL - USE TO BACKFILL THE VENT RAISE AND SHAFT FROM PLUG AT THE SUB-COLLAR TO WITHIN 1 FOOT OF THE EXISTING CONCRETE CAP. THEN FILL THE REMAINING VOID WITH LIGHT-WEIGHT CONCRETE.
6. PLUG THE EXISTING SHAFT OPENING WITH LIGHTWEIGHT CONCRETE AND PLACE A SHAFT MARKER IN THE PLUG.
7. PLACE 2' OF CLEAN SOIL OVER THE TOP OF THE CONCRETE SLAB AND REVEGITATE.
8. 8" TO 10" PVC MONITORING PIPE WITH ACCESS CAP AT THE GROUND SURFACE.
9. UTILITY TUNNEL SHAFT CONNECTION TO BE BACKFILLED WITH THE SAME FLOWABLE CEMENTITIOUS FILL SPECIFIED FOR THE SHAFT COLLAR.

GENERAL NOTES:

G.1 FOR CONSTRUCTION, PLACEMENT, AND MATERIAL REQUIREMENTS FOR THE FLOWABLE CEMENTITIOUS BACKFILL SEE PROJECT SPECIFICATIONS.

G.2 CONTRACTOR TO DETERMINE MEANS AND METHODS TO SAFELY FABRICATE AND INSTALL THE SHAFT PLUG AND BACKFILL SHOWN ON THIS DRAWING.

G.3 THIS IS THE APPROVED CONCEPTUAL DESIGN. THE FINAL DESIGN WILL GENERALLY FOLLOW THIS CONCEPT BUT MAY VARY IN MATERIALS AND CONSTRUCTION PER THE FINAL DESIGN OF A LICENSED STRUCTURAL ENGINEER.

REV	DESCRIPTION	DATE	DRAWN BY	ENGINEER	APPROVED
A	FOR REVIEW	12-17-21	EL	EL	AK
B	FOR SUBMITTAL	6-6-22	EL	EL	AK
C	FOR SUBMITTAL	9-15-25	SM	MM	MM

RIO GRANDE RESOURCES CORP.
MOUNT TAYLOR MINE - *San Mateo, NM*

Prepared By: Alan Kuhn Associates LLC

Drawn By: EL Engineering Services LLC

PRINT SIZE: B

SCALE: As Shown

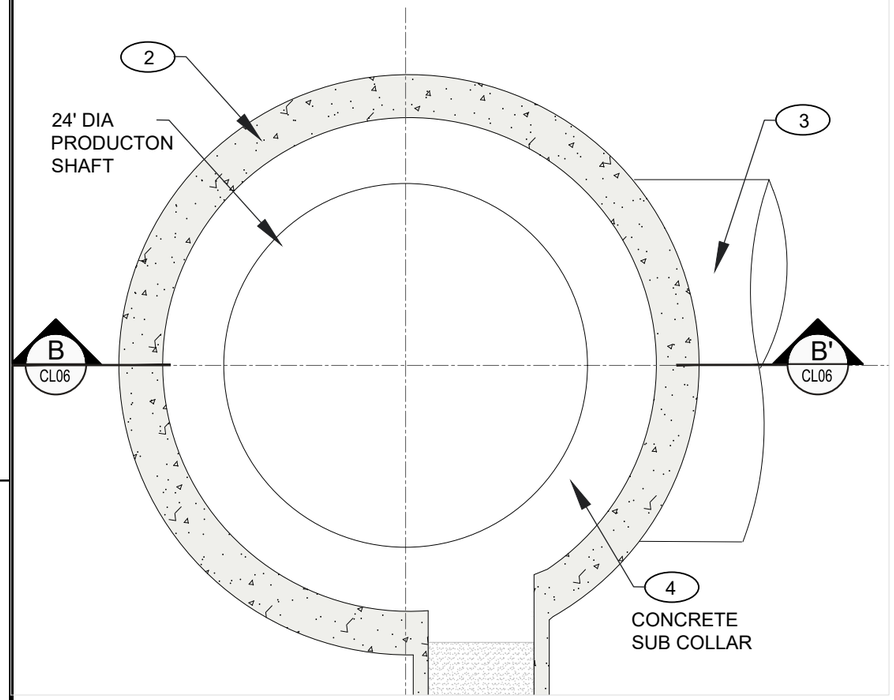
MT. TAYLOR MINE
2022 CLOSEOUT / CLOSURE PLAN

SHEET TITLE: SHAFT CLOSURE - MANWAY VENT

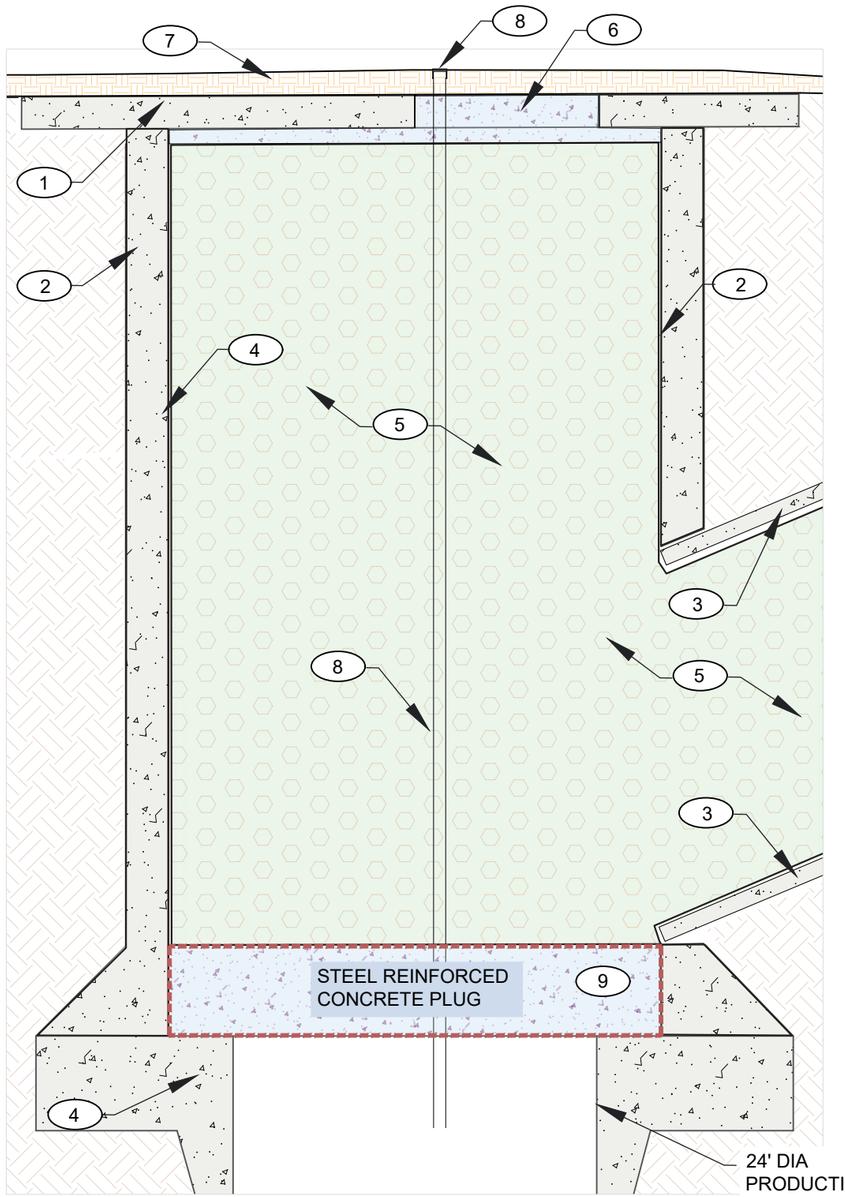
SHEET NO. **CL 05**

DWG NO. **GS21-CB105-00**

REV **B**



AA'
CL06
SECTION AA' - PLAN VIEW



BB'
CL06
SECTION BB'

NOTES:

1. EXISTING CONCRETE SLAB TO REMAIN.
2. EXISTING CONCRETE SHAFT COLLAR WALLS TO REMAIN.
3. EXISTING 24' DIAMETER VENT RAISE TO REMAIN AS PART OF SHAFT PLUG STRUCTURE. THE VENT RAISE TO BE BACKFILLED WITH SLURRY FILL.
4. REMOVE AND DROP ALL EQUIPMENT, FITTINGS, AND UTILITIES BETWEEN COLLAR TO SUB COLLAR LEVEL AND CLEAN SUB COLLAR OF ANY DEBRIS.
5. FLOWABLE CEMENTITIOUS BACKFILL - USE TO BACKFILL THE VENT RAISE AND SHAFT FROM PLUG AT THE SUB-COLLAR TO WITHIN 1 FOOT OF THE EXISTING CONCRETE CAP. THEN FILL THE REMAINING VOID WITH LIGHT-WEIGHT CONCRETE.
6. PLUG THE EXISTING SHAFT OPENING WITH LIGHTWEIGHT CONCRETE AND PLACE A SHAFT MARKER IN THE PLUG.
7. PLACE 2' OF CLEAN SOIL OVER THE TOP OF THE CONCRETE SLAB AND REVEGITATE.
8. 8" TO 10" PVC MONITORING PIPE WITH ACCESS CAP AT THE GROUND SURFACE.
9. MRB TECHNICAL SERVICES AND CRITICAL VIEW ENGINEERING ARE PREPARING THE STRUCTURAL DESIGN TO IMPLEMENT THE ACCEPTED 2013 DESIGN CONCEPT FOR THE SHAFT PLUG. (SEE APPENDIX G).

GENERAL NOTES:

G.1 FOR CONSTRUCTION, PLACEMENT, AND MATERIAL REQUIREMENTS FOR THE FLOWABLE CEMENTITIOUS BACKFILL SEE PROJECT SPECIFICATIONS.

G.2 CONTRACTOR TO DETERMINE MEANS AND METHODS TO SAFELY FABRICATE AND INSTALL THE SHAFT PLUG AND BACKFILL SHOWN ON THIS DRAWING.

G.3 THIS IS THE APPROVED CONCEPTUAL DESIGN. THE FINAL DESIGN WILL GENERALLY FOLLOW THIS CONCEPT BUT MAY VARY IN MATERIALS AND CONSTRUCTION PER THE FINAL DESIGN OF A LICENSED STRUCTURAL ENGINEER (SEE NOTE 9).

REV	DESCRIPTION	DATE	DRAWN BY	ENGINEER	APPROVED
A	FOR REVIEW	12-17-21	EL	EL	AK
B	FOR SUBMITTAL	5-26-22	EL	EL	AK

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MOUNT TAYLOR MINE - *San Mateo, NM*

Prepared By: Alan Kuhn Associates LLC

Drawn By: EL Engineering Services LLC

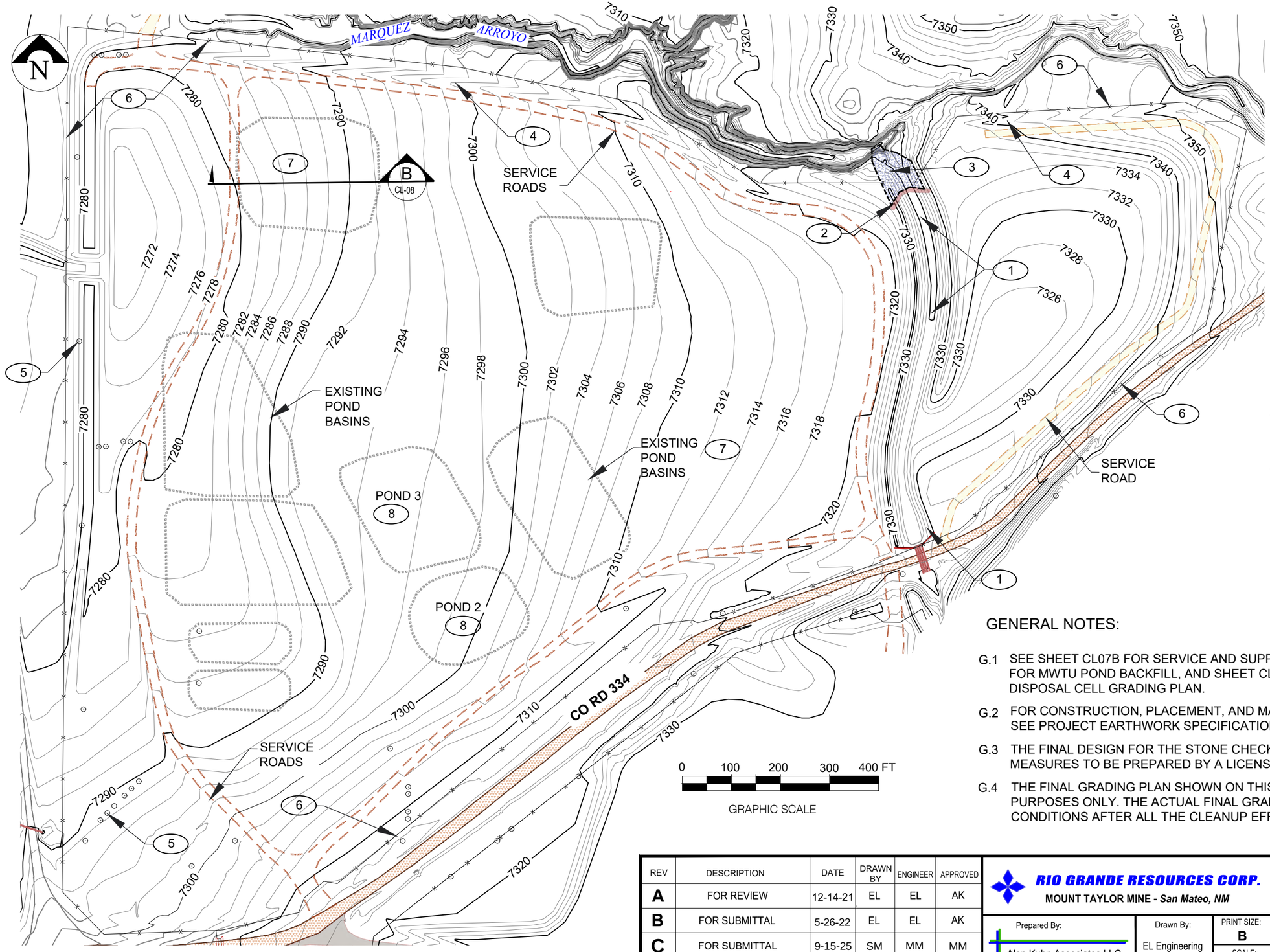
PRINT SIZE: B

SCALE: As Shown

MT. TAYLOR MINE
2022 CLOSEOUT / CLOSURE PLAN

SHEET TITLE: SHAFT CLOSURE - PRODUCTION SHAFT

SHEET NO.	DWG NO.	REV
CL 06	GS21-CB106-00	B



NOTES:

1. NORTH DIVERSION DITCH WILL BE DESIGNED AFTER SITE RECLAMATION.
2. STONE CHECK DAM. (SEE SHEET CL13).
3. EROSION PROTECTION - GEOGRID WITH STONE FILL. (SEE SHEET CL13)
4. BERM (2' TO 3' HIGH).
5. EXISTING POWER POLES TO REMAIN.
6. EXISTING SECURITY FENCE TO REMAIN.
7. EXISTING MWTU PONDS TO BE BACKFILLED. (SEE SHEET CL 08)
8. LINED PONDS #2 AND #3 TO REMAIN UNTIL ABATEMENT ACTIVITIES ARE COMPLETED THEN THEY WILL BE BACKFILLED.

GENERAL NOTES:

G.1 SEE SHEET CL07B FOR SERVICE AND SUPPORT GRADING PLAN, SHEET CL08 FOR MWTU POND BACKFILL, AND SHEET CL09 FOR THE WASTE ROCK PILE / DISPOSAL CELL GRADING PLAN.

G.2 FOR CONSTRUCTION, PLACEMENT, AND MATERIAL REQUIREMENTS SEE PROJECT EARTHWORK SPECIFICATIONS.

G.3 THE FINAL DESIGN FOR THE STONE CHECK DAM AND EROSION PROTECTION MEASURES TO BE PREPARED BY A LICENSED CIVIL ENGINEER.

G.4 THE FINAL GRADING PLAN SHOWN ON THIS DRAWING IS FOR INFORMATIONAL PURPOSES ONLY. THE ACTUAL FINAL GRADING WILL DEPEND ON THE SITE CONDITIONS AFTER ALL THE CLEANUP EFFORTS ARE COMPLETE.

REV	DESCRIPTION	DATE	DRAWN BY	ENGINEER	APPROVED
A	FOR REVIEW	12-14-21	EL	EL	AK
B	FOR SUBMITTAL	5-26-22	EL	EL	AK
C	FOR SUBMITTAL	9-15-25	SM	MM	MM

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MOUNT TAYLOR MINE - *San Mateo, NM*

Prepared By: Alan Kuhn Associates LLC

Drawn By: EL Engineering Services LLC

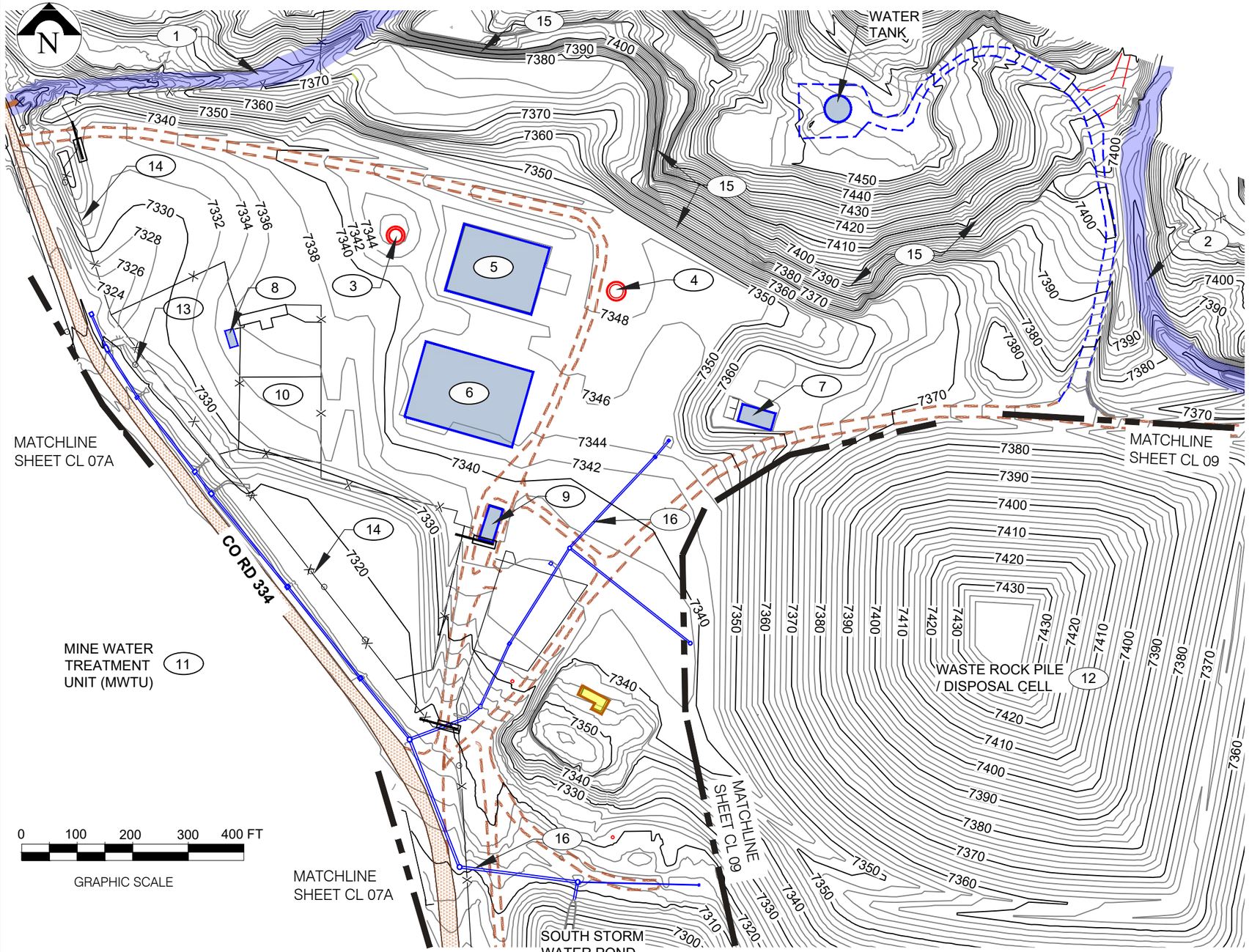
PRINT SIZE: B

SCALE: As Shown

MT. TAYLOR MINE
2022 CLOSEOUT / CLOSURE PLAN

SHEET TITLE: FINAL GRADING PLAN - MINE WATER TREATMENT UNIT

SHEET NO.	DWG NO.	REV
CL 07A	GS21-CB107A-00	B



NOTES:

1. NORTH DIVERSION CHANNEL.
2. SOUTH DIVERSION CHANNEL.
3. MANWAY SHAFT - SEE SHEET CL05 FOR PLUG AND BACKFILL DETAILS.
4. PRODUCTION SHAFT - SEE SHEET CL06 FOR PLUG AND BACKFILL DETAILS.
5. HOIST HOUSE.
6. SERVICE BUILDING (OFFICE AND WAREHOUSE).
7. ELECTRICAL BUILDING.
8. CAPACITOR BUILDING.
9. GUARD HOUSE (SECURITY BUILDING).
10. SUBSTATION (EARTHWORK IN THIS AREA TO BE LIMITED TO CLEAN UP OF CONTAMINATED SOILS AND FILLING TO RESTORE ORIGINAL GRADES).
11. SEE SHEET CL 07A FOR MWTU GRADING PLAN.
12. SEE APPENDIX K - DISPOSAL CELL DESIGN REPORT.
13. EXISTING POWER POLES TO REMAIN.
14. EXISTING SECURITY FENCE TO REMAIN. IMPROVE OR REPLACE SECTIONS OF THE EXISTING FENCE AS NEEDED.
15. SLOPES GREATER THAN 1H: 1V IN THE SERVICE AND SUPPORT AREA TO BE REDUCED TO NO GREATER THAN 1.5H : 1V.
16. EXISTING STORM DRAINAGE SYSTEM TO REMAIN.

LEGEND

- COUNTY ROADS (NOT RGR'S RESPONSIBILITY)
- SERVICE ROADS
- WATER TANK ACCESS ROAD
- SECURITY GATES
- EXISTING FENCE-LINES TO REMAIN
- EXISTING BUILDINGS TO REMAIN
- ADOBE RUIN
- DIVERSION CHANNELS

GENERAL NOTES:

G.1 FOR CONSTRUCTION, PLACEMENT, AND MATERIAL REQUIREMENTS SEE PROJECT EARTHWORK SPECIFICATIONS.

G.2 THE FINAL GRADING PLAN SHOWN ON THIS DRAWING IS FOR INFORMATIONAL PURPOSES ONLY. THE ACTUAL FINAL GRADING WILL DEPEND ON THE SITE CONDITIONS AFTER ALL THE CLEANUP EFFORTS ARE COMPLETE.

REV	DESCRIPTION	DATE	DRAWN BY	ENGINEER	APPROVED
A	FOR REVIEW	12-14-21	EL	EL	AK
B	FOR SUBMITTAL	5-26-22	EL	EL	AK
C	FOR SUBMITTAL	9-15-25	SM	MM	MM

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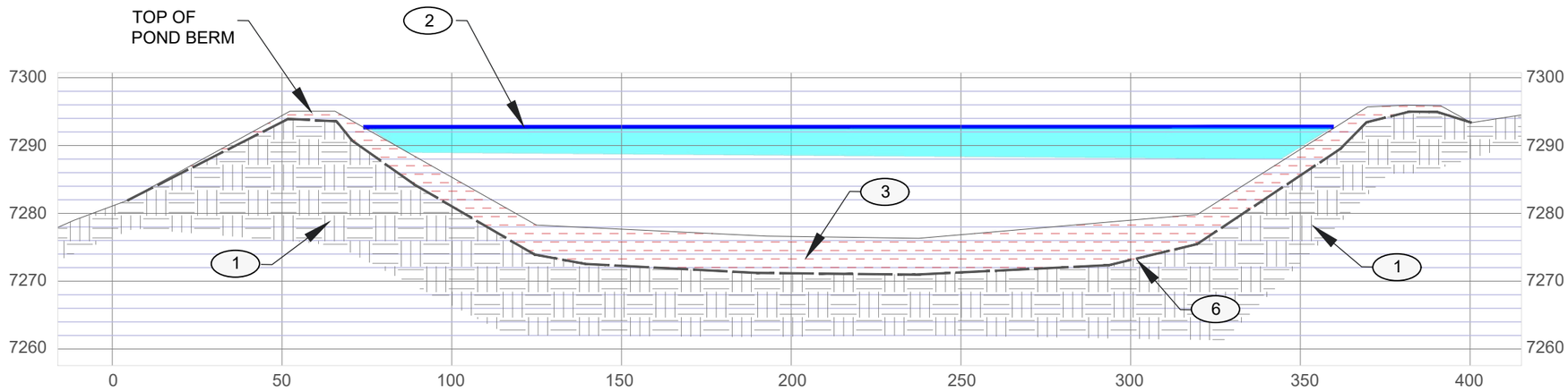
MOUNT TAYLOR MINE - *San Mateo, NM*

Prepared By: Alan Kuhn Associates LLC
Drawn By: EL Engineering Services LLC
PRINT SIZE: B
SCALE: As Shown

MT. TAYLOR MINE
2022 CLOSEOUT / CLOSURE PLAN

SHEET TITLE: FINAL GRADING PLAN - SERVICE AND SUPPORT AREA

SHEET NO.	DWG NO.	REV
CL 07B	GS21-CB107-00	B

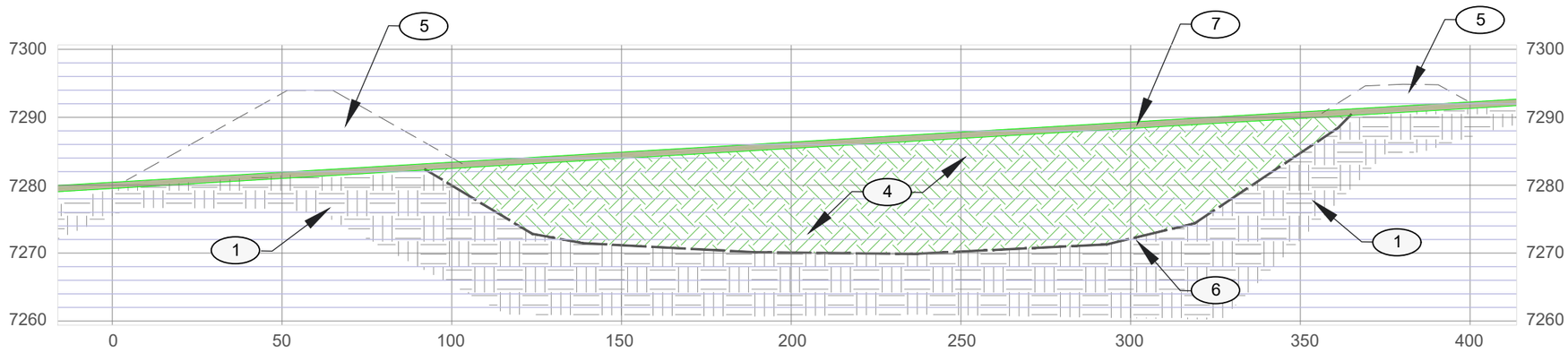


B / CL07 SECTION B - MINE WATER TREATMENT POND BEFORE CLOSURE

E/W SECTION THROUGH POND 8 SHOWN AS EXAMPLE

NOTES:

1. CLEAN SOILS
2. APPROXIMATE TOP OF POND WATER AT OPERATIONAL LEVELS.
3. CONTAMINATED SOILS AND POND SEDIMENTS. (REMOVED AND DEPOSITED IN THE DISPOSAL CELL IN 2018 -2021.)
4. CLEAN FILL FROM POND BERMS AND NEARBY GRADING.
5. POND BERMS REMOVED AND USED AS CLEAN FILL IN POND BASINS.
6. CURRENT GRADES AFTER 2018- 2021 CLEANUP EFFORTS.
7. FINAL GRADES. (NOTE: THE GENTLY SLOPING GRADES ARE SIMILAR TO THE PRE-MINE 1974 TOPOGRAPHY. SEE NOTE G.3)



B.1 / CL07 SECTION B.1 - MINE WATER TREATMENT POND AFTER CLOSURE

E/W SECTION THROUGH POND 8 SHOWN AS EXAMPLE

GENERAL NOTES:

G.1 FOR CONSTRUCTION, PLACEMENT, AND MATERIAL REQUIREMENTS SEE PROJECT EARTHWORK SPECIFICATIONS.

G.2 SEE SHEET CL07A FOR MWTU AREA GRADING PLAN.

G.3 THE FINAL GRADES ON THIS SITE MAY NEED TO BE SLIGHTLY LOWER OR HIGHER THAN THE "PRE-MINE" ELEVATIONS DEPENDING ON THE CUT/FILL BALANCE FOR THE SITE.

REV	DESCRIPTION	DATE	DRAWN BY	ENGINEER	APPROVED
A	FOR REVIEW	12-13-21	EL	EL	AK
B	FOR SUBMITTAL	6-2-22	EL	EL	AK

RIO GRANDE RESOURCES CORP.
MOUNT TAYLOR MINE - *San Mateo, NM*

Prepared By: Alan Kuhn Associates LLC

Drawn By: EL Engineering Services LLC

PRINT SIZE: B

SCALE: As Shown

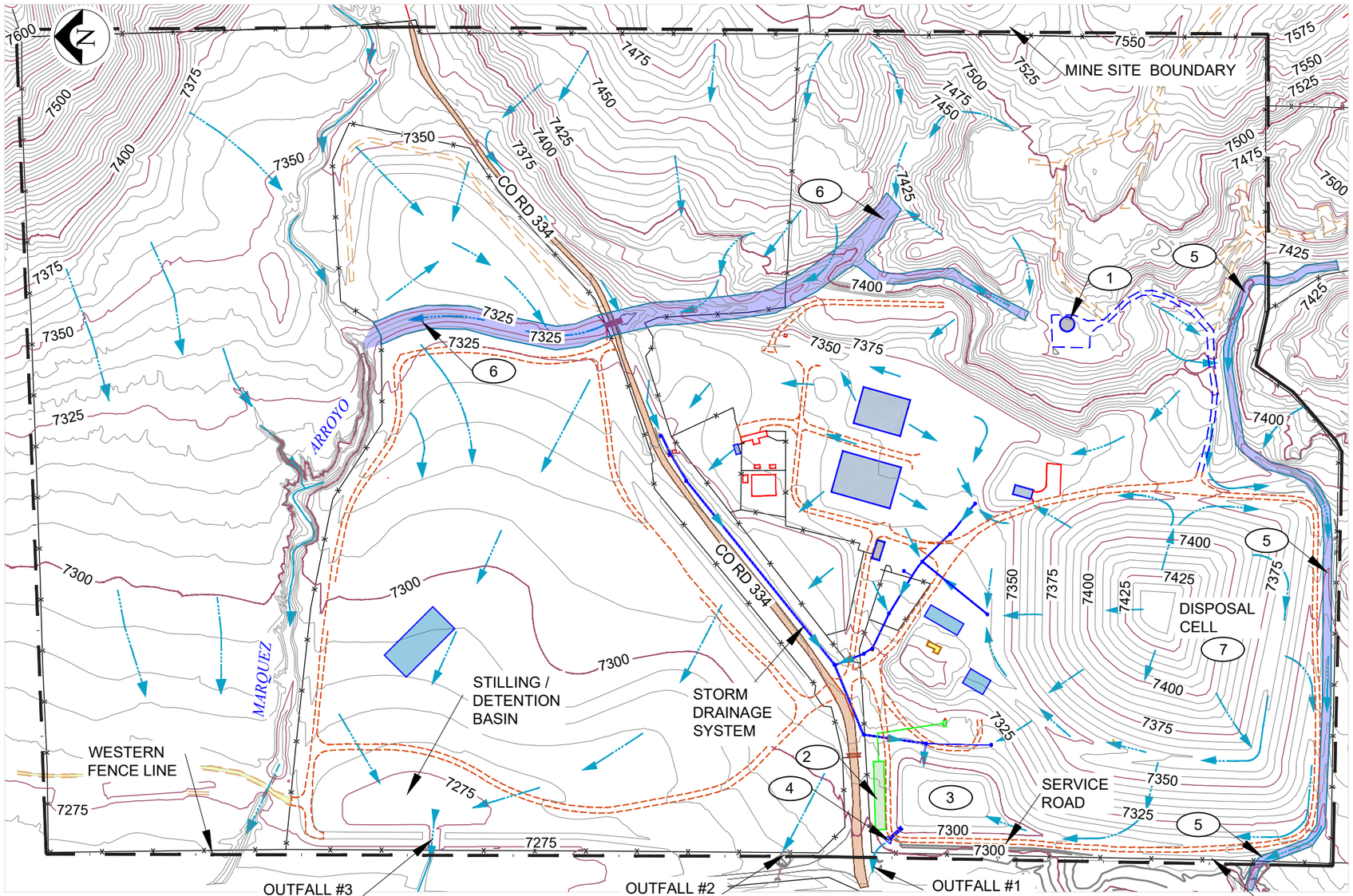
MT. TAYLOR MINE
2022 CLOSEOUT / CLOSURE PLAN

SHEET TITLE: DETAILS - BACKFILL IN POND AREAS

SHEET NO. **CL 08**

DWG NO. **GS21-CB108-00**

REV **B**



LEGEND

- COUNTY ROADS
- ELECTRICAL SUBSTATION AND TRANSFORMERS
- MINE SERVICE ROADS
- FENCE-LINES
- EXISTING BUILDINGS TO REMAIN
- SEPTIC SYSTEM
- INTERMITTENT FLOW WITH DIRECTIONAL ARROW
- DIVERSION CHANNELS
- MINE SITE BOUNDARY
- STORM DRAINAGE SYSTEM
- PRE-MINE ADOBE STRUCTURE

NOTES:

1. WATER TANK
2. SEPTIC SYSTEM
3. SOUTH STORM WATER POND (SSWP)
4. SOUTH STORM WATER POND OVER-FLOW CULVERTS
5. SOUTH DIVERSION CHANNEL- FLOW IN THIS CHANNEL IS ISOLATED FROM THE DISPOSAL CELL DRAINAGE.
6. NORTH DIVERSION CHANNEL
7. ALL DRAINAGE FROM THE WASTE ROCK / DISPOSAL CELL AREA FLOWS INTO THE SOUTH STORM WATER POND.

GENERAL NOTES:

G.1 OUTFALL #1 DRAINS THE SOUTHERN HALF OF COUNTY ROAD 334 FROM THE MINE ACCESS ROAD TO THE WESTERN FENCE LINE. IT ALSO DRAINS THE NARROW STRIP OF PROPERTY BETWEEN THE SERVICE ROAD THE FENCE LINE ON THE NORTH AND WEST SIDES OF THE SSWP .

G.2 OUTFALL #2 DRAINS THE NORTHERN HALF OF THE COUNTY ROAD 334 RIGHT OF WAY FROM THE NORTH DIVERSION CHANNEL TO THE WESTERN FENCE LINE.

G.3 OUTFALL #3 DRAINS THE AREA FROM THE NORTH DIVERSION CHANNEL TO THE WESTERN FENCE LINE AND FROM THE NORTHERN FENCE ALONG COUNTY ROAD 334 TO THE THE FENCE LINE ALONG THE MARQUEZ ARROYO.

G.4 ALL FLOWS INDICATED ON THIS DRAWING SHOW INTERMITTENT FLOW ONLY. THERE ARE NO PERENNIAL OR INTERMITTENT STREAMS NEAR OR ON THIS SITE.

REV	DESCRIPTION	DATE	DRAWN BY	ENGINEER	APPROVED
A	FOR REVIEW	12-16-21	EL	EL	AK
B	FOR SUBMITTAL	6-2-22	EL	EL	AK
C	FOR SUBMITTAL	9-15-25	SM	MM	MM
D	FOR SUBMITTAL	9-08-26	MK	MK	MM

RIO GRANDE RESOURCES CORP.
MOUNT TAYLOR MINE - *San Mateo, NM*

Prepared By: Alan Kuhn Associates LLC

Drawn By: EL Engineering Services LLC

PRINT SIZE: B

SCALE: As Shown

MT. TAYLOR MINE
2022 CLOSEOUT / CLOSURE PLAN

SHEET TITLE: FINAL DRAINAGE PLAN

SHEET NO. **CL 14**

DWG NO. **GS21-CB114-00**

REV **B**

APPENDIX B

Hydrologic and Erosion Analysis

B.1 Design Runoff Calculations

B.2 Surface Water Hydrologic Analysis

- Flood Hydrograph (HEC-1) Analysis
- Water Surface Profile (HEC-2) Analysis

SURFACE WATER RUNOFF HYDROLOGIC ANALYSIS

GENERAL PARAMETRIC EVALUATION AND MODEL INPUT DATA SELECTION FOR HEC-1 (WATERSHED RUNOFF) AND HEC-2 (FLOOD ROUTING)

Design Storm Precipitation (Inches) for Various Frequency Intervals and Durations

Interval years	Duration in Hours					
	1	2	3	6	12	24
2	0.89	1.00	1.07	1.20	1.30	1.50
5	1.03	1.17	1.27	1.45	1.60	1.90
10	1.15	1.32	1.44	1.65	1.83	2.20
25	1.38	1.59	1.73	2.00	2.23	2.70
50	1.71	1.91	2.04	2.30	2.50	2.90
100	1.97	2.15	2.27	2.50	2.73	3.20

** Duration selected must be => time of concentration, Tc

Unit Duration ~= Lg/5.5

Time of Concentration, tc
For watersheds < or = 10 sq. mi.
tc = 0.00013*(L^0.77/S^0.385)
where S = gradient
For watersheds > 10 sq. mi.
tc = 0.385*(11.9*L^3)/H
where H = elevation difference

Curve Number, CN
CN = 71 for P-J uplands (Group D) = 78 for Group B/C soils

Time to Peak Discharge, Tp, hours
Tp = 0.5*dt+Tlag
where dt = duration of excess, or computation interval
Tlag = time between center of rainfall excess and time of peak discharge

Peak flow of unit hydrograph, Qp, cfs/in
Qp = 484*Area*/Tp where Area = subbasin area in sq mi

Average Manning's Coefficient, Kn =
0.26 for uplands, general storm
0.13 for PMF and well-developed drainage courses
0.05 for uplands thunderstorm
0.073 for thunderstorm in well-developed drainage courses
For Southwest region
0.07 for coniferous forest areas
0.042 for desert terrain

WEATHER DATA FOR THE MT. TAYLOR AREA

from National Weather Service Annual Climatological Summaries
1986-1995
Grants Airport (1986-1995) and San Mateo (1986-1987) Stations

GRANTS AIRPORT

AVERAGE MONTHLY PRECIPITATION, INCHES

	J	F	M	A	M	J	JL	A	S	O	N	D	Annual
1986	0.00	0.55	0.32	0.47	1.29	1.94	1.75	1.53	1.10	1.55	2.25	1.35	14.10
1987	1.60	1.24	0.54	0.28	0.89	0.26	2.61	3.05	0.72	0.50	0.82	1.25	13.76
1988	0.19	0.09	0.07	1.74	0.20	1.06	1.22	2.30	1.46	0.85	0.15	0.13	9.46
1989	0.77	0.45	0.16	0.00	0.08	0.10	0.98	0.90	1.64	1.07	0.05	0.11	6.31
1990	0.35	0.17	0.88	1.54	1.02	0.37	1.96	3.99	2.13	1.27	0.62	1.59	15.89
1991	0.66	0.05	1.04	0.65	0.26	0.99	1.05	1.66	1.83	0.27	1.33	1.76	11.55
1992	0.72	0.27	0.93	0.67	2.68	0.46	1.68	1.86	1.23	0.90	0.90	1.26	13.56
1993	1.91	1.15	1.94	0.25	1.10	0.00	0.43	4.23	0.35	0.60	0.43	0.18	12.57
1994	0.10	0.38	0.77	0.52	2.02	0.18	0.84	1.50	1.42	1.82	1.84	0.30	11.69
1995	0.49	0.30	0.38	0.09	0.29	0.49	0.45	1.92	0.86	0.00	0.30	0.37	5.94
AVE	0.68	0.47	0.70	0.62	0.98	0.59	1.30	2.29	1.27	0.88	0.87	0.83	11.48

	FREEZE-FREE DAYS	ANNUAL TEMP., F LOW	HIGH
1986	141	0	96
1987	132	-18	NA
1988	120	-6	94
1989	167	-15	101
1990	159	-33	99
1991	154	-7	98
1992	183	-9	99
1993	138	-4	98
1994	140	-3	101
1995	129	2	102
AVE	**146.3**	**-9.3**	**98.7**

SAN MATEO

	J	F	M	A	M	J	JL	A	S	O	N	D	Annual
1986	0.04	0.13	0.45	0.38	0.73	0.84	3.45	1.78	1.90	1.91	3.88	0.57	16.06
1987	0.92	2.81	0.84	0.14	0.78	0.73	0.39	3.97	0.23	0.72	0.54	2.00	14.07
1988	2.64												*10.22*
1989													*6.82*
1990													*17.17*
1991													*12.48*
1992													*14.66*
1993													*13.59*
1994													*12.63*
1995													*6.42*
AVE	1.20	1.47	0.65	0.26	0.76	0.79	1.92	2.88	1.07	1.32	2.21	1.29	**12.41**

	FREEZE-FREE DAYS	ANNUAL TEMP., F LOW	HIGH
1986	155	4	89
1987	181	0	89
1988	*146*	*5*	*87*
1989	*204*	*-4*	*94*
1990	*194*	*-22*	*92*
1991	*188*	*4*	*91*
1992	*223*	*2*	*92*
1993	*168*	*7*	*91*
1994	*171*	*8*	*94*
1995	*157*	*13*	*95*
AVE	*179*	***2***	***91***

CORRECTION FACTORS

F-F DAYS	LOW	HIGH
0.9097	4	-7
0.7293	18	
0.8195	11	-7
0.8195	11	-7
0.8195	11	-7
0.8195	11	-7
0.8195	11	-7
0.8195	11	-7
0.8195	11	-7
0.8195	11	-7

RAINFALL PARAMETERS

Design Storm Precipitation (Inches) for Various Frequency Intervals and Durations

Interval years	Duration in Hours					
	1	2	3	6	12	24
2	0.9	1.0	1.1	1.2	1.3	1.5
5	1.0	1.2	1.3	1.45	1.6	1.9
10	1.2	1.3	1.4	1.65	1.8	2.2
25	1.4	1.6	1.7	2.0	2.2	2.7
50	1.7	1.9	2.0	2.3	2.5	2.9
100	2.0	2.1	2.3	2.5	2.7	3.2

** Duration selected must be => time of concentration, Tc

Fraction of one hour

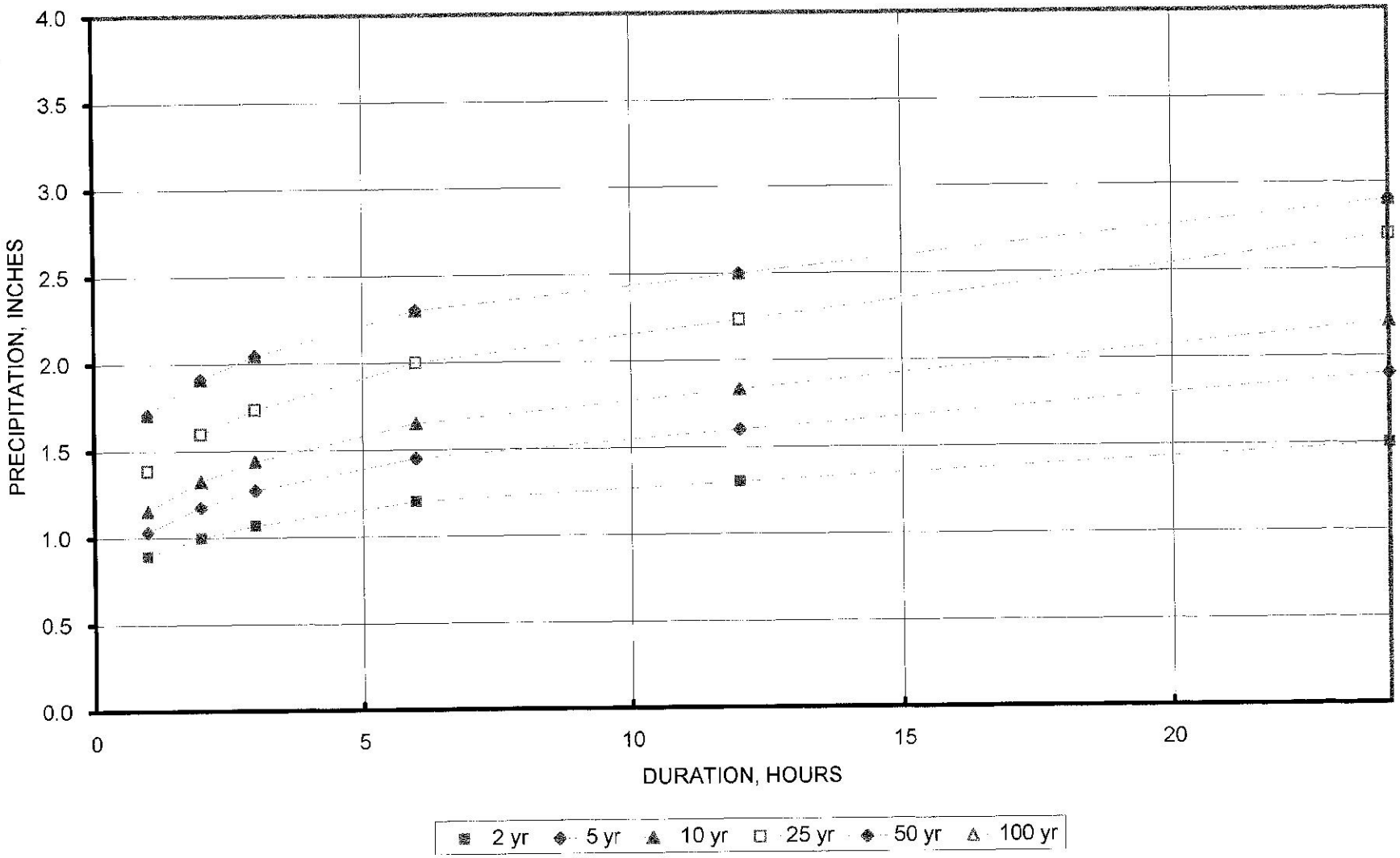
depth10 = 0.59 depth15 + 0.41 depth5
depth30 = 0.49 depth60 + 0.51 depth15

Minutes	Hours	Fraction of 1-Hr Depth inches
0	0	0.00
5	0.08	0.60
10	0.17	0.75
15	0.25	0.85
30	0.50	0.93
45	0.75	0.97
60	1.00	1.00

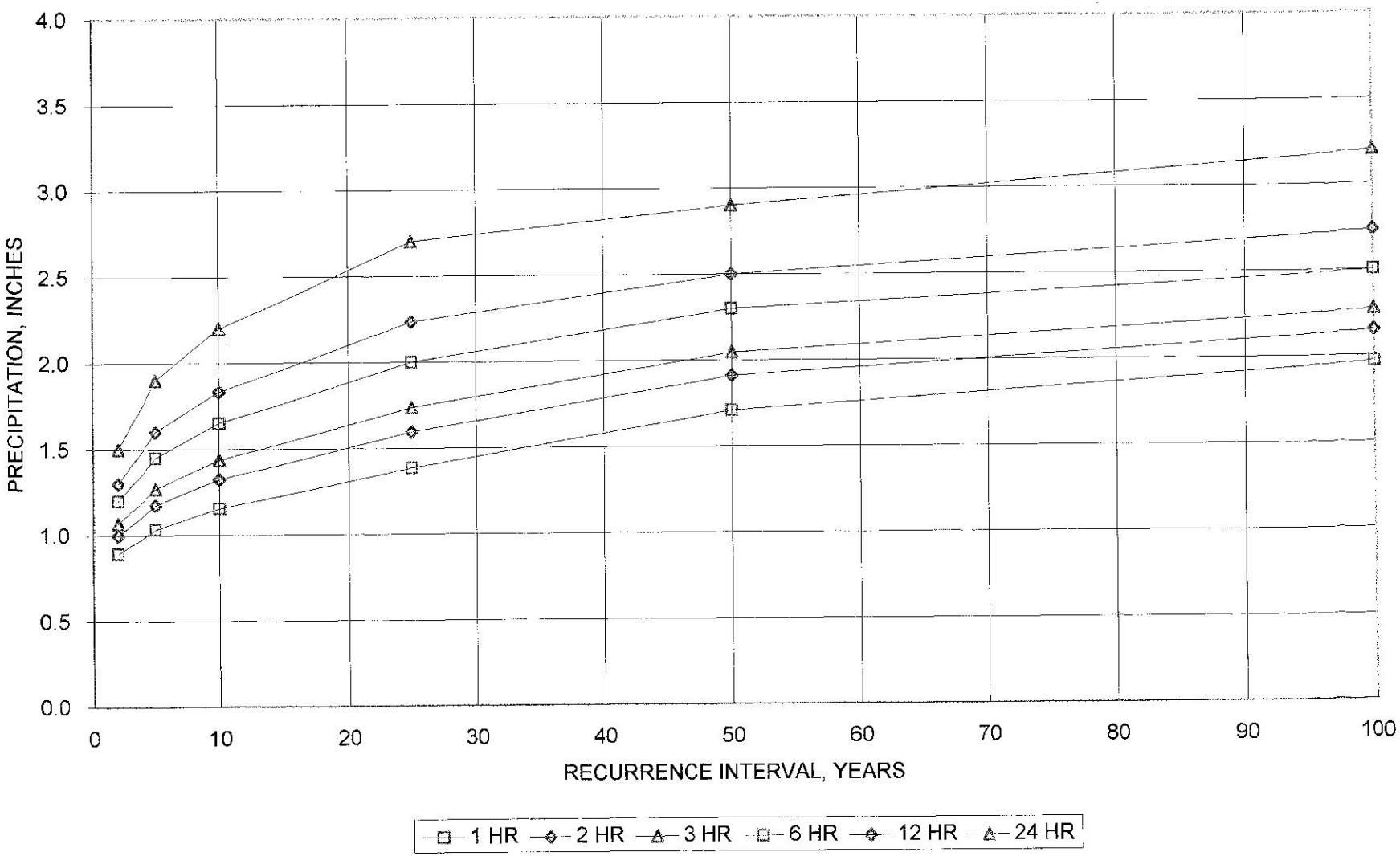
Triangular Precipitation Distribution for 24 hr/100 yr Event

Time Step hours	Cum Precip	Interval Depth	Balanced Storm Hyetograph
0	0	0	0
1	1.97	1.9686	0.0300
2	2.15	0.1812	0.0367
3	2.27	0.1212	0.0400
4	2.35	0.0790	0.0400
5	2.42	0.0700	0.0400
6	2.50	0.0800	0.0400
7	2.54	0.0400	0.0400
8	2.58	0.0400	0.0400
9	2.62	0.0400	0.0400
10	2.66	0.0400	0.0700
11	2.69	0.0300	0.0800
12	2.73	0.0433	0.1812
13	2.77	0.0367	1.9686
14	2.81	0.0400	0.1212
15	2.85	0.0400	0.0790
16	2.89	0.0400	0.0433
17	2.93	0.0400	0.0400
18	2.97	0.0400	0.0400
19	3.00	0.0300	0.0400
20	3.04	0.0400	0.0400
21	3.08	0.0400	0.0400
22	3.12	0.0400	0.0400
23	3.16	0.0400	0.0400
24	3.20	0.0400	0.0300

PRECIPITATION DEPTH VS DURATION
MT TAYLOR MINE WATERSHED



PRECIPITATION VS INTERVAL AND DURATION
MT TAYLOR MINE WATERSHED



9431HYD.XLS

SURFACE WATER RUNOFF HYDROLOGIC ANALYSIS - MT. TAYLOR MINE
WATERSHED PARAMETERS

A73.K145

PARAMETERS	Marquez/ Maruca Basin				Hummer Basin		
	Total Basin	Marquez Canyon above junction	Maruca Canyon	Lower Marquez Canyon	Total Basin	East Hummer	West Hummer
L, length of longest watercourse, ft =	32312	26805	26214	7000	10481	9513	5644
Maximum elevation	9250	9250	9380	7928	8300	8300	7810
Minimum elevation	7260	7450	7450	7450	7315	7350	7315
H, difference in elevation	1990	1800	1930	478	985	950	495
S, slope gradient =	0.062	0.067	0.074	0.068	0.094	0.100	0.088
in ft/mi =	325	355	389	361	496	527	463
Time of Concentration, tc, hrs (watersheds < 10 sq. mi.) = 0.00013*(L^0.77/S^0.385) =	1.13	0.94	0.90	0.33	0.40	0.37	0.26
Area, sq. mi.	5.02	2.76	1.63	0.63	0.54	0.4	0.14
Lag Time, Lg, hrs							
USBR method, Lg = C*(L*Lc/S^.5)^N =	1.58	1.38	1.34	0.57	0.70	0.65	0.47
Constant, C = 26*Kn =	1.56	1.56	1.56	1.56	1.56	1.56	1.56
Constant, N =	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Length of Longest Watercourse, L, mi =	6.12	5.08	4.96	1.33	1.99	1.80	1.07
Length Along L to Point Opposite Watershed Centroid, Lc, mi =	3.06	2.54	2.48	0.66	0.99	0.90	0.53
Overall Slope of L, S, ft/mi =	325	355	389	361	496	527	463
Average Manning's Coefficient, Kn = 0.06 average based on: For Southwest region 0.07 for coniferous forest 0.042 for desert terrain	0.06	0.06	0.06	0.06	0.06	0.06	0.06
SCS Method, Lg = 0.6 Tc	0.68	0.57	0.54	0.20	0.24	0.22	0.15
Unit Duration, dt, hours ~= Lg/5.5	0.12	0.10	0.10	0.04	0.04	0.04	0.03
rounded to	0.1	0.1	0.1	0.04	0.04	0.04	0.03
Time to Peak Discharge, Tp, hours							
Tp = 0.5*dt+Lg	0.73	0.62	0.59	0.22	0.26	0.24	0.17
Peak flow of unit hydrograph, Qp, cfs/in							
Qp = 484*Area*/Tp	3344	2166	1342	1384	999	810	401
Vol. = volume of runoff, cfs-day from 1 inch rainfall	134.99	74.22	43.83	16.94	14.52	10.76	3.76
Curve Number, CN							
CN = 71 for P-J upland (Group D) = 78 for Group B/C soils							

Temporal Distribution - Dimensionless Unit Hydrograph

m1.u71

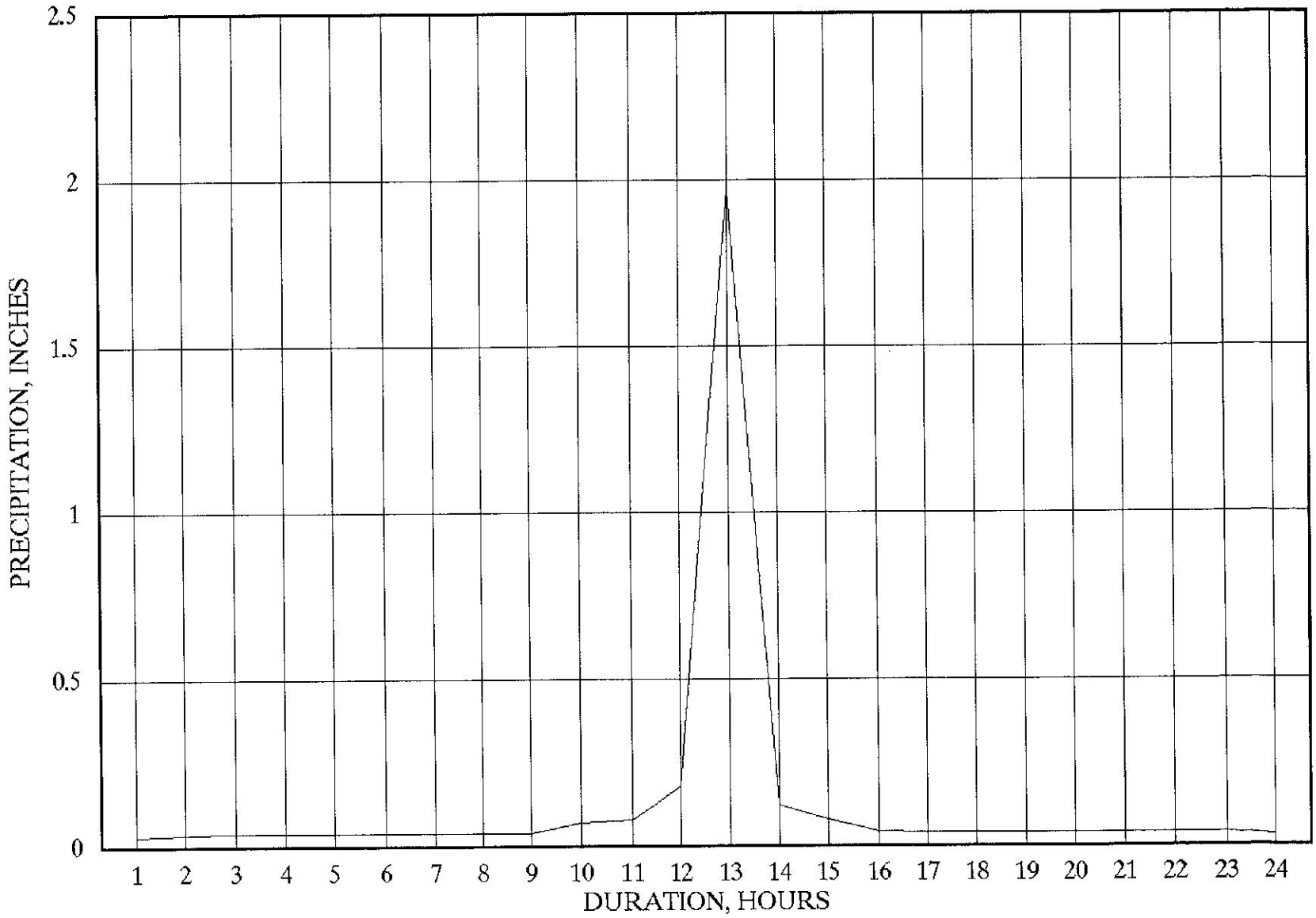
** % of (Lg+D/2)	** q	q*(Lg+D/2)/V	differential q*(Lg+D/2)/Vol.	Time hours	% of (Lg+D/2)	Ordinate	Unit q cfs
5	0.19	0.0016		0.25	40.5	0.032	3.86
10	0.32	0.0027	0.0011	0.50	81.1	0.239	28.73
15	0.48	0.0040	0.0013	0.75	121.6	0.101	12.11
20	0.74	0.0061	0.0022	1.00	162.1	0.129	15.49
25	1.21	0.0101	0.0039	1.25	202.7	0.220	26.46
30	1.81	0.0150	0.0050	1.50	243.2	0.225	27.06
35	2.63	0.0219	0.0068	1.75	283.7	0.167	20.13
40	3.68	0.0306	0.0087	2.00	324.3	0.112	13.46
45	5.47	0.0455	0.0149	2.25	364.8	0.080	9.61
50	8.41	0.0699	0.0244	2.50	405.3	0.060	7.16
55	12.61	0.1048	0.0349	2.75	445.9	0.048	5.74
60	16.5	0.1371	0.0323	3.00	486.4	0.040	4.79
65	20.5	0.1704	0.0332	3.25	526.9	0.034	4.07
70	23.97	0.1992	0.0288	3.50	567.5	0.029	3.46
75	27.75	0.2306	0.0314	3.75	608.0	0.024	2.93
80	28.91	0.2403	0.0096	4.00	648.5	0.021	2.48
85	28.07	0.2333	-0.0070	4.25	689.1	0.018	2.12
90	26.38	0.2192	-0.0140	4.50	729.6	0.015	1.80
95	24.18	0.2009	-0.0183	4.75	770.1	0.013	1.52
100	21.55	0.1791	-0.0219	5.00	810.7	0.011	1.31
105	18.92	0.1572	-0.0219	5.25	851.2	0.009	1.11
110	16.08	0.1336	-0.0236	5.50	891.7	0.008	0.94
115	14.19	0.1179	-0.0157	5.75	932.3	0.007	0.80
120	12.61	0.1048	-0.0131	6.00	972.8	0.006	0.68
125	11.04	0.0917	-0.0130	6.25	1013.3	0.005	0.58
130	9.99	0.0830	-0.0087	6.50	1053.9	0.004	0.49
135	9.04	0.0751	-0.0079	6.75	1094.4	0.003	0.42
140	8.2	0.0681	-0.0070	7.00	1135.0	0.003	0.36
145	7.36	0.0612	-0.0070	7.25	1175.5	0.002	0.30
150	6.78	0.0563	-0.0048				
155	6.2	0.0515	-0.0048				
160	5.83	0.0484	-0.0031				
165	5.47	0.0455	-0.0030				
170	5.15	0.0428	-0.0027				
175	4.84	0.0402	-0.0026				
180	4.57	0.0380	-0.0022				
185	4.31	0.0358	-0.0022				
190	4.1	0.0341	-0.0017				
195	3.87	0.0322	-0.0019				
200	3.68	0.0306	-0.0016				
205	3.47	0.0288	-0.0017				
210	3.28	0.0273	-0.0016				
215	3.1	0.0258	-0.0015				
220	2.93	0.0243	-0.0014				
225	2.75	0.0229	-0.0015				
230	2.63	0.0219	-0.0010				
235	2.47	0.0205	-0.0013				
240	2.33	0.0194	-0.0012				
245	2.22	0.0184	-0.0009				
250	2.1	0.0175	-0.0010				
255	1.99	0.0165	-0.0009				
260	1.88	0.0156	-0.0009				
265	1.78	0.0148	-0.0008				
270	1.68	0.0140	-0.0008				
275	1.59	0.0132	-0.0007				
280	1.5	0.0125	-0.0007				
285	1.43	0.0119	-0.0006				
290	1.36	0.0113	-0.0006				
295	1.28	0.0106	-0.0007				
300	1.21	0.0101	-0.0006				
305	1.15	0.0096	-0.0005				

Lg =	0.57	0.54	0.20
D =	0.1	0.1	0.04
Lg+D/2 =	0.62	0.59	0.22
Vol. =	74.22	43.83	16.94

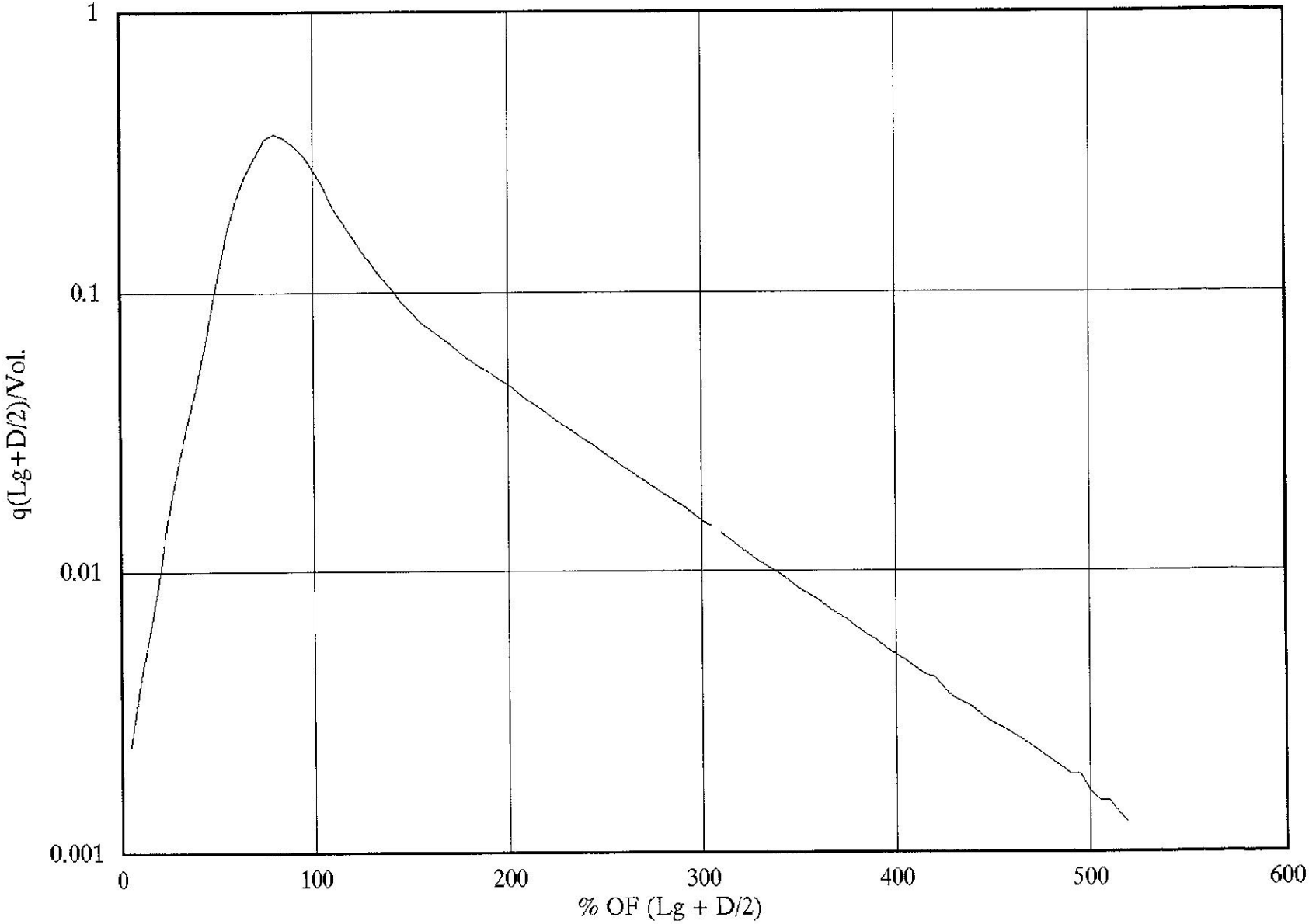
** from Table 3-13, USBR 1987

BALANCED STORM HYETOGRAPH – 24 HR/100YR

MT TAYLOR MINE WATERSHED

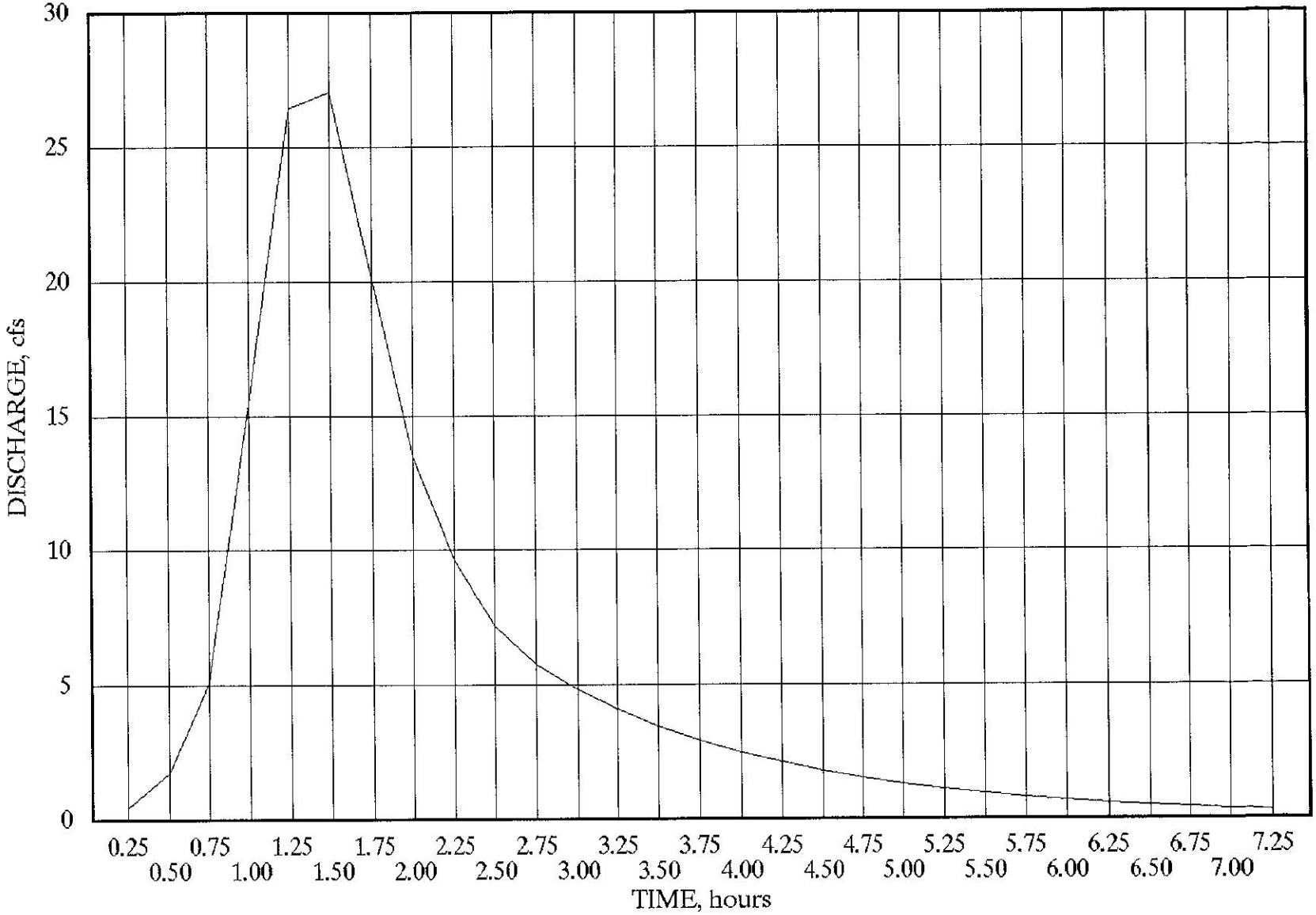


DIMENSIONLESS UNIT HYDROGRAPH FOR MARQUEZ WATERSHED
MT TAYLOR MINE

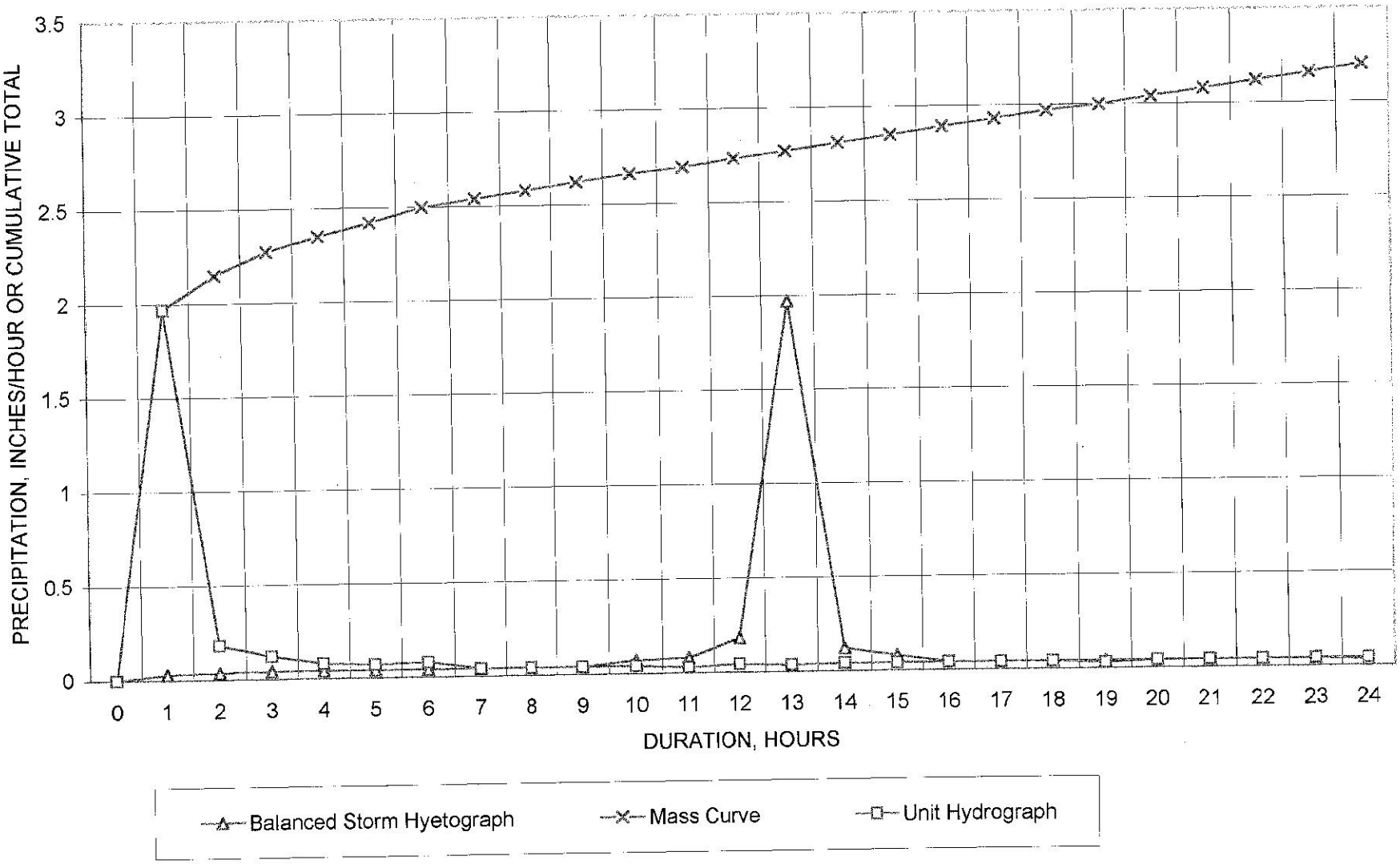


UNIT HYDROGRAPH AT SITE WEST BOUNDARY

MT. TAYLOR MINE – MARQUEZ CANYON WATERSHED



24 HR/100YR RAINFALL DISTRIBUTION
MT TAYLOR MINE - MARQUEZ CANYON WATERSHED



HEC1 S/N: 1343001323 HMVersion: 6.33 Data File: MARQEZ.HC1

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*****************************************                    ****************************************
*                                       *                    *                                      *
   FLOOO HYDROGRAPH PACKAGE  (HEC·1)    *                    *   U.S. ARMY CORPS OF ENGINEERS       *
+              MAY  1991                *                    *   HYDROLOGIC ENGINEERING CENTER      *
*           VERSION 4.0.1E              *                    *         609 SECOND STREET            *
*                                       *                    *       DAVIS CALIFORNIA 95616         *
*  RUN DATE 09/06/1996 TIME  10:53:37   *                    *         (y16) 756-1104               *
*****************************************                    ****************************************
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X     X XXXXXXX  XXXXX         X
X     X  X       X    X       XX
 X     X  X      X             X
X XXXXXX  X XXX  X       XXXXX  X
X     X  X       X              X
X     X  X       X    X         X
X     X XXXXXXX  XXXXX         XXX
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Full Microcomputer lrrplementation
by
Haestad Methods, Inc.

37 Brookside Road* Waterbury, Connecticut 06708 * (203) 755-1666

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73}, HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP· AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK· ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS JS THE FORTRAN?? VERSION
NEU OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS;WRJTE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
    1     ID  PRECIP DEPTH, AREA SIMULATION FOR MARQUEZ CANYON WATERSHED - MT. TAYLOR HINE
    2     ID  100 YEAR, 24 HOUR STORM EVENT
    3     IT      15        0        0       96
    4     IO       1
    5     JO     3.2      5.02
    6     PIT                      1.2     1.70    Z.00     2.1      2.3     2.5     2.7     3.2
    7     KK       10 RUNOFF FROM UPPER MARQUEZ CANYOM TO MARUCA JUNCTION
    8     KO        0
    9     SA    2.76         0
   10     BF       0         0        1
   11     LS       0        71        0
   12     UD      .57
   13     KK     1040 ROUTE MARQUEZ RUNOFF TO JUNCTION
   14     RO    26805    .067     .06            TRAP     4.5      1.9
   15     1(1(     20  RUNOFF FROM MARUCA CANYON
   16     1(0       0
   17     BA    t.63         0
   18     BF       0         0        1
   19     LS       0        71        0
   20     U0     .54
   21           2040  ROUTE MARUCA RUNOFF TO JUNCTION
   22     1(1(  _2 6-2-1-4   .074      .06            TRAP     4.5      1.9
   23     KK       30 RUNOFF FROM LOWER MARQUEZ CANYON
   24     BA     .63         0
   25     BF       O         O        1
   26     LS       O        78        0
   27     UO     .20
   28     KK       40 COMBINE 10  20,30 RUNOFF
   29     KM    COMBINE RUNOFF FROM UPPER MARQUEZ AND MARUCA CANYONS AND LOWER MARQUEZ
   30     KC       3         0
   31     KO       0
   32     KK    4050 ROUTE COMBINED 10,20, ANO 30 RUNOFF TO WEST SIDE OF  !NE PROPERTY
   33     RO    5507    ,068     .06            TRAP     4.5      1.9
   34     Z
```

C1 S/N: 1343001323 HMVersion: 6.33 Data File: MARQEZ.HC1

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAk	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOJR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
!\YDROGRAPH AT	10	990.	12.50	213.	65.	65.	2.76		
ROUTED TO	1040	929.	13.00	210.	63.	63.	2.76		
HYDROGRAPH AT	20	604.	12.50	126.	38.	38.	1.63		
ROOTED TO	2040	593.	13.00	131.	39.	39.	1.63		
HYDROGRAPH AT	30	625.	12.00	73.	22.	22.	0.63		
3 COMBINED AT	40	1579.	13.00	407.	123.	123.	5.02		
ROUTED TO	4050	1502.	13.00	406.	123.	123.	5.02		

100 YEAR- 24 HOUR EVENT

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
•	3.000	0.00	0.00	0.00	318.50	361.00	320.18	320.18	320.73	232.10	5.94	60.75	23.70
	2.000	800.00	0.00	0.00	331.75	361.00	333.96	333.73	334.43	135.64	5.51	65.48	31.00
	1.000	900.00	0.00	0.00	344.00	361.00	346.37	346.15	346.94	141.74	6.10	59.21	30.32

100 YEAR- 24 HOUR EVENT

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	3.000	361.00	320.18	0.00	0.00	0.00	56.32	0.00
	2.000	361.00	333.96	0.00	13.78	0.00	45.22	800.00
	1.000	361.00	346.37	0.00	12.41	0.00	36.07	900.00

HEC-2 WATER SURFACE PROFILES
Version 4.6.2; May 1991
JN DATE 6SEP96 TIME 10:59:50

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HYDROLOGIC ENGINEERING CENTER
609 SECOND STREET, SUITED
DAVIS, CALIFORNIA 95616-4687
(916) 756-1104

FULL MICRO-COMPUTER IMPLEMENTATION

H A E S T AD ME TH O DS

37 Brookside Road * Waterbury, Connecticut 06708 * (203) 755-1666

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'E'G'2''A'T'E'R''S'U'R'F'A'C'E''P'R'O'F'I L E S

WATER PROFfIE ANALYSES FOR MARQUEZ CANYON ARROYO ACROSS MINE SITE
!MT. 1AYLOR MINE, WITHOUT CHANNEL IMPROVEMENTS
: 100 YEAR· 24 HOUR EVENT

!CHECK	**INQ**	**NlNV**	**IDIR**	STRT	**METRIC**	**HVINS**	Q	**WSEL**	FQ
	0	0	0	-1	0	0	1579		0

NPROf	!PLOT	PRFVS	XSECV	XSECH	**FN**	ALLOC	**IBW**	CKNIM	**ITRACf.**
-1	**1**	0	0	0	0	-1	0	0	

VARIABLE CODES **FOR SUMMARY** PRINTOUT

150

LPRNT **NUMSEC** ***·****REQUESTED SECTION NUMBERS********

-1 -10

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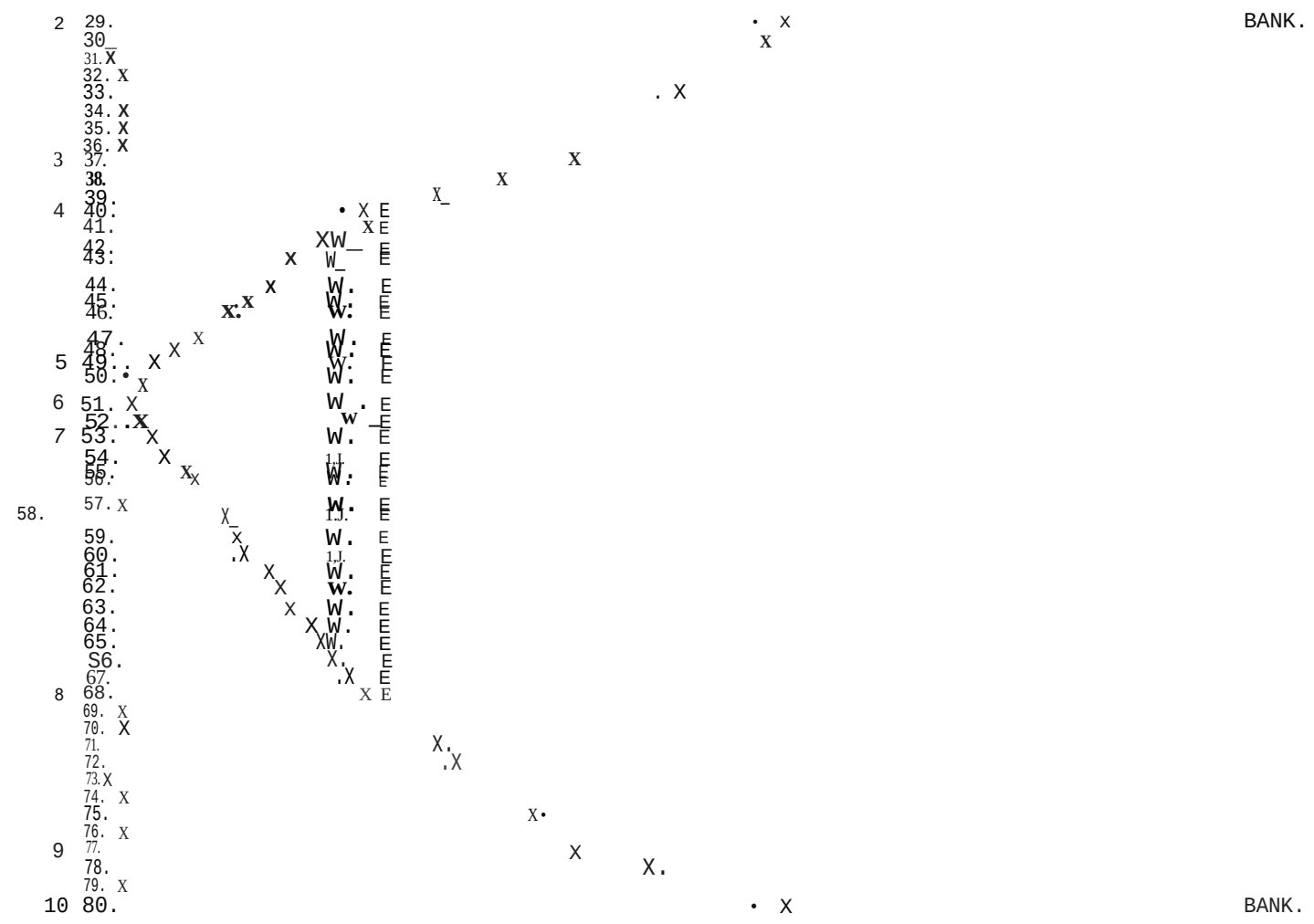
1	3	8	10	50	0	0	0	0	0	1
R	270	0	265	10	260	19	257	22	257	28
R	260	35	265	50	267	68				
	2	11	40	108	1200	1200	1200	0	0	1
	305	0	300	40	285	50	280	62	277	67
R	276	77	277	87	280	90	285	92	300	108
R	305	118								
1		9	29	80	350	350	350	0	0	1
R	320	29	310	37	300	40	290	49	289	51
R	290	53	300	68	310	77	320	80		

CROSS SECTION 1.00
STREAM 100 YEAR- 24 HOUR EVENT
DISCHARGE"' 1579_

PLOTTED POINTS (BY PRIORITY)-B"'BOTTOM BR!DGE,T,,,TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

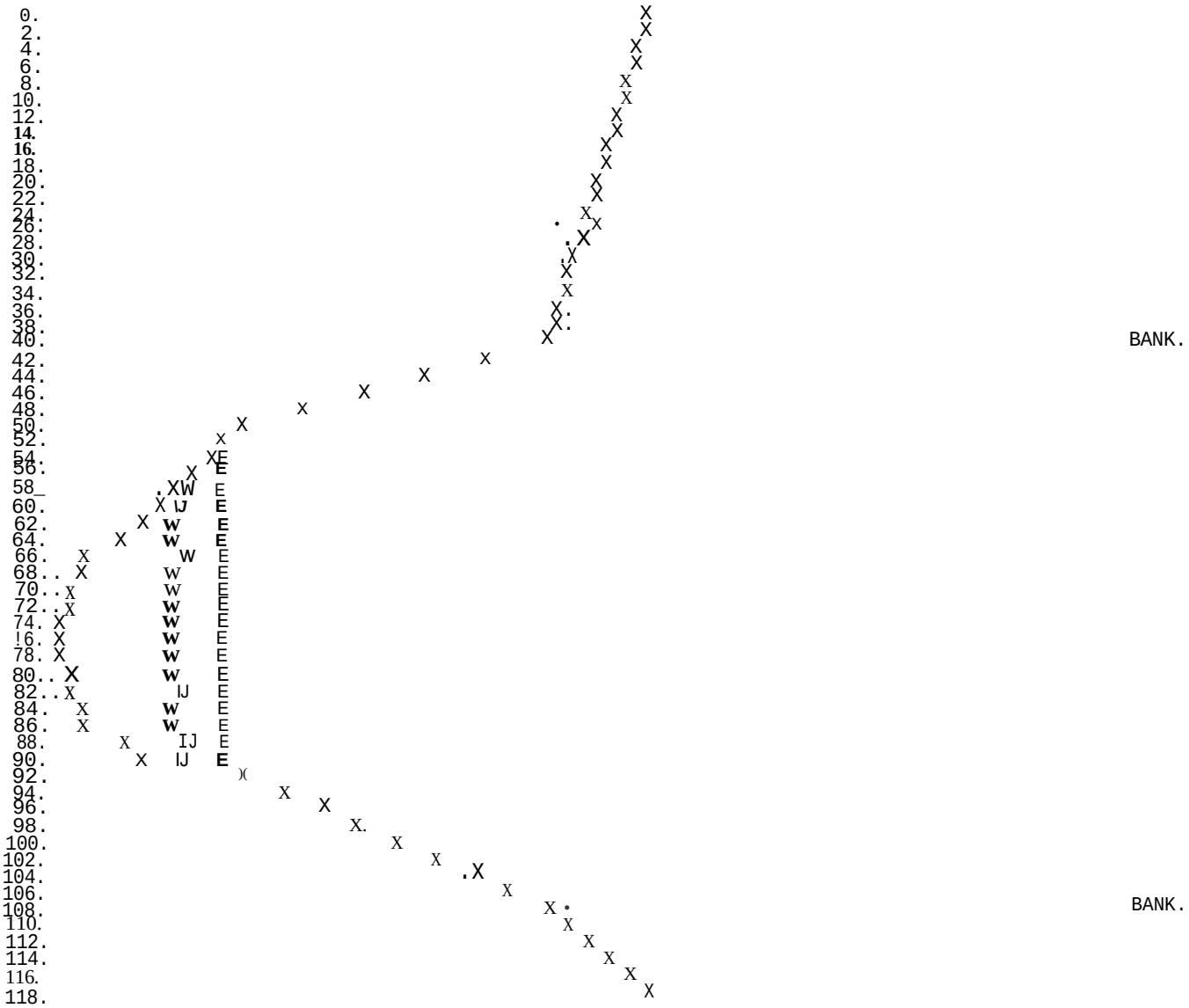


CROSS SECTION 2.00
STREAM 100 YEAR- 24 HOUR EVENT
DISCHARGE= 1579.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,IJ=IJATER SUR,E=ENERGY GRADIENT,C=CRITICAL IJSEL

E. 276.0 281.0 286.0 291.0 296.0 301.0 306.0 311.0 316.0 321.0 326.0

STA-FEET

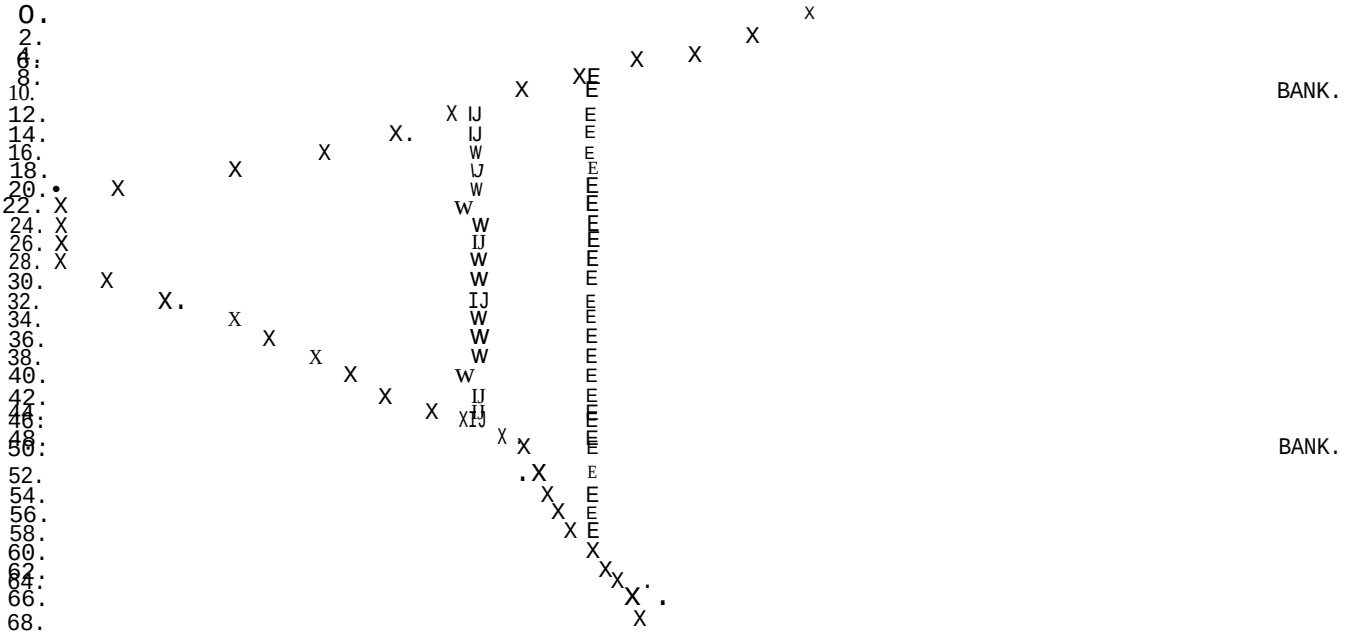


CROSS SECTION 3.00
STREAM 100 YEAR· 24 HOUR EVENT
DISCHARGE= 1579.

P. ED POINTS (BY PRIORITY)·B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,IJ=\JATER SUR,E=ENERGY GRADIENT,C=CRITICAL IJSEL

ELEV 257.0 259.0 261.0 263.0 265.0 267.0 269.0 271.0 273.0 275.0 277.0

STA-FEET



100 YEAR· 24 HOUR EVENT

SUMMARY PRINTOUT TABLE 150

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•	3.000	0.00	0.00	0.00	257.00	1579.00	264.15	264.15	266.10	168.24	11.23	140.58	121.74
	2.000	1200.00	0.00	0.00	276.00	1579.00	282.16	281.77	283.90	132.33	10.60	148.91	137.26
*	1.000	350.00	0.00	0.00	289.00	1579.00	298.49	298.49	301.07	194.22	12.89	122.54	113.30

100 YEAR· 24 HOUR EVENT

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
•	3.000	1579.00	264.15	0.00	0.00	0.00	35.90	0.00
	2.000	1579.00	282.16	0.00	18.01	0.00	34.04	1200.00
*	1.000	1579.00	298.49	0.00	16.34	0.00	24.38	350.00

HEC1 S/N: 1343001323 HMVersion: 6.33 Data File: hu1Trller.hc1

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*  FLOOD HYOROGRAPH PACKAGE (HEC·l)     *
*               MAY  1991               *
*            VERSION 4.0.1E             *
*                                       *
*  RUN DATE 09/06/1996  TIME  15:18:49  *
*                                       *
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*                                       *
*     U.S. ARMY CORPS OF ENGINEERS      *
*     HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET            *
*        DAVIS CALIFORNIA 95616         *
*           (Y16) 756-1104              *
*                                       *
*****************************************
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x     x  xxxxxxx  xxxxx          x
x     x  x       x     x        xx
x     x  x       x              x
xxxxxxx  xxxx    x       xxxxx  x
x     x  x       x              x
x     x  x       x     x        x
x     x  xxxxxxx  xxxxx          xxx
```

Full Microcomputer Implementation
by
Haestad Methods, Inc.

37 Brookside Road* Waterbury, Connectlcut 06708 * (203) 755-1666

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP· AND ·RTIOR· HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION *OF* -AMSKK· ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:REAO TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: **NEW** FINITE DIFFERENCE ALGORITHM

```
LINE      10 .....1....2....3....4....5....6.....7....8....9....10
   1      ID  PRECIP DEPTH- AREA SIMULATION FOR HUMMER WATERSHED - MT. TAYLOR MINE
   2      ID  100 YEAR, 24 HOUR STORM EVENT
   3      IT     15       0       0      96
   4      10      1
   5      JD    3.2     .54
   6      PH                    1.2     1.70    2.00     2.1     2.3     2.5     2.7     3.2
   7      1(1(    10 RUNOFF FRa-1 EAST HUMMER
   8      KO       0
   9      BA     .40       0
          BF       0       0       1
  10      LS       0      71       0
  11      UD     .22
  12
  13      KI(   1030  ROUTE EAST HUMKER RUNOFF TO JUNCTION 30
  14      RD    9513   0.10    •06          TRAP     14     4.0
  15      KK      20  RUNOFF FROM WEST HUMMER
  16      J(Q      0
  17      BA     .14       0
  18      Bf       0       0       1
  19      LS       0      71       0
  20      LIO   0.15
  21      KK    2030  ROUTE WEST HUMMER RUNOFF TO JUNCTION 30
  22      RD    5644   0.088     .06          TRAP     14     4.0
  23      KK      30 COMBINE 10 AND 20 RUNOFF
  24      KM    COMBINE RUNOFF FROM EAST AND WEST HUMMER
  25      HC       2       0
  26      1(0      0
  27      KK    3040 ROUTE COMBINED 10 AND 20 RUNOFF TO WEST SIDE OF MINE PROPERTY
  28      RO     968    .036    .03          TRAP     14      4
  29      ZZ
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r1 S/N: 1343001323 IIMVersion: 6.33 Date File: hU11111er_nc1

RUMOFF SUMMARY

FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLO\J FOR MAXIMUM PERIOD 6·1!0UR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	10	226.	12.00	31.	9.	9.	0.40		
ROUTED TO	1030	254.	12.25	35.	10.	to.	0.40		
HYDROGRAPH AT	20	118.	12.00	11.	3.	3.	0.14		
ROUTED TO	2030	107.	12.25	11.	3.	3.	0.14		
2 COMBINED AT	30	361.	12.25	46.	14.	14.	0.54		
ROUTED TO	3040	334.	12.25	46.	14.	14.	0.54		

HEC-2 ATER SURFACE PROFILES
rsion 4.6.2; May 1991
DATE 6SEP96 TINE 16:05:18

U.S. ARMY CORPS OF ENGINEERS
HYDROLOGJC ENGINEERING CENTER
609 SECOND STREET, SUITED
DAVIS, CALIFORNIA 95616-4687
(916) 756·1104

FULL MICRO•CCf,tPUTER IMPLEMENTATION

H A E S T A D M E T H O O S

37 Brookside Road * Uaterbury, Connecticut 06708 * (203) 755·1666

THIS RUN EXECUTED 6SEP96 16:05:18

lEC·2 UATER SURFACE PROFILES

WATER PROFILE ANALYSES FOR HUMMER WATERSHED WITHOUT IMPROVEMENTS
'.MT. TAYLOR MINE
100 YEAR· 24 HOUR EVENT

!CHECK	INQ	NIIIV	!DIR		METRIC	HVINS	Q	USEL	FQ
	0	0	0	ST R T	0	0	361		0

NPROf	!PLOT	PRFVS	XSECV	XSECH	HI	ALLDC	IBW	CHNlM	lTRACE
-1		0	0	0	0	-1	0	0	

VARIABLE COOES FOR **SUMMARY** PRINTOUT

150

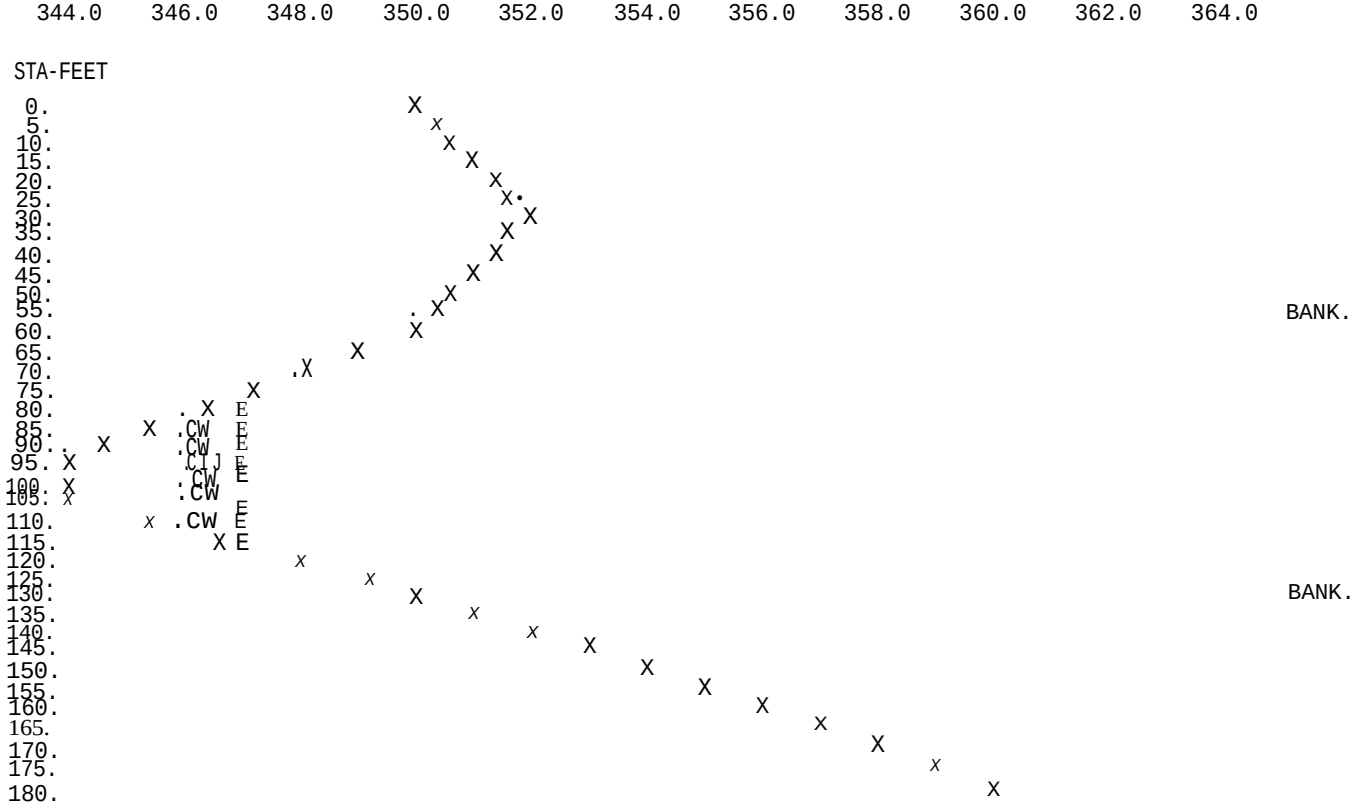
LPRNT NU1'1SEC ********REQUESTED SECTION NUMBERS********
-1 -10

!HLEQ	!COPY	SUBDTV	STRTDS	RMILE
		0	0	0

.03	.03	.040	.1	.3			0	0	1
3	7	110	186						
325	0	321	80	321	110	318.5	142	318.5	158
321	186	323.7	280						
2	7	**85**	**159**	820	790	800	0	0	1
340	0	336	60	**336**	85	331.75	115	331.75	129
336	159	**338.2**	**280**						
1	7	60	130	900	900	900	0	0	1
350	0	352	30	**350**	60	344	93	344	107
350	130	360	180						

CROSS SECTION 1.00
STREAM 100 YEAR· 24 HOUR EVENT
OISCHARGE= 361.

PLOTTED POINTS (BY PRIORITY)·B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

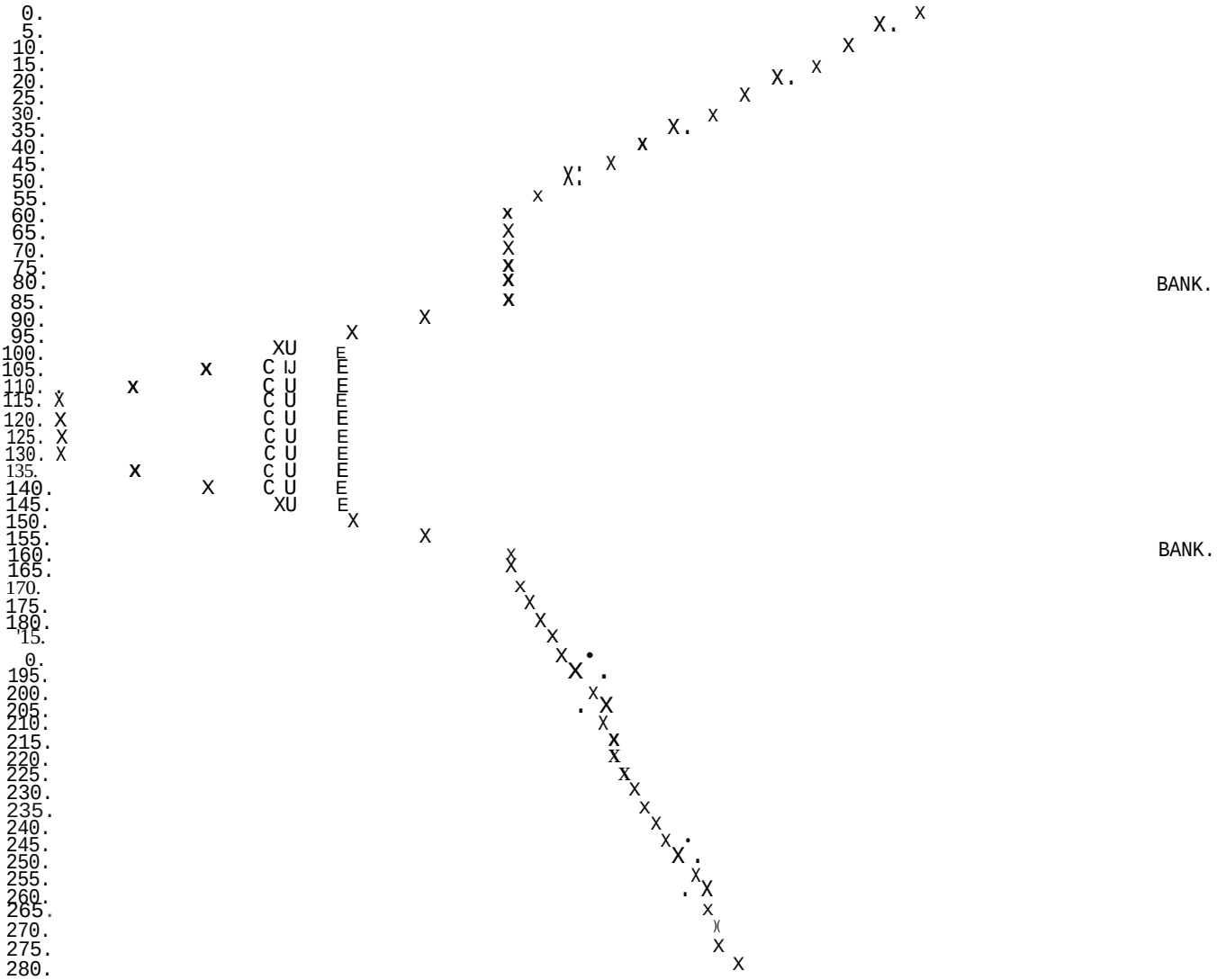


CROSS SECTION 2.00
STREAM 100 YEAR· 24 HOUR EVENT
DISCHARGE= 361.

PLOTTED POINTS(BY PRIORITY)·B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,U=UATER SUR,E=ENERGY GRADIENT,C=CRITICAL USEL

331.8 332.8 333.8 334.8 335.8 336.8 337.8 338.8 339.8 340.8 341.8

STA-FEET

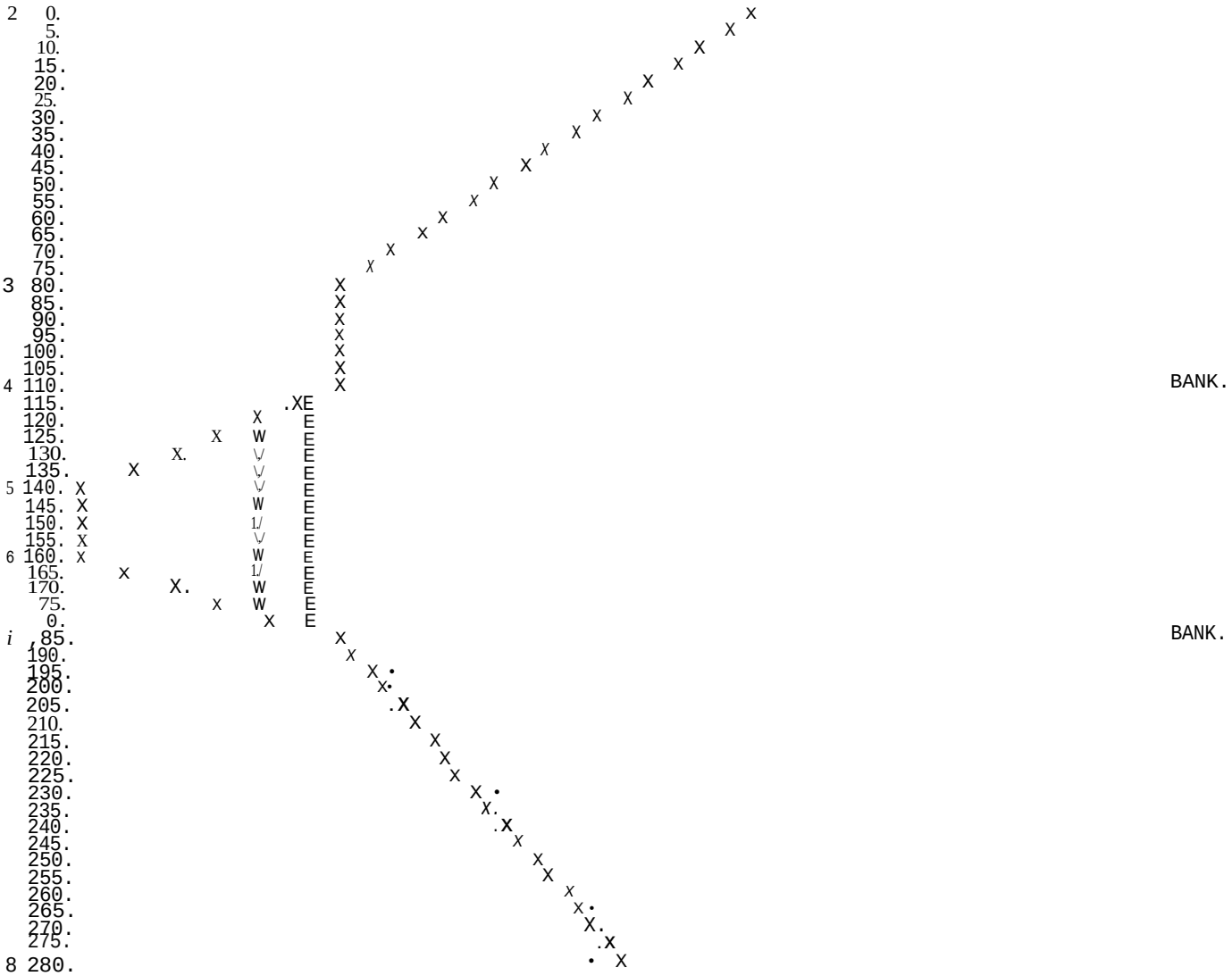


CROSS SECTION 3.00
STREAM 100 YEAR- 24 HOUR EVENT
DISCHARGE= 361.

'ED POINTS (BY PRIORITY)-B=BOTTOM BRJDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 318.5 319.5 320.5 321.5 322.5 323.5 324.5 325.5 326.5 327.5 328.5

STA·FEET



APPENDIX C

Technical Specifications

C.2 Buildings and Pipeline Demolition

C.3 Shaft Backfill and Plugging

C.4 Earthwork

C.2 BUILDINGS AND PIPELINE DEMOLITION

GENERAL TECHNICAL REQUIREMENTS

Summary of Work

Rio Grande Resources Corporation (RGR) is owner and operator of the Mt. Taylor Uranium Mine located in Cibola County, New Mexico in Section 24, T13N, R8W, NMPM. The mine site is 1/2-mile northeast of the Village of San Mateo and is accessible from New Mexico State Route 605. At the time of this submittal, the mine is on active (operating) status, but RGR has initiated closeout due to the depressed uranium market.

The mine extracted uranium ore from depths of over 3,000 feet below ground surface that connect to two 3,300-foot-deep shafts from the mine surface. The mine surface facilities are located on 285.6 acres, of which approximately 175 acres are disturbed land, and the remaining acres are undisturbed.

The disturbed land consists of:

- Support (Service and Support) Facilities
- Mine Water Treatment Area
- Treated Water Discharge Pipeline Easement
- Ore Stockpile
- Waste Pile
- Storm Water Retention Ponds (2)
- Access Road

The included work consists of demolition of buildings that will have no post-mining use, excavation of contaminated soils, well plug and abandonment, shaft and conduit closure, and disposal cell construction. Some of the mine buildings, the treated water discharge pipeline, the headframe, and other facilities have already been removed. Buildings and facilities that have post-mining use will not be removed. Facilities remaining to be removed are listed in Table 4-2. Closeout activities for the production shaft and the manway shaft are addressed in Appendix C.3.

Scrap materials from demolition (with the exception of concrete) that are not radiologically contaminated and meet the criteria for unrestricted use will be disposed of as scrap or made available for off-site sale. The surface landowner shall have the right to retain any uncontaminated demolition materials, other than concrete, for its own use, including but not limited to on-site use for post-mining applications or for off-site sale. Any demolition materials not retained on site at the written request of the surface landowner prior to demolition shall be removed by the contractor and may be used or sold by the contractor without compensation to RGR or the surface landowner. Subsequent to closeout, removal of remaining salvaged materials from the site will be at the landowner's discretion and cost.

The required work includes:

- Mobilization and demobilization of contractor's equipment
- Preparation of the work area
- Protection of potentially impacted facilities and structures
- De-energizing and removal of electric lines and equipment in facilities to be removed
- Demolition of the buildings listed in Table 4-2
- Separation and stacking of demolition debris at locations on site approved by NMED as staging areas.

Any demolition materials (other than concrete) meeting release criteria may be salvaged for sale and re-used offsite by the contractor. Workplans with drawing sheets will be prepared as each task is initiated.

Site Survey

Prior to mobilizing to the mine site, the Contractor shall perform its own survey of the facilities to be removed for the purposes of dimensional and volume measurements, assessment of hazards, and planning the work. The results of this site survey shall be submitted to the Project Manager for review and approval before the work begins.

Site Restrictions

Access to the site is limited to ingress/ egress through the main gate. All Contractor personnel and visitors shall log in and out at the guardhouse. All personnel shall wear the required safety equipment as directed by the site Safety Officer while inside the mine perimeter fence.

Information on Existing Facilities

Facilities to be removed include the buildings listed in Table 4-2, abandoned on-site water pipes, and hydraulic control structures of the mine water treatment ponds.

Codes, Standards, and Regulatory Requirements

All work must be performed according to NM State Mine Inspector or MSHA requirements. The Contractor is responsible for identifying and complying with the relevant standards and requirements.

Site Investigation Reports & Data

Not Applicable

Health & Safety Practices

Work area safety is the responsibility of the contractor. The contractor shall submit and implement a Safety Plan that satisfies federal, state, and RGR requirements for the type of work being performed.

For the work under this specification, Level D PPE is required. All contractor personnel and others within the contractor's working area must be equipped with the required PPE and must comply with the requirements cited in the Codes, Standards, and Regulatory Requirements section above.

The contractor shall have a qualified Safety Officer on site during working hours. The Safety Officer shall be responsible for enforcing all safety requirements and shall have the authority to remove anyone not complying with those requirements from the contractor's working area.

Site Safety & Emergency Communication

The contractor shall post emergency response phone numbers in the worker break area. The contractor shall always maintain an active phone line. The cell phone service may not be reliable at the mine site.

Radiological Materials

The MMD 2016 joint guidance specifies the criteria for Ra-226 only for impacted soil cleanup. It does not specify any criteria for radiologic surface contamination limits for the release of equipment, material, and facilities. In the absence of MMD- or NMED-specific radiologic surface contamination release criteria for facilities, RGR has applied the conservative gross alpha surface contamination limit of 5,000 dpm/100 cm² contained in the MMD-approved March 2021 Site Radiation Protection Program Manual. The MMD requested that the gross alpha surface contamination limit for the PMLU at the Site would not exceed the dose limit of 100 mrem/yr.

In the 12/27/2021 Addendum to "Work Plan for Post-Mining Radiological Surveys of Permit Area and Impacted Lands", RGR calculated the radiologic release criteria consistent with the 25 mrem/yr radiological dose-based criterion for license termination and unrestricted use from Title 20, Chapter 3, Part 4, Subpart 426.B of the New Mexico Administrative Code (NMAC). The gross alpha surface contamination limit for the release of facility at the dose limit of 25 mrem/yr was calculated to be 2,364 dpm/100 cm². For a 100 mrem/yr dose limit, the gross alpha surface contamination would be 9,456 dpm/100 cm². This is because the relationship between surface contamination and dose is linear. However, RGR proposes the gross alpha surface contamination limit of 5,000 dpm/100 cm², as specified in NRC Regulatory Guide 1.86, which is well below the 9,456 dpm/100 cm² calculated based on the 100 mrem/yr dose. In addition, the gross alpha surface contamination limit of 5,000 dpm/100 cm² is specified in the MMD-approved March 2021 Site Radiation Protection Program Manual

Field Engineering and Surveying

Not Applicable

General Submittals

Prior to commencing the work, the contractor shall submit, in a format acceptable to RGR, the following:

- **Site Safety Plan:** Including the name and qualifications of the Safety Officer
- **Demolition Plan:** – Describing methods of demolition, equipment to be used, names and qualifications of key personnel, and the project schedule.

Construction Facilities and Field Office

Site Access, Field Office, Storage, and Maintenance

RGR will provide space for the contractor's field office, laydown areas, sanitary facilities, and equipment maintenance. Existing buildings, if any, will not be available for contractor use. If needed, electrical power must be arranged by the contractor with Continental Divide Electric Cooperative. Water, both potable and non-potable, is available on site. The contractor must make arrangements with RGR for pumping, storing, and discharge of water needed by the contractor.

Protection of Existing Facilities

The contractor shall not use, damage, or block access to site buildings and other facilities that are in use at the time of the contractor's work or that are to remain intact for post-mining land use. Any damage or loss of use shall be repaired or compensated at the contractor's cost.

Temporary Environmental Controls

The contractor shall be responsible for emplacing, utilizing, and removing those measures necessary to contain contaminants, surface water and fugitive dust releases generated by the contractor's work. Such measures may include, but are not limited to;

- Fuels, solvents and lubricants storage
- Surface water diversions and erosion control materials
- Dust suppression chemicals containers
- Sanitary wastes containments
- Trash containers
- Fire suppression equipment

Wildlife, including large game animals, frequently enters the site. The contractor's workers shall do nothing to attract, injure, or otherwise interfere with wildlife. No firearms may be brought on the mine site.

SITE WORK

Site Preparation

The contractor shall de-energize and remove all electrical equipment and lines in facilities to be removed. The contractor shall prepare its office, equipment, and laydown areas as approved by RGR so as not to obstruct or interfere with RGR site operations or other contractors' operations.

Demolition

The contractor shall submit a demolition plan for RGR approval prior to beginning the work. The plan shall include methods and equipment to be used, names and qualifications of key personnel, and schedule. The plan shall also describe any salvage proposed by the contractor, including materials and expected values.

Building and Pipe Removal

The buildings shall be removed by mechanical or manual methods; no explosives may be used. The buildings are steel frames with metal siding and roofs.

No asbestos-containing materials (ACM) are currently known to be present within the site facilities. However, the contractor shall perform inspections as it considers necessary to identify potential ACM that may be encountered during demolition, renovation, reclamation, or earthwork activities. If suspect ACM is identified, the material shall be evaluated and managed in accordance with applicable federal and state regulations. Any confirmed ACM shall be handled by appropriately trained personnel, properly contained during removal and transport, and disposed of at a licensed off-site facility authorized to accept asbestos-containing waste. The contractor shall be responsible for complying with all applicable notification, handling, transportation, and disposal requirements.

Debris Sizing and Stacking

The contractor shall prepare demolition debris for disposal. The contractor shall reduce the size of debris and sort it sufficiently for it to be classified and stacked by material type and potential re-use or salvage.

Demolition debris other than concrete shall be cut, hauled, and stacked according to shape (e.g.; beams, sheet metal) in disposal cell of the waste pile as determined by RGR. Debris shall be reduced in size to fit into the likely transport vehicle, but in any case, must not be any longer than 40 feet.

Concrete Debris

The contractor shall remove the concrete in floor slabs of removed buildings, pond hydraulic control structures, ore bins next to the production shaft, aprons more than 20 feet beyond the shaft collars, and subgrade of mine car rails. Some concrete slabs and foundations (Table 4-2) will be broken into pieces not exceeding one-foot maximum dimension and left in place to be covered with soil.

GENERAL QUALITY ASSURANCE AND QUALITY CONTROL

Reviews

Not Applicable

Inspection Reports

The contractor shall record in writing the amount of material removed in each truck-load trip ticket, as well as the total amount of material removed each working day. This record shall be subject to review and independent verification by RGR.

Test Reports

Not Applicable

FINAL ACCEPTANCE AND CONTRACT CLOSEOUT

Substantial Completion

The work will be substantially complete when all site work and general quality assurance and quality control has been completed by the contractor and accepted by RGR.

Close-Out Documentation

The contractor shall submit written documentation, in a form acceptable to RGR, that all units of work have been completed in accordance with this specification. This documentation shall include quantities of work performed in accordance with the line items in the contractor's bid schedule that have been approved in writing by RGR. The documentation shall also include the contractor's affirmation that all regulatory requirements and environmental standards applicable to the work have been met.

The documentation shall bear the signature of the contractor's officer with signatory authority.

Final Payment

Final payment shall be made after close-out documentation has been accepted and approved by RGR.

C.3 SHAFT PLUGGING AND BACKFILL

GENERAL TECHNICAL REQUIREMENTS

Summary of Work

Rio Grande Resources Corporation (RGR) is owner and operator of the Mt. Taylor Uranium Mine located in Cibola County, New Mexico in Section 24, T13N, R8W, NMPM. The mine site is 1/2-mile northeast of the Village of San Mateo and is accessible from New Mexico State Route 605. At the time of this submittal, the mine is in active (operating) status but has initiated closeout activities due to the continued depressed uranium market.

The mine extracted uranium ore from depths of over 3,000 feet below ground surface that connect to two 3300-foot-deep shafts from the mine surface. The water level in the shafts is approximately 820 feet below collar elevation.

The included work consists of construction of a plug in each shaft at subcollar level, backfilling to the collar and connected openings, and placement of concrete markers on the shaft caps. Required work includes:

- Mobilization and demobilization of the contractor's equipment
- Preparation of the work area
- Placement of new structural steel as the primary structural component of the shaft plugs
- Mixing and placement of light weight concrete, cementitious slurry, and cap concrete
- Site cleanup and removal of work debris

The work is represented in Appendix A Drawing Sheets: CL05 Shaft Closure - Manway Vent and CL06 Shaft Closure - Production Shaft

NOTE: THESE DRAWINGS SHOW THE CONCEPTUAL DESIGNS OF SHAFT CLOSURE. DETAILED DESIGN WILL BE COMPLETED BY A LICENSED STRUCTURAL ENGINEER AND MAY ALTER THE PLUG CONFIGURATIONS SHOWN HERE.

Site Survey

The Contractor shall perform its own survey of the dimensions of the shaft collar, subcollar, and connected openings above subcollar level for the purposes of dimensional and volume measurements, assessment of hazards, and planning the work. This survey shall include an inventory of material in the shaft collars that must be removed from the shafts for salvage. The results of this site survey shall be submitted to the Project Manager for review and approval before the work begins.

Site Restrictions

Access to the site is limited to ingress/egress through the main gate. All Contractor personnel and visitors shall log in and out at the guardhouse. All personnel shall wear the required safety equipment as directed by the site Safety Officer while inside the mine perimeter fence.

The contractor's work area shall be enclosed with temporary fencing, selected and provided by the contractor, to restrict access to the shafts to authorized personnel only. The contractor shall prohibit entry to anyone not trained and authorized to enter the enclosed area or accompanied at all times by an authorized person.

Work Performed by Others

Not applicable.

Codes, Standards, and Regulatory Requirements

All work must be performed according to New Mexico State Mine Inspector and/or MSHA requirements. The Contractor is responsible for identifying and complying with the relevant standards and requirements.

The contractor shall implement the applicable requirements for worker fall protection including, but not limited to, 29 CFR 1926:

- 1926.501, Duty to have fall protection
- 1926.502, Fall protection systems criteria and practices
- 1926.503, Training requirements (Fall Protection)
- 1926.760, Steel Erection (Fall protection)
- 1926.800, Underground construction
- 1926.1051, General requirements (Stairways and Ladders)

Site Investigation Reports & Data

Not applicable.

Health & Safety Practices

Work area safety is the responsibility of the contractor. The contractor shall submit and implement a Safety Plan that satisfies federal, state, and RGR requirements for the type of work being performed.

For the work under this specification, at a minimum Level D PPE is required. In addition, safety measures required under the Codes, Standards, and Regulatory Requirements section and

elsewhere in federal and state regulations shall be implemented. All contractor personnel and others within the contractor's working area must be equipped with the required PPE.

The contractor shall have a qualified Safety Officer on site during working hours. The Safety Officer shall be responsible for enforcing all safety requirements and shall have the authority to remove anyone not complying with those requirements from the contractor's working area.

Site Safety & Emergency Communication

The contractor shall post emergency response phone numbers in the worker break area. The contractor shall maintain an active phone line at all times. Cell phone service is not reliable at the mine site.

Radiological Materials

The production shaft and manway/ventilation shaft are inaccessible and will be permanently closed through installation of engineered shaft plugs, backfill, and surface caps as described in this section. During shaft closure activities, the contractor shall implement the applicable portions of RGR's Radiation Safety Program Manual (RSPM) and associated procedures to ensure the protection of workers, the public, and the environment.

The RSPM and associated procedures include, but are not limited to, radiological work controls, development and use of non-routine procedures, access control and security, radiation monitoring surveys, radiation dose management, and response to incidents and emergencies involving radioactive materials. RGR's radiological consultant, Facilities Supervisor, and Reclamation Manager will provide the necessary technical support, training, and oversight; however, the contractor shall be responsible for ensuring worker compliance with the RSPM.

Field Engineering and Survey

The contractor shall perform surveys and measurements as required under the Site Survey section to verify dimensions of workspaces and construction materials described in this specification, the Appendix A reference drawings, and the 1974 Dravo design drawings, which will be available to the contractor for planning the work.

General Submittals

Prior to commencing the work, the contractor shall submit, in a format acceptable to RGR, the following:

- **Site Safety Plan:** Including the name and qualifications of the Safety Officer.
- **Shaft Plug and Backfill Construction Plan:** Describing methods of construction, equipment to be used, names and qualifications of key personnel, and the project schedule.

Construction Facilities and Field Office

RGR will provide space for the contractor's field office, laydown areas, sanitary facilities, and equipment maintenance. Existing buildings, if any, will not be available for contractor use. If needed, electrical power must be arranged by the contractor with Continental Divide Electric Cooperative. Water, both potable and non-potable, is available on site. The contractor must make arrangements with RGR for pumping, storing, and discharge of water needed by the contractor.

Protection of Existing Facilities

The contractor shall not use, damage, or block access to site buildings and other facilities that are in use at the time of the contractor's work or that are to remain intact for post-mining land use. Any damage or loss of use shall be repaired or compensated at the contractor's cost.

Temporary Environmental Controls

The contractor shall be responsible for emplacing, utilizing, and removing those measures necessary to contain contaminants, surface water and fugitive dust releases generated by the contractor's work. Such measures may include, but are not limited to:

- Fuels, solvents and lubricants storage
- Surface water diversions and erosion control materials
- Dust suppression chemicals containers
- Sanitary wastes containments
- Trash containers
- Fire suppression equipment

SITE CONSTRUCTION

Site Preparation

The contractor shall prepare its office, equipment, and laydown areas as approved by RGR so as not to obstruct or interfere with RGR site operations or other contractors' operations. The contractor shall stage and operate its equipment to allow setback distances from the shaft collars that are appropriate for the selected equipment size, weight, and operating radius. The contractor shall prepare its working area and equipment locations to minimize traffic or materials next to the shaft collars.

Shaft Plug Construction

The following information represents the construction of conceptual plug designs. The actual design and the construction to implement that design provided by a licensed Structural Engineer may be different for this conceptual design and shall supersede or modify this design concept.

Both the 24 ft. diameter production shaft and the 14 ft. diameter manway/ventilation shaft will be closed in the same way, illustrated in the Appendix A Drawing Sheets CL05 and CL06, in the following sequence after the headframes and collar structures are removed (by others) and the subcollar space has been freed of obstacles.

To address concerns regarding plug stability and the added weight on the legacy shaft concrete, the final shaft closure design will incorporate measures to transfer the structural loads from the shaft plug into competent host rock, such as engineered horizontal keyways, or another engineered approach determined during final design. The final design will support the plug independently of the existing shaft walls and minimize reliance on the long-term integrity of the shaft concrete or future regional water-level fluctuations. The final shaft closure design will be submitted to NMED for review and approval prior to construction.

To facilitate long-term post-closure groundwater sampling capabilities, the final plug design is expected to incorporate two structurally isolated steel monitoring ports built directly through each individual shaft plug.

A plug of light-weight concrete meeting the requirements of ASTM C 330 shall be poured to encapsulate the engineered structural steel and monitoring ports. The concrete shall have an in-place density of 90-115 pcf and a minimum compressive strength of 2500 psi. The concrete shall be placed in not more than three lifts. The first lift shall fully encapsulate and cover the base structural support and shall be vibrated to ensure a tight seal within the keyway. Successive lifts shall be not more than 1.0 feet thick.

The shaft plug concrete shall be allowed to cure for not less than 28 days before any overlying shaft backfill is placed.

Shaft Backfill

The remainder of the shaft above the plug, as well as connecting tunnels and raises, shall be backfilled with a cementitious slurry of soil, Portland cement, fly ash, and water shall be utilized. The contractor shall determine proportions of these components using test batches of the available materials, for acceptance by RGR before placement. The selected mix shall have a cured compressive strength of not less than 75 pcf. Sandy waste rock material from the waste pile may be substituted for the soil fraction of the mix.

Shaft Cap and Marker

The remaining space at the top of the shaft backfill, from top of slurried backfill to adjacent ground surface, shall be capped with not less than 1.0 feet of light-weight concrete, with a monument marker extending above ground surface.

The marker monuments shall be pre-cast 2500-psi concrete, at least two feet high and four feet wide and long, with a hand finished top surface. Both shaft markers shall be inscribed with "Mt. Taylor Mine (name) Shaft, Closed (date)."

GENERAL QUALITY ASSURANCE AND QUALITY CONTROL

Reviews

Not applicable.

Daily Reports

The contractor shall prepare a written daily report of each working day. This report shall include a record of the dimensions of the shaft plug components, the volumes of materials used, and any deviations from the drawings or this specification necessitated by conditions encountered. This record shall be subject to review and independent verification by RGR.

Test Reports

At least one test cylinder shall be cast for each lift of light-weight concrete poured. The contractor shall have each cylinder tested for density (unit weight) and unconfined compressive strength. Records of test cylinder tests shall be submitted to RGR.

FINAL ACCEPTANCE AND CONTRACT CLOSEOUT

Substantial Completion

The work will be substantially complete when all work required under the Site Construction and General Quality Assurance and Quality Control sections have been completed by the contractor and accepted by RGR.

Close-Out Documentation

The contractor shall submit written documentation, in a form acceptable to RGR, that all units of work have been completed in accordance with this specification. This documentation shall include quantities of work performed in accordance with the line items in the contractor's bid schedule that have been approved in writing by RGR. The documentation shall also include the contractor's affirmation that all regulatory requirements and environmental standards applicable to the work have been met.

The documentation shall bear the signature of the contractor's office with signatory authority.

Final Payment

Final payment shall be made after close-out documentation has been accepted and approved by RGR.

C.4 EARTHWORK

GENERAL TECHNICAL REQUIREMENTS

Summary of Work

Rio Grande Resources Corporation (RGR) is owner and operator of the Mt. Taylor Uranium Mine located in Cibola County, New Mexico in Section 24, T13N, R8W, NMPM. The mine site is 1/2-mile northeast of the Village of San Mateo and is accessible from New Mexico State Route 605. At the time of this submittal, the mine is on active (operating) status, but RGR has initiated closeout activities due to the depressed uranium market.

The mine extracted uranium ore from depths of over 3,000 feet below ground surface that connect to two 3300-foot-deep shafts from the mine surface. The mine surface facilities are located on 285.6 acres, of which approximately 148 acres are disturbed land, and the remaining acres are undisturbed.

The disturbed land consists of:

- Support (Service and Support) Facilities
- Mine Water Treatment Area
- Ore Stockpile Pad
- Waste Pile / Disposal Cell
- Storm Water Retention Ponds (2)
- Access Road and other roads
- Borrow areas

The included work consists of excavation, hauling, placement, and compaction of soil and rippable rock within the mine permit area and nearby affected areas for the purposes removing contaminated soil, stabilizing slopes, and covering mine waste containment structures.

The required work includes:

- Mobilization and demobilization of the contractor's equipment
- Preparation of the work area
- Excavation of soil contaminated with low levels of radium and uranium originating from the underground mine and mine water
- Disposal of contaminated soil in the existing mine disposal cell on the waste rock pile, or in the shafts

- Expanding the disposal cell
- Reducing rock slopes
- Backfilling of the mine water treatment ponds
- Placement of clean soil cover over the waste rock pile and disposal cell
- Backfilling the mine water treatment ponds
- Finish grading of disturbed ground within the mine permit area and affected areas

The work is represented in the Appendix A Drawing Sheets, and will be developed in future workplans and drawing sets per individual tasks:

- CL07A: Final Grading Plan - Mine Water Treatment Unit
- CL07B: Final Grading Plan – Service and Support Area
- CL08: Details – Backfill in Pond areas
- CL14: Final Drainage Plan

Site Survey

The Contractor shall perform its own survey or calculations to determine depths and volumes of excavated soil, field control for line and grade, and depths and volumes of soil placed. The results of this site survey shall be submitted to the Project Manager for review and approval of work performed and for verification of payment quantities.

Site Restrictions

Access to the site is limited to ingress/ egress through the main gate. All Contractor personnel and visitors shall log in and out at the guardhouse. All personnel shall wear the required safety equipment as directed by the site Safety Officer while inside the mine perimeter fence.

Work Performed by Others

Prior to the commencement of this work, the shaft headframes, hydraulic control structures, and selected buildings will be removed by others.

Codes, Standards, and Regulatory Requirements

All work must be performed according to OSHA and/or MSHA requirements. The Contractor is responsible for identifying and complying with the relevant standards and requirements.

Site Investigation Reports & Data

RGR has conducted site investigations to characterize the waste rock pile materials, soil contamination, and geotechnical properties of on-site soil. Reports of these studies and related data are included in Appendix D of the Mt. Taylor Mine Closeout/Closure Plan.

Health & Safety Practices

Work area safety is the responsibility of the contractor. The contractor shall submit and implement a Site Safety Plan that satisfies federal, state, and RGR requirements for the type of work being performed.

For the work under this specification, Level D PPE is required. In addition, safety measures required under the Codes, Standards, and Regulatory Requirements section and elsewhere in federal and state regulations shall be implemented. All contractor personnel and others within the contractor's working area must be equipped with the required PPE and must comply with the requirements cited in the Codes, Standards, and Regulatory Requirements section.

The contractor shall have a qualified Safety Officer on site during working hours. The Safety Officer shall be responsible for enforcing all safety requirements and shall have the authority to remove from the contractor's working area anyone not complying with those requirements.

Site Safety & Emergency Communication

The contractor shall post emergency response phone numbers in the worker break area. The contractor shall maintain an active phone line at all times. Cell phone service is not reliable at the mine site.

Radiological Materials

The contractor shall implement the applicable portions of RGR's Radiation Safety Program Manual (RSPM) and associated procedures to ensure the protection of workers, the public, and the environment during reclamation activities. The RSPM and associated procedures include, but are not limited to, radiological work controls, development and use of non-routine procedures, access control and security, radiation monitoring surveys, radiation dose management, and response to incidents and emergencies involving radioactive materials. RGR's radiological consultant, Facilities Supervisor, and Reclamation Manager will provide the necessary technical support, training, and oversight; however, the contractor shall be responsible for ensuring worker compliance with the RSPM.

Field Engineering and Surveying

The contractor shall perform surveys and measurements as required under the Site Survey section to verify dimensions, lines and grades, and construction materials described in this specification and the Appendix A referenced drawings.

General Submittals

Prior to commencing the work, the contractor shall submit, in a format acceptable to RGR, the following:

- **Site Safety Plan:** Including the name and qualifications of the Safety Officer.
- **Contaminated Soil Excavation Plan:** Describing methods for excavating, hauling, and placing contaminated soil, including measures to be taken to control spillage and fugitive dust release during handling. The plan shall also describe equipment to be used, names and qualifications of key personnel, and the project schedule.
- **Soil Cover and Grading Plan:** Describing methods of construction for excavation, hauling, placing, and compacting clean fill soil, including equipment to be used, names and qualifications of key personnel, and the project schedule. The plan shall also include fugitive dust control and finish line and grade control.
- **Stormwater Pollution Prevention Plan (SWPPP)**: Compliant with the minimum requirements of EPA's 2012 Construction General Permit under the NPDES.

Construction Facilities and Field Office

RGR will provide space for the contractor's field office, laydown areas, sanitary facilities, and equipment maintenance. Existing buildings, if any, will not be available for contractor use. If needed, electrical power must be arranged by the contractor with Continental Divide Electric Cooperative. Water, both potable and non-potable, is available on site. The contractor must make arrangements with RGR for pumping, storing, and discharge of water needed by the contractor.

Protection of Existing Facilities

The contractor shall not use, damage, or block access to site buildings and other facilities that are in use at the time of the contractor's work or that are to remain intact for post-mining land use. Any damage or loss of use shall be repaired or compensated at the contractor's cost.

Temporary Environmental Controls

The contractor shall be responsible for emplacing, utilizing, and removing those measures necessary to contain contaminants, surface water and fugitive dust releases generated by the contractor's work. Such measures may include, but are not limited to:

- Spraying of clean water for dust suppression
- Storage of fuels, solvents and lubricants
- Surface water diversions and erosion control materials
- Sanitary wastes containments
- Trash containers
- Fire suppression equipment

Wildlife, including large game animals, frequently enters the site. The contractor's workers shall do nothing to attract, injure, or otherwise interfere with wildlife. No firearms may be brought on the mine site.

SITE CONSTRUCTION

Site Preparation

The contractor shall prepare its office, equipment, and laydown areas as approved by RGR so as not to obstruct or interfere with RGR site operations or other contractors' operations.

Removal of MWTU Facilities Pond Liner Anchor

The contractor shall remove the following:

- The HDPE liner systems from the Mine Water Treatment Unit (MWTU) Ponds 2 and 3.

All removed pond liner materials and debris from the hydraulic control structures shall be transported and placed in the disposal cell, as directed by RGR.

Excavation and Disposal of Contaminated Soil

The contractor shall submit a Contaminated Soil Excavation Plan for excavating, hauling, and disposal of soil containing more than 6.8 pCi/g of Radium 226. RGR will provide field direction for the contractor in determining the lateral extent and depth of excavation required.

The contaminated soil excavated north of the CR 334 shall be disposed of in the disposal cell on the waste rock pile, as directed by RGR. Contaminated soil excavated within the CR 334 right-of-way and on the mine site south of the CR 334 right-of-way shall be placed in the disposal cell, as well.

The waste pile and some old fill (placed during mine development) contain scrap metal, rock bolts, abandoned pipe and cable, and other debris from mining. The contractor can encounter these materials buried within the waste rock and other locations within the mine area. If such debris is uncovered during reshaping, it shall be removed and reburied in the disposal cell.

RGR will provide radiological screening support to guide the contractor in assessment of soil radium content and determination of areas and depths of excavation for soil removal and for relocation to the disposal cell.

Construction of Soil Cover

The contractor shall submit for RGR approval a Soil Cover and Grading Plan that describes the methods for excavation, hauling, placing and compacting clean fill soil and finish grading over the mine site. The plan shall include equipment to be used, names and qualifications of key personnel, and schedule. The plan shall also include fugitive dust control and methods to verify finish line and grade control.

Finish Grading

All disturbed soil surfaces and constructed cover surfaces shall be finish-graded to achieve the lines and grades shown on Appendix A Drawing Sheets CL07A, CL07B, CL08, and CL14. The elevation contours shown on these drawings are representational; final elevations will depend on actual quantities of contaminated soil and clean cover soil excavated and placed.

The finish-graded surface shall conform to the direction (line) and angle of slope (grade) shown on the drawings. Verification of line and grade shall be made by land surveys directed by a New Mexico Licensed Professional Surveyor.

The finish-graded surfaces shall be free of demolition debris and depressions, ridges, rills, and other irregularities more than three inches in amplitude caused by either mining-related activities or closeout activities. On surfaces where rock will be placed for erosion protection (riprap), final grading need not achieve this standard but shall remove all irregularities of amplitude greater than the design thickness of the rock to be placed on such surfaces.

The surfaces of the disturbed areas and covers shall be bladed to provide:

- Smooth transitions to surrounding soil surfaces
- Gradual transitions in slope gradients
- Unimpeded drainage of runoff (no depressions deeper than the amplitude of the surface roughness of the soil cover)

On the final pass of surface grading, the grading equipment shall run along the contour of the slope, unless slope gradients are prohibitively steep, and shall blend the re-contoured surfaces into adjacent undisturbed areas.

Erosion Control and General Site Drainage

The primary means of controlling erosion by runoff will be grading per the Finish Grading section. Control of surface water runoff onto or from reclaimed areas will be accomplished as part of the re-contouring and final grading. Existing natural drainage courses will be preserved and improved as necessary to remove obstacles and trapped debris.

In general, runoff will be directed to natural drainage courses and will follow natural surface gradients so that no control structures or energy dissipaters will be required. New drainage courses and swales will be not less than 10 feet wide at channel bed, not less than two feet deep, with side slopes not steeper than 4H:1V unless obstructed by natural durable rock. Diversion channels will be required only where actual cover or final slope gradients produce concentrated runoff and/or slope erosion.

GENERAL QUALITY ASSURANCE AND QUALITY CONTROL

Reviews

RGR shall meet with the contractor at the start of work each day to review the previous day's Daily Report and any deliverable from the contractor.

Daily Reports

The contractor shall prepare a written daily report of each working day. This report shall include a record of the units and quantities of work performed, events or conditions adversely affecting the work, and any deviations from the drawings or this specification necessitated by conditions encountered. This record shall be subject to review and independent verification by RGR.

Test Reports

The contractor shall measure, record and report in writing the quantities of each size of concrete and rock crushed and screened. The contractor shall report on the measured volumes, locations and thicknesses of soil, rock, and erosion control materials placed each day.

FINAL ACCEPTANCE AND CONTRACT CLOSEOUT

Substantial Completion

The work will be substantially complete when all work required under the Site Construction and General Quality Assurance and Quality Control sections have been completed by the contractor and accepted by RGR.

Close-Out Documentation

The contractor shall submit written documentation, in a form acceptable to RGR, that all units of work have been completed in accordance with this specification. This documentation shall include quantities of work performed in accordance with the line items in the contractor's bid schedule

that have been approved in writing by RGR. The documentation shall also include the contractor's affirmation that all regulatory requirements and environmental standards applicable to the work have been met.

The documentation shall bear the signature of the contractor's officer with signatory authority.

Final Payment

Final payment shall be made after close-out documentation has been accepted and approved by RGR.

APPENDIX D

Soil Sampling and Laboratory Test Data

D.1 2012 Soil Investigations

- Kleinfelder Laboratory Results

D.2 Radiological Investigations

- Soil Investigation, June 6, 2012
- Gamma Radiation Survey Clean Borrow Pile, April 25, 2016
- Soil Analysis Results, April 30, 2018
- Gamma Radiation Survey Waste Pile North/East Delineation, April 25, 2016
- Radiological Survey Results for Discharge Pipeline and Soils Along Pipeline Corridor, July 6, 2020
- Surface and Subsurface Soil Radiologic Characterization Windblown Area, Ore Pad Area and Mine Compound, August 14, 2023
- Addendum August 14, 2023, Surface and Subsurface Soil Radiologic Characterization Report Windblown Area, Ore Pad Area and Mine Compound
- Treatment Pond Radiologic Characterization, June 4, 2024
- North Controlled Area Soil Radiologic Characterization, June 5, 2025
- South Controlled Area Soil Radiologic Characterization, February 2026

D.3 Laboratory Test Results

- Soil Physical Properties Analytical Results, April 2012
- Soil Chemical Analytical Results, April 2012
- Sediment Analytical Results, April 2012
- Ore Chemical Analysis, March 18, 1986

D.4 Original Closeout Plan Soil Data

See these reports for sampling and test data generated from 2014 to 2022:

- Construction Quality Assurance Report (CQAR), Phase 1 Completion, Mt. Taylor Mine Reactivation, February 2021
- Construction Quality Control Data Report Mine Water Treatment Pond #2, Mt. Taylor Mine, July 2020
- Construction Quality Control Data Report, Disposal Cell Liner, Mt. Taylor Mine, February 2020
- Construction Quality Control Data Report Mine Water Treatment Pond #3, Mt. Taylor Mine, February 2020
- Soil and Water Sampling and Testing, Water and Sediment Impoundment Locations Downstream of Mt. Taylor Mine Water Outfall 001, January 2015
- Vegetation Growth Report, Mt. Taylor, 2019
- Construction Quality Control Data Report, South Storm Water Pond, Mt. Taylor Mine, June 2019
- Radon Flux Measurements Report, Waste Repository Cover at Mt. Taylor Mine, May 2019

APPENDIX D.1

Field Sampling and Laboratory Test Data

2012 Soil Investigations

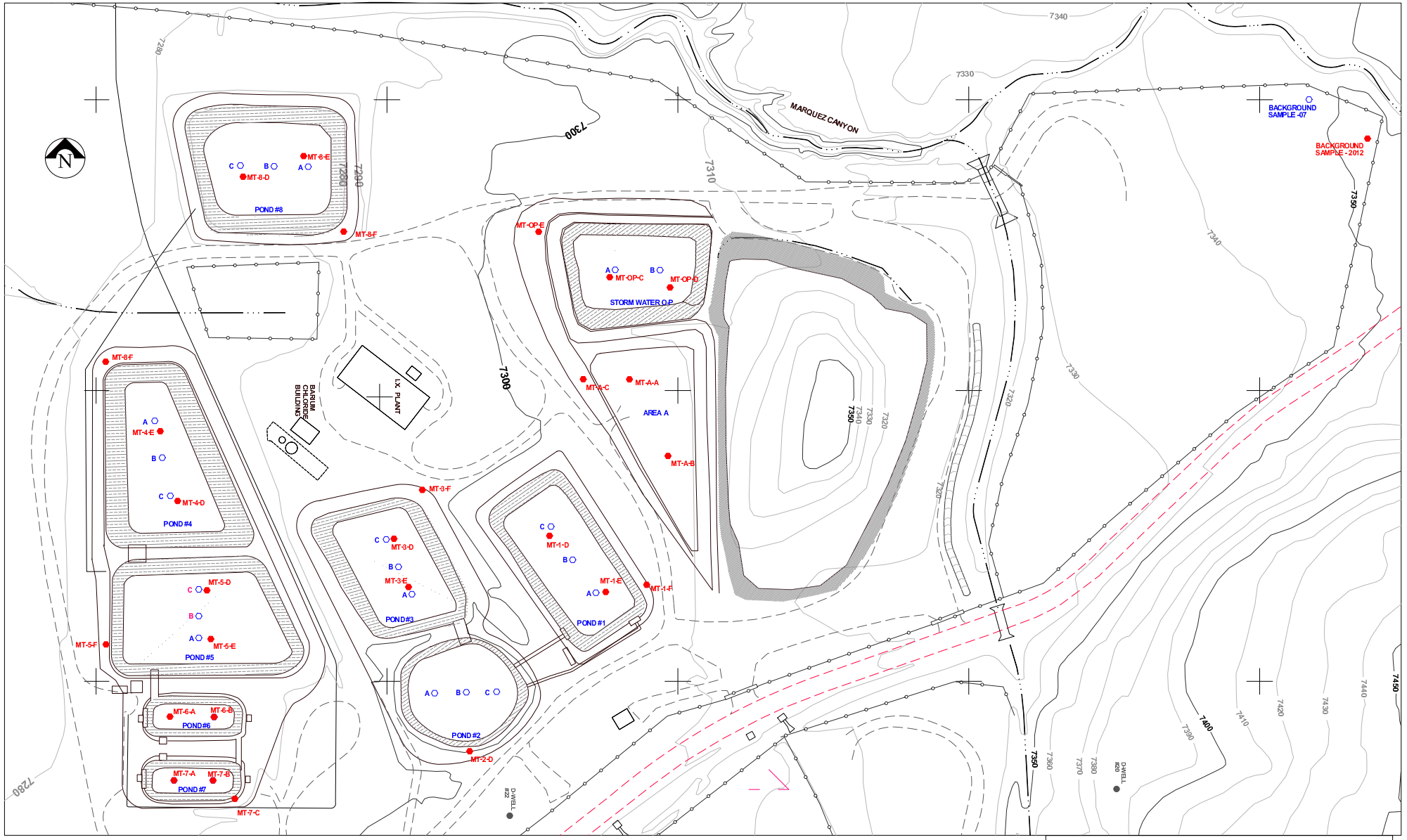


FIGURE 1

PROPOSED SAMPLE LOCATIONS
MARCH 29, 2012 - TASK 7A

RIO GRANDE RESOURCES CORPORATION

File #

Mt Taylor Mine - Borrow Test Pit Log | **Pit #** | **MT-1-F**

Location Pond # 1 Berm	GPS N 35-20.578'	W 107-38.001'
Location Description	Top edges of Ponds – South East Side of Pond # 1	
Field Engineer: Stan Fitch / Ed Loescher	Excavation Method: Small Bobcat Backhoe	
Date: April - 10-2012 10:30 am	Operator:	
Weather and Moisture Conditions: Warm – Sunny – 60 to 70d		

	Graphic Log	Sample #	Description (USCS, texture, density, color, moisture, odor, inclusions, etc.)
0		MT - 1- F Depth 6"	Silty Clay, mixed with some coarse sand, trace gravel, dark brown
1			
2			
3			
4			
5			
6			
7			
8			

Total Depth: 12" DEEP

Comments:

Part of the sample for sent for Geotechnical testing - Part for Environmental Testing.

Checked: Date:

Approved: Date:

RIO GRANDE RESOURCES CORPORATION

File #

Mt Taylor Mine - Borrow Test Pit Log | **Pit #** | **MT-2-D**

Location Pond #2 berm	GPS N 35-20.541'	W 107-38.057'	
Location Description	Top edges of Ponds – South Side of Pond # 2		
Field Engineer: Stan Fitch / Ed Loescher		Excavation Method: Small Bobcat Backhoe	
Date: April - 10-2012 10:15 am		Operator:	
Weather and Moisture Conditions: Warm – Sunny – 60 to 70d			

	Graphic Log	Sample #	Description (USCS, texture, density, color, moisture, odor, inclusions, etc.)
0		MT - 2- D Depth 6"	Clayey Silt, some sand, trace roots, medium brown
1			
2			
3			
4			
5			
6			
7			
8			

Total Depth: 12" DEEP

Comments:

Part of the sample for sent for Geotechnical testing - Part for Environmental Testing.

Checked: Date:

Approved: Date:

RIO GRANDE RESOURCES CORPORATION

File #

Mt Taylor Mine - Borrow Test Pit Log | **Pit #** | **MT-3-F**

Location	Pond # 3 Berm	GPS N 35-20.632'	W 107-38.089'
Location Description	Top edges of Ponds – North East Corner of Pond # 3		
Field Engineer:	Stan Fitch / Ed Loescher	Excavation Method:	Small Bobcat Backhoe
Date:	April - 10-2012 11:10 am	Operator:	
Weather and Moisture Conditions:	Warm – Sunny – 60 to 70d		

	Graphic Log	Sample #	Description (USCS, texture, density, color, moisture, odor, inclusions, etc.)
0		MT -3-F Depth 6"	Silty Clay, some sand, trace gravel, dark brown
1			
2			
3			
4			
5			
6			
7			
8			

Total Depth: 12" DEEP

Comments:

Part of the sample for sent for Geotechnical testing - Part for Environmental Testing.

Checked: Date:

Approved: Date:

RIO GRANDE RESOURCES CORPORATION

File #

Mt Taylor Mine - Borrow Test Pit Log | **Pit #** | **MT-4-F**

Location	Pond #4 berm	GPS N 35-20.661'	W 107-38.220'
Location Description	Top edges of Ponds – North West Corner of Pond # 4		
Field Engineer:	Stan Fitch / Ed Loescher	Excavation Method:	Small Bobcat Backhoe
Date:	April - 10-2012 9:35 am	Operator:	
Weather and Moisture Conditions:	Warm – Sunny – 60 to 70d		

.	Graphic Log	Sample #	Description (USCS, texture, density, color, moisture, odor, inclusions, etc.)
0		MT -4-F Depth 6"	Sandy Clay, trace roots, dark brown
1			
2			
3			
4			
5			
6			
7			
8			

Total Depth: 12" DEEP

Comments:

Part of the sample for sent for Geotechnical testing - Part for Environmental Testing.

Checked: Date:

Approved: Date:

RIO GRANDE RESOURCES CORPORATION

File #

Mt Taylor Mine - Borrow Test Pit Log | **Pit #** | **MT-5-F**

Location	Pond #5 Berm	GPS N 35-20.576'	W 107-38.217'
Location Description	Top edges of Ponds – South West Corner of Pond # 5		
Field Engineer:	Stan Fitch / Ed Loescher	Excavation Method:	Small Bobcat Backhoe
Date:	April - 10-2012 9:45 am	Operator:	
Weather and Moisture Conditions:	Warm – Sunny – 60 to 70d		

	Graphic Log	Sample #	Description (USCS, texture, density, color, moisture, odor, inclusions, etc.)
0		MT -5-F Depth 6"	Clayey Silt, some sand, trace roots, medium brown
1			
2			
3			
4			
5			
6			
7			
8			

Total Depth: 12" DEEP

Comments:

Part of the sample for sent for Geotechnical testing - Part for Environmental Testing.

Checked: Date:

Approved: Date:

RIO GRANDE RESOURCES CORPORATION

File #

Mt Taylor Mine - Borrow Test Pit Log | **Pit #** | **MT-7-C**

Location	Pond #7 Berm	GPS N 35-20.526'	W 107-38.148'
Location Description	Top edges of Ponds – South East Corner of Pond # 7		
Field Engineer:	Stan Fitch / Ed Loescher	Excavation Method:	Small Bobcat Backhoe
Date:	April - 10-2012 9:55 am	Operator:	
Weather and Moisture Conditions:	Warm – Sunny – 60 to 70d		

	Graphic Log	Sample #	Description (USCS, texture, density, color, moisture, odor, inclusions, etc.)
0		MT -7-C Depth 6"	Clayey Silt, some sand, trace roots, light brown
1			
2			
3			
4			
5			
6			
7			
8			

Total Depth: 12" DEEP

Comments:

Part of the sample for sent for Geotechnical testing - Part for Environmental Testing.

Checked: Date:

Approved: Date:

RIO GRANDE RESOURCES CORPORATION

File #

Mt Taylor Mine - Borrow Test Pit Log | **Pit #** | **MT-8-F**

Location	Pond #8 Berm	GPS N 35-20.693'	W 107-38.108'
Location Description	Top edges of Ponds – South West Corner of Pond # 8		
Field Engineer:	Stan Fitch / Ed Loescher	Excavation Method:	Small Bobcat Backhoe
Date:	April - 10-2012 9:50 am	Operator:	
Weather and Moisture Conditions:	Warm – Sunny – 60 to 70d		

	Graphic Log	Sample #	Description (USCS, texture, density, color, moisture, odor, inclusions, etc.)
0		MT -8-F Depth 6"	Clayey Silt, some sand, trace gravel, brown
1			
2			
3			
4			
5			
6			
7			
8			

Total Depth: 12" DEEP

Comments:

Part of the sample for sent for Geotechnical testing - Part for Environmental Testing.

Checked: Date:

Approved: Date:

RIO GRANDE RESOURCES CORPORATION

File #

Mt Taylor Mine - Borrow Test Pit Log | **Pit #** | **MT-Borrow**

Location	Background borrow area	GPS N 35-20.724'	W 107-38.759'
Location Description	NE Corner of the Property in the main proposed borrow area.		
Field Engineer:	Stan Fitch / Ed Loescher	Excavation Method:	Small Bobcat Backhoe
Date:	April - 10-2012 8:50 am	Operator:	

Weather and Moisture Conditions: Warm – Sunny – 60 to 70d

	Graphic Log	Sample #	Description (USCS, texture, density, color, moisture, odor, inclusions, etc.)
0			(0-24") Clayey Silt, some sand, trace roots gravel, brown
1			
2		MT -borrow Composite Sample 24"-66"	(24"- 66") Silty Sand with Clay, trace gravel, occasional gray sand seams, brown.
3			
4			
5			
			(66" – 72") Clayey Sand, with silt, trace roots and gravel, brown.
6			
7			
8			

Total Depth: 72" DEEP

Comments:

Part of the sample for sent for Geotechnical testing - Part for Environmental Testing.

Checked: Date:

Approved: Date:

RIO GRANDE RESOURCES CORPORATION

File #

Mt Taylor Mine - Borrow Test Pit Log | **Pit #** | **MT-A-C**

Location Pond # Area "A" | GPS N 35-20.650' | W 107-38.046'

Location Description: Top edges of Ponds – North West Corner of Area A

Field Engineer: Stan Fitch / Ed Loescher | Excavation Method: Small Bobcat Backhoe

Date: April - 10-2012 10:55 am | Operator:

Weather and Moisture Conditions: Warm – Sunny – 60 to 70d

	Graphic Log	Sample #	Description (USCS, texture, density, color, moisture, odor, inclusions, etc.)
0		MT -A-C Depth 6"	Silty Sand, some clay, trace gravel, light brown
1			
2			
3			
4			
5			
6			
7			
8			

Total Depth: 12" DEEP

Comments:

Sample submitted for Environmental Testing.

Checked: Date:

Approved: Date:

RIO GRANDE RESOURCES CORPORATION

File #

Mt Taylor Mine - Borrow Test Pit Log | **Pit #** | **MT-OP-E**

Location Pond # OP (Ore Pile Pond)	GPS N 35-20.694'	W 107-38.062'
Location Description	Top edges of Ponds – North West Corner of Pond # OP	
Field Engineer: Stan Fitch / Ed Loescher	Excavation Method: Small Bobcat Backhoe	
Date: April - 10-2012 9:10 am	Operator:	
Weather and Moisture Conditions: Warm – Sunny – 60 to 70d		

	Graphic Log	Sample #	Description (USCS, texture, density, color, moisture, odor, inclusions, etc.)
0		MT -OP-E Depth 6"	Sandy Clay, trace gravel, medium brown
1			
2			
3			
4			
5			
6			
7			
8			

Total Depth: 12" DEEP

Comments:

Part of the sample for sent for Geotechnical testing - Part for Environmental Testing.

Checked: Date:

Approved: Date:

RIO GRANDE RESOURCES CORPORATION

File #

Mt Taylor Mine Water Treatment Pond Test Pit Log

Pit # 1

Location	Pond 1	(GPS) N 35°20.579'	W 107°38.023'
Location Description		MT-1-E	
Field Engineer:	B. Everett	Excavation Method:	Backhoe/Shovel
Date:	4/10/2012	Operator:	K. Strickland
Weather and Moisture Conditions:	clear, sunny, warm; cool and windy in afternoon		

Depth	Graphic Log	Sample #	Description (USCS, texture, density, color, moisture, odor, inclusions, etc.)
0		S1-01-01	0-6": Sediment, silty to sandy clay, slightly moist Sample collected at 0-4" bgs at 10:45
1		S1-01-02	6"-26": Clay sediments, trace gravel and cobles, some silt lenses, dark gray, dense, moist Sample collected at 16-18" bgs at 10:50
2		S1-01-03	26-67": Sandy clay, hard, moist, brown Sample collected at 44-48" bgs at 11:00
3			
4			
5			
			TD = 67" bgs
6			
7			
8			

Total Depth: 67" bgs

Comments: Pond sediments 0-6"
Clay 6-26" bgs
Native soil 26-67" bgs

Checked: Date:

Approved: Everett Date: 5/7/2012

RIO GRANDE RESOURCES CORPORATION

File #

Mt Taylor Mine Water Treatment Pond Test Pit Log

Pit # 2

Location	MT-1-D	(GPS) N	W
Location Description	Distal to inlet		
Field Engineer:	B. Everett	Excavation Method:	Backhoe/Shovel
Date:	4/10/2012	Operator:	K. Strickland
Weather and Moisture Conditions:	clear, sunny, warm; cool and windy in afternoon		

Depth	Graphic Log	Sample #	Description (USCS, texture, density, color, moisture, odor, inclusions, etc.)
0		SL-02-01	0-10": Pond sediment, silty sand, friable, mottled brown and gray, moist Sample collected at 0-4" bgs at 11:40
1			10"-30": Silty sand, some clay, friable, yellow-brown, moist
2		SL-02-02	Sample collected at 26-30" at 11:43
3		SL-02-03	30-48": Silty sand, some clay, friable, yellow-brown, slightly moist Sample collected at 44-48" bgs at 11:45
4			TD = 48" bgs
5			
6			
7			
8			

Total Depth: 48" bgs

Comments: No visible clay or clay liner at this location.
Native material at 10-inches

Checked: Date:

Approved: Everett Date: 5/7/2012

RIO GRANDE RESOURCES CORPORATION

File #

Mt Taylor Mine Water Treatment Pond Test Pit Log

Pit # 1

Location	Pond 3	(GPS) N 35°20.592'	W 107°38.02'
Location Description	MT-3-E		
Field Engineer:	B. Everett	Excavation Method:	Backhoe/Shovel
Date:	4/10/2012	Operator:	K. Strickland
Weather and Moisture Conditions:	clear, sunny, warm; cool and windy in afternoon		

Depth	Graphic Log	Sample #	Description (USCS, texture, density, color, moisture, odor, inclusions, etc.)
0			0-4": Sediment and organic matter, clayey silt - siltly sand, light gray, varved lenses of settling
		S3-01-01	4"-20": Clay and bentonite, dark gray, with lenses of silt, pond liner material Sample collected at 0-12" bgs
1			
		S3-01-02	20"-22": Silt - clayey silt, dense, white, wet. Sample collected at 20-26" bgs at 08:50
2			22"-26": Clayey Silt, brown, wet at 25 ft bgs
		S3-01-03	26"-64": Clay, hard, dense, brown, moist, trace gravel and some silt/sand lenses. Sample collected at 26-36" bgs at 09:40
3			
4			
5			
		S3-01-04	64"-75": Silty Sand, friable, yellow-brown, trace gravel Sample collected at 64-75" bgs at 09:40
6			TD - 75" bgs
7			
8			

Total Depth:	75" bgs
Comments:	Pond sediments 0-4" Clay 4-20" bgs Clayey silt 20-26" bgs Clay 26-64" bgs Native material 64" bgs
Checked:	Date:
Approved: Everett	Date: 5/7/2012

RIO GRANDE RESOURCES CORPORATION

File #

Mt Taylor Mine Water Treatment Pond Test Pit Log

Pit # 2

Location	Pond 3	(GPS) N 35°20.605'	W 107°38.106'
Location Description	MT-3-D		
Field Engineer:	B. Everett	Excavation Method:	Backhoe/Shovel
Date:	4/10/2012	Operator:	K. Strickland
Weather and Moisture Conditions:	clear, sunny, warm; cool and windy in afternoon		

Depth	Graphic Log	Sample #	Description (USCS, texture, density, color, moisture, odor, inclusions, etc.)
0		S3-02-01	0-13": Sediment, silty to sandy clay, slightly moist Sample collected at 0-12" bgs at 10:05
1			13"-19": Clay sediments, varved white and dark gray, dense, moist
			19"-37": Clay, dense brown, moist
2		S3-02-02	Sample collected at 26-30" bgs at 10:30
3			37"-54": Silty sand, friable, yellow-brown, moist, native soil
4		S3-02-03	Sample collected at 50-54" bgs at 10:30 TD = 54" bgs
5			
6			
7			
8			

Total Depth: 54" bgs

Comments: Pond sediments 0-19"
Clay 19-37" bgs
Native soil 37-54" bgs

Checked: Date:

Approved: Everett Date: 5/7/2012

RIO GRANDE RESOURCES CORPORATION

File #

Mt Taylor Mine Water Treatment Pond Test Pit Log **Pit #** **MT-4-D**

Location Pond #4 bottom | GPS N 35-20.644' | W 107-38.178'

Location Description: Bottom of Pond – North End

Field Engineer: Ed Loescher | Excavation Method: Small Bobcat Backhoe

Date: April - 10-2012 2:00 pm | Operator:

Weather and Moisture Conditions: Warm – Sunny – 70d

	Graphic Log	Sample #	Description (USCS, texture, density, color, moisture, odor, inclusions, etc.)
0 12"		MT -4-D-S1 Depth 6"	(0"-12") *Pond Sediment* - Sandy Clay with some silt– Dark Brown
1		MT -4-D-S2 Depth 14"	(12"- 42") Soft –fine grained- Sandstone, highly fractured, white, easily excavated with bobcat. (*Natural Soil)*
2			
3 42"			
48"		MT -4-D-S3 Depth 48"	(42"- 48") Sandy Silt Brown – trace gravel *(Natural Soil)*
4			
5			
6			
7			
8			

Total Depth: 48" DEEP

Comments:

Checked: Date:

Approved: Date:

RIO GRANDE RESOURCES CORPORATION

File #

Mt Taylor Mine Water Treatment Pond Test Pit Log | **Pit #** | **MT-4-E**

Location: Pond # 4 Bottom | GPS N 35-20.522' | W 107-38.170'

Location Description: Bottom of Pond – South End

Field Engineer: Ed Loescher | Excavation Method: Small Bobcat Backhoe

Date: April - 10-2012 1:35 pm | Operator:

Weather and Moisture Conditions: Warm – Sunny – 60d to 70d

	Graphic Log	Sample #	Description (USCS, texture, density, color, moisture, odor, inclusions, etc.)
0 6"		MT-4-E-S1 Depth 4"	(0"-6") *Pond Sediment* - Silty Sand, with some silt lenses – the sand was white/tan and the silt lenses were dark Brown.
1 20"		MT -4-E-S2 Depth 10-12"	(6"- 20") Silty Clay, dark brown, moist, hard (*Natural Soil or Possible liner)*
2 3 48"		MT -4-E-S3 Depth 36"	(20"-48") Sandy Clay, some silt, trace gravel, brown, *(Natural Soil)*
4 50"		MT-4-E-S4 Depth 48" -50"	(48"- 50") Clayey Sand, trace gravel, brown *(Natural Soil)*
5			
6			
7			
8			

Total Depth: 50" DEEP

Comments:

Possible clay liner from 6 to 20" depth

Checked: Date:

Approved: Date:

RIO GRANDE RESOURCES CORPORATION

File #

Mt Taylor Mine Water Treatment Pond Test Pit Log

Pit # 1

Location	Pond 5	(GPS) N 35°20.580'	W 107°38.150'
Location Description	MT-5-E		
Field Engineer:	B. Everett	Excavation Method:	Backhoe/Shovel
Date:	4/10/2012	Operator:	K. Strickland
Weather and Moisture Conditions:	clear, sunny, warm; cool and windy in afternoon		

Depth	Graphic Log	Sample #	Description (USCS, texture, density, color, moisture, odor, inclusions, etc.)
0		S5-01-01	0-22": Clayey silt with sand, friable, brown, moist Sample collected at 0-12" bgs at 14:05
1			
2			22"-37": Silty sand, trace clay, friable, dry
3		S5-01-02	Sample collected at 36-37" bgs at 14:09
			TD = 37" bgs
4			
5			
6			
7			
8			

Total Depth: 37" bgs

Comments:
No clay layer noted
Clayey silt with sand 0-22" bgs
Native soil at 22" bgs
Silty sand with trace clay 22-37" bgs

Checked:		Date:	
Approved:	Everett	Date:	5/7/2012

RIO GRANDE RESOURCES CORPORATION

File #

Mt Taylor Mine Water Treatment Pond Test Pit Log

Pit # 2

Location	Pond 5	(GPS) N 35°20.595'	W 107°38.189'
Location Description	MT-5-D		
Field Engineer:	B. Everett	Excavation Method:	Backhoe/Shovel
Date:	4/10/2012	Operator:	K. Strickland
Weather and Moisture Conditions:	clear, sunny, warm; cool and windy in afternoon		

Depth	Graphic Log	Sample #	Description (USCS, texture, density, color, moisture, odor, inclusions, etc.)
0		SS-02-01	0-10": Silty sand, slightly clayey, brown, mottled with white dense BaCl, friable, slightly damp Sample collected at 0-12" bgs at 14:30
1			10"-17": Clay with white precipate BaCl, varved sediments from settling, dark brown gray and white, dense, some silt
		SS-02-02	17"-24": Silty sand, friable, yellow brown, slightly moist Sample collected 17-24" bgs at 14:15
2			24"- 44": Silty sand, friable yellow brown, slightly damp, trace gravel and cobbles
3		SS-02-03	Sample collected at 40-44" bgs at 14:20
			TD = 45" bgs
4			
5			
6			
7			
8			

Total Depth: 45" bgs

Comments: No liner in this pond. Various construction debris on surface. Moist to 24" bgs, slightly damp below.
Pond sediments 0-17" bgs
Native soil 17-44" bgs

Checked: Date:

Approved: Everett Date: 5/7/2012

RIO GRANDE RESOURCES CORPORATION

File #

Mt Taylor Mine Water Treatment Pond Test Pit Log | **Pit #** | **MT-6-A**

Location Pond # 6 Bottom	GPS N 35-20.557'	W 107-38.157'	
Location Description	Bottom of Pond – East end		
Field Engineer: Ed Loescher		Excavation Method: Small Bobcat Backhoe	
Date: April - 10-2012 3:00 pm		Operator:	

Weather and Moisture Conditions: Warm – Sunny – 60d to 70d

	Graphic Log	Sample #	Description (USCS, texture, density, color, moisture, odor, inclusions, etc.)
0 12"		MT -6-A-S1 Depth 0-5"	(0"-12") *Pond Sediment* - Sandy Silt, light gray (sand from erosion of pond side-banks)
1 20"		MT -4-D-S2 Depth 12-20	(12"- 20") Silty Clay, dark gray and reddish brown silt seams, moist (Pond sediment) (Hypalon geomembrane liner at 20" depth)
2			(20"-40") River Rocks, rounded, 3"dia to 6"dia.
3 40"			(Hypalon geomembrane liner at 40" depth) 40" - Hit hard rock surface. Appears to be a sandstone layer.
4			
5			
6			
7			
8			

Total Depth: 40" DEEP

Comments:

Hypalon and river-rock liner.

Checked: Date:

Approved: Date:

RIO GRANDE RESOURCES CORPORATION

File #

Mt Taylor Mine Water Treatment Pond Test Pit Log **Pit #** **MT-6-B**

Location Pond #6 Bottom | GPS N 35-20.560' | W 107-38.174'

Location Description: Bottom of Pond West End

Field Engineer: Ed Loescher | Excavation Method: Small Bobcat Backhoe

Date: April - 10-2012 2:30 pm | Operator:

Weather and Moisture Conditions: Warm – Sunny –60d to 70d

	Graphic Log	Sample #	Description (USCS, texture, density, color, moisture, odor, inclusions, etc.)
0		MT -6-B-S1 depth 8"- 10"	(0"-16") *Pond Sediment* - Intermittent lenses of silt, sand and sandy Clay, light gray (sand from erosion of pond side banks)
1 16"			(Hypalon geomembrane liner at 16" depth) (16"- 28") River Rocks, rounded, 3"dia to 6"dia.
2 28"			(Hypalon geomembrane liner at 28" depth)
3 42"		MT -6-B-S2 Depth 30"	(28"- 42") Sandy Silt Brown – trace gravel *(Natural Soil)* 42" - Hit hard rock surface. Appears to be a sandstone layer
4			
5			
6			
7			
8			

Total Depth: 42" DEEP

Comments:

Hypalon and river-rock liner.

Checked: Date:

Approved: Date:

RIO GRANDE RESOURCES CORPORATION

File #

Mt Taylor Mine Water Treatment Pond Test Pit Log

Pit # 1

Location	Pond 7	(GPS) N 35°20.544	W 107°38.171'
Location Description	MT-7-A		
Field Engineer:	B. Everett	Excavation Method:	Backhoe/Shovel
Date:	4/10/2012	Operator:	K. Strickland
Weather and Moisture Conditions:	clear, sunny, warm; cool and windy in afternoon		

Depth	Graphic Log	Sample #	Description (USCS, texture, density, color, moisture, odor, inclusions, etc.)
0		S7-01-01	0-10": Sediments, clayey silt, moist, dark brown Sample collected at 0-10" bgs at 15:12
			10"-12": Clay, soft red, moist
1			12"-30.5": Silty clay, dense, dark brown, moist
2		S7-01-02	Sample collected at 24-30" bgs at 15:17
		S7-01-03	30.5"-35": Silty sand, yellow brown, moist Sample collected at 30.5-34" bgs at 15:22
3			TD = 35" bgs
4			
5			
6			
7			
8			

Total Depth: 35" bgs

Comments: Geolayer at 10" bgs, 2" of moist red clay below liner
18" of dark brown clay below red clay
Native soil - silty sand below 30.5" bgs, slightly moist
Bedrock at 35" bgs

Checked: Date:

Approved: Everett Date: 5/7/2012

RIO GRANDE RESOURCES CORPORATION

File #

Mt Taylor Mine Water Treatment Pond Test Pit Log

Pit # 2

Location	Pond 7	(GPS) N 35°20.544	W 107°38.171'
Location Description	MT-7-B		
Field Engineer:	B. Everett	Excavation Method:	Backhoe/Shovel
Date:	4/10/2012	Operator:	K. Strickland
Weather and Moisture Conditions:	clear, sunny, warm; cool and windy in afternoon		

Depth	Graphic Log	Sample #	Description (USCS, texture, density, color, moisture, odor, inclusions, etc.)
0			0-23": Silty sand sediments, loose, light tan, some organic material, moist to 12" bgs, dry below 12" bgs
1		S7-02-01	Sample collected at 0-12" bgs at 15:45
2			23"-43": Pond sediments, silt varved from settling
3		S7-02-02	Sample collected at 23-43" bgs
		S7-02-03	43"-45": Clay, red, moist, soft. Sample collected at 43-46" bgs
			45"-49": Clay and silt, brown, dense, moist
4			49"-50": Sandy silt, yellow brown, dry
			TD =50" bgs
5			
6			
7			
8			

Total Depth: 50" bgs

Comments: Geolayer at 43" bgs with 2" red clay beneath
Native soil at 49-50" bgs
Bedrock at 50" bgs

Checked: Date:

Approved: Everett Date: 5/7/2012

RIO GRANDE RESOURCES CORPORATION

File #

Mt Taylor Mine Water Treatment Pond Test Pit Log

Pit # 1

Location	Pond 8	(GPS) N 35°20.708	W 107°38.129'
Location Description	MT-8-E		
Field Engineer:	B. Everett	Excavation Method:	Backhoe/Shovel
Date:	4/10/2012	Operator:	K. Strickland
Weather and Moisture Conditions:	clear, sunny, warm; cool and windy in afternoon		

Depth	Graphic Log	Sample #	Description (USCS, texture, density, color, moisture, odor, inclusions, etc.)
0		S8-01-01	0-17": Clayey silt, pliable, brown, moist Sample collected at 0-8" bgs at 13:00
1			
		S8-01-02	17"-30": Clay, dense, gray brown, with white precipitate BaCl 6" layer from 17-23" bgs Sample collected at 17-30" bgs
2			Increase in brown silty sand 23-30" bgs
			30"-40": Silty sand, friable, yellow brown, dry
3		S8-01-03	Sample collected at 36-40" bgs at 13:09
			TD = 40" bgs
4			
5			
6			
7			
8			

Total Depth: 40" bgs

Comments: Moist to 20" bgs
BaCl layer 17-23" bgs in clay 17-30" bgs
Native soil yellow brown, silty sand at 30" bgs

Checked: Date:

Approved: Everett Date: 5/7/2012

RIO GRANDE RESOURCES CORPORATION

File #

Mt Taylor Mine Water Treatment Pond Test Pit Log

Pit # 2

Location	Pond 8	(GPS) N 35°20.714'	W 107°38.150'
Location Description	MT-8-D		
Field Engineer:	B. Everett	Excavation Method:	Backhoe/Shovel
Date:	4/10/2012	Operator:	K. Strickland
Weather and Moisture Conditions:	clear, sunny, warm; cool and windy in afternoon		

Depth	Graphic Log	Sample #	Description (USCS, texture, density, color, moisture, odor, inclusions, etc.)
0		S8-02-01	0-18": Silty sand, trace gravel, brown, friable, moist Sample collected at 0-12" bgs at 13:26
1			
		S8-02-02	18"-24": Clayey silt, varved gray and white sediment settling Sample collected 18-24" bgs at 13:36
2		S8-02-03	24"-56": Clay, very dense, dark brown, slightly damp to dry Sample collected at 40-50" bgs at 13:36
3			
4			
5		S8-02-04	56"-62": Silty sand, yellow brown, friable, dry Sample collected 58-62" bgs at 13:39
			TD = 62" bgs
6			
7			
8			

Total Depth: 62" bgs

Comments:
Silty sand, brown, friable, some gravel 0-18" bgs
Clayey silt, gray white, varved pond sediments 18-24" bgs
Clay, very dense, dark brown, dry 24-56" bgs
Native soil, yellow brown, silty sand 56-62" bgs

Checked:		Date:	
Approved:	Everett	Date:	5/7/2012

RIO GRANDE RESOURCES CORPORATION

File #

Mt Taylor Mine Water Treatment Pond Test Pit Log **Pit #** **MT-A-A**

Location Area "A" | GPS no reading | W no reading

Location Description Bottom of Pond –North End

Field Engineer: Ed Loescher | Excavation Method: Small Bobcat Backhoe

Date: April - 10-2012 11:45 am | Operator:

Weather and Moisture Conditions: Warm – Sunny – 60 to 70d

	Graphic Log	Sample #	Description (USCS, texture, density, color, moisture, odor, inclusions, etc.)
4" 0		MT -A-A-S1 Depth 4"	(0"-4") *Pond Sediment* - Clayey Silt with some silt– Dark Brown
1		MT -A-A-S2 Depth 8"	(4"- 30") Sandy Clay, trace gravel, brown, moist (*Natural Soil)*
30" 2			
36"			(30"-36") Silty Sand, some clay, trace gravel, tan (*Natural Soil)*
3			
4			
5			
6			
7			
8			

Total Depth: 36" DEEP

Comments:

Checked: Date:

Approved: Date:

RIO GRANDE RESOURCES CORPORATION

File #

Mt Taylor Mine Water Treatment Pond Test Pit Log — **Pit #** **MT-A-B**

Location Area "A" | GPS no reading | W no reading

Location Description: Bottom of Pond –South End

Field Engineer: Ed Loescher | Excavation Method: Small Bobcat Backhoe

Date: April - 10-2012 11:30 am | Operator:

Weather and Moisture Conditions: Warm – Sunny – 60 to 70d

	Graphic Log	Sample #	Description (USCS, texture, density, color, moisture, odor, inclusions, etc.)
0 6"		MT -A-B-S1 Depth 4"	(0"-6") *Pond Sediment* - Clayey Silt with some silt– Dark Brown
1		MT -A-B-S2 Depth 8"	(6"- 28") Sandy Clay, trace gravel, brown, moist *(Natural Soil)*
28" 2 36"		MT -A-B-S3 Depth 30"	(28"-36") Silty Sand, some clay, trace gravel, brown, moist *(Natural Soil)*
3			
4			
5			
6			
7			
8			

Total Depth: 36" DEEP

Comments:

Checked: Date:

Approved: Date:

RIO GRANDE RESOURCES CORPORATION

File #

Mt Taylor Mine Water Treatment Pond Test Pit Log | **Pit #** | **MT-OP-D**

Location OP (ore pile pond) | GPS N 35-20.675' | W 107-38.004'

Location Description: Bottom of Pond – West end

Field Engineer: Ed Loescher | Excavation Method: Small Bobcat Backhoe

Date: April - 10-2012 12:45 pm | Operator:

Weather and Moisture Conditions: Warm – Sunny – 60 -70d

	Graphic Log	Sample #	Description (USCS, texture, density, color, moisture, odor, inclusions, etc.)
0		MT -OP-D-S1 Depth 6"	(*Alluvial Sand* 0-48") **Sand,** trace silt and gravel, tan, loose. (layer of sand from erosion of inlet channel and pond side-banks.)
1			
2			
3 48"			
4		MT -OP-D-S2 Depth 48" -50"	(48"- 72") **Clay,** frequent silt seams, dark gray, moist. (possible original pond sediment from 48"-50" and underlain by a clay liner to 72")
5 72"			
6			(72"-76") **Clayey Sand,** trace gravel, brown, moist *(Natural Soil)*
76"			
7			
8			

Total Depth: 76" DEEP

Comments:

Difficult to determine layering below 48" due to the upper layer of sand caving into excavation.
Upper layer of sand due to erosion from pond inlet and side-banks.
Observed perched water seeping slowly into excavation at 50" depth

Checked: Date:

Approved: Date:

RIO GRANDE RESOURCES CORPORATION

Mt Taylor Mine Water Treatment Pond Test Pit Log | **Pit #** | **MT-OP-C**

Location OP (ore pile pond)	GPS N 35-20.680'	W 107-38.032'	
Location Description	Bottom of Pond - East end		
Field Engineer: Ed Loescher		Excavation Method: Small Bobcat Backhoe	
Date: April - 10-2012 1:20 pm		Operator:	

Weather and Moisture Conditions: Warm – Sunny – 60 -70d

	Graphic Log	Sample #	Description (USCS, texture, density, color, moisture, odor, inclusions, etc.)
0		MT -OP-C-S1 Depth 6"	(*Pond Sediment* 0-18") **Mix of Silt and Clay** - Dark Gray- Trace Gravel
1 18"			
2		MT -OP-C-S2 Depth 20"	(18"- 44") **Clayey Sand** with some silt - Brown - Trace Gravel (*Natural Soil)*
3 44"			
4		MT -OP-C-S3 Depth 48" -50"	(44"- 72") **Sandy Clay** - Brown- Some Gravel – moist *(Natural Soil)*
5 72"			
6		MT -OP-C-S4 Depth 72"	(72") **Clayey Sand** - Brown - Some Gravel – moist *(Natural Soil)*
7			
8			

Total Depth: 72" DEEP

Comments:

Checked: Date:

Approved: Date:

APPENDIX B

Kleinfelder Laboratory Results

SUMMARY OF LABORATORY ANALYSIS

Project: **Mount Taylor Mine: Settling Pond Evaluations** Location: **San Mateo, New Mexico**
Project Number: **96450**

Boring Number	Depth	Soil Classification		Atterberg Limits		Sieve Analysis - Accumulative % Passing														Moisture Content	Dry Density	Unconfined Comp. Strength
	(ft.)	USCS	AASHTO	PI	LL	No. 200	No. 100	No. 50	No. 40	No. 30	No. 16	No. 10	No. 8	No. 4	3/8 in	1/2 in	3/4 in	1 in	1 1/2 in	(%)	(pcf)	(psi)
Borrow Area	2.0 - 5.5	CL	A-6	13	37	64	78	88	91	93	97	98	99	99	100	100	100	--	--	10.7	--	--
MT-1-F	0.0 - 0.5	SC	A-6	15	35	44	56	74	76	77	81	99	100	100	100	--	--	--	--	13.7	--	--
MT-2-D	0.0 - 0.5	CL	A-6	14	33	56	73	95	97	97	98	99	99	100	100	--	--	--	--	16.4	--	--
MT-3-F	0.0 - 0.5	CL	A-6	17	35	59	77	92	95	96	98	99	99	100	100	--	--	--	--	17.3	--	--
MT-4-F	0.0 - 0.5	CL	A-6	13	34	63	86	90	91	91	91	91	91	91	92	92	96	100	--	10.5	--	--
MT-5-F	0.0 - 0.5	CL	A-6	17	37	67	80	94	96	97	98	99	99	99	100	100	--	--	--	17.6	--	--
MT-7-C	0.0 - 0.5	CL	A-6	17	39	71	80	94	97	98	100	100	100	100	--	--	--	--	--	17.9	--	--
MT-8-F	0.0 - 0.5	SC	A-6	13	27	50	73	95	97	98	99	99	99	100	100	--	--	--	--	12.9	--	--
MT-OP-E	0.0 - 0.5	CL	A-6	12	31	63	79	95	97	98	99	99	99	100	100	--	--	--	--	10.3	--	--
MT-WP-SM1	0.0 -	SC	A-6	24	37	48	67	91	93	94	96	97	97	98	99	99	100	--	--	5.9	--	--
MT-WP-SM2	0.0 -	CL	A-7-6	27	43	70	78	85	86	87	89	91	92	96	98	100	--	--	--	10.9	--	--
MT-WP-SM3	0.0 -	SC	A-6	21	34	46	63	89	93	95	96	97	97	98	98	99	100	--	--	3.0	--	--

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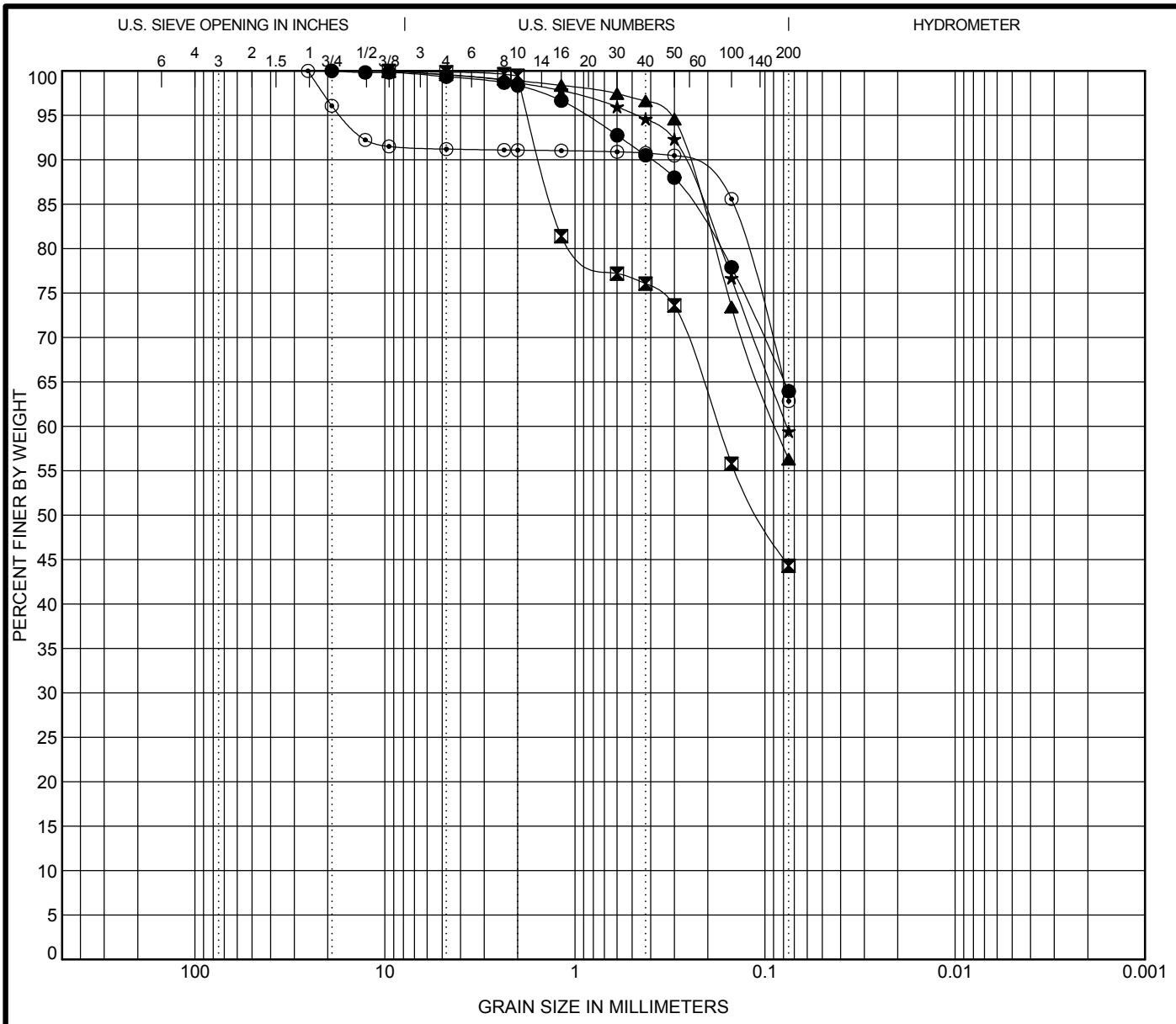

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	Borrow Area	2.0	19.05				0.7	35.4	63.9	
⊠	MT-1-F	0.0	9.525	0.177			0.1	55.6	44.3	
▲	MT-2-D	0.0	9.525	0.087			0.4	43.2	56.3	
★	MT-3-F	0.0	9.525	0.077			0.4	40.1	59.4	
⊙	MT-4-F	0.0	25.4				8.8	28.4	62.8	

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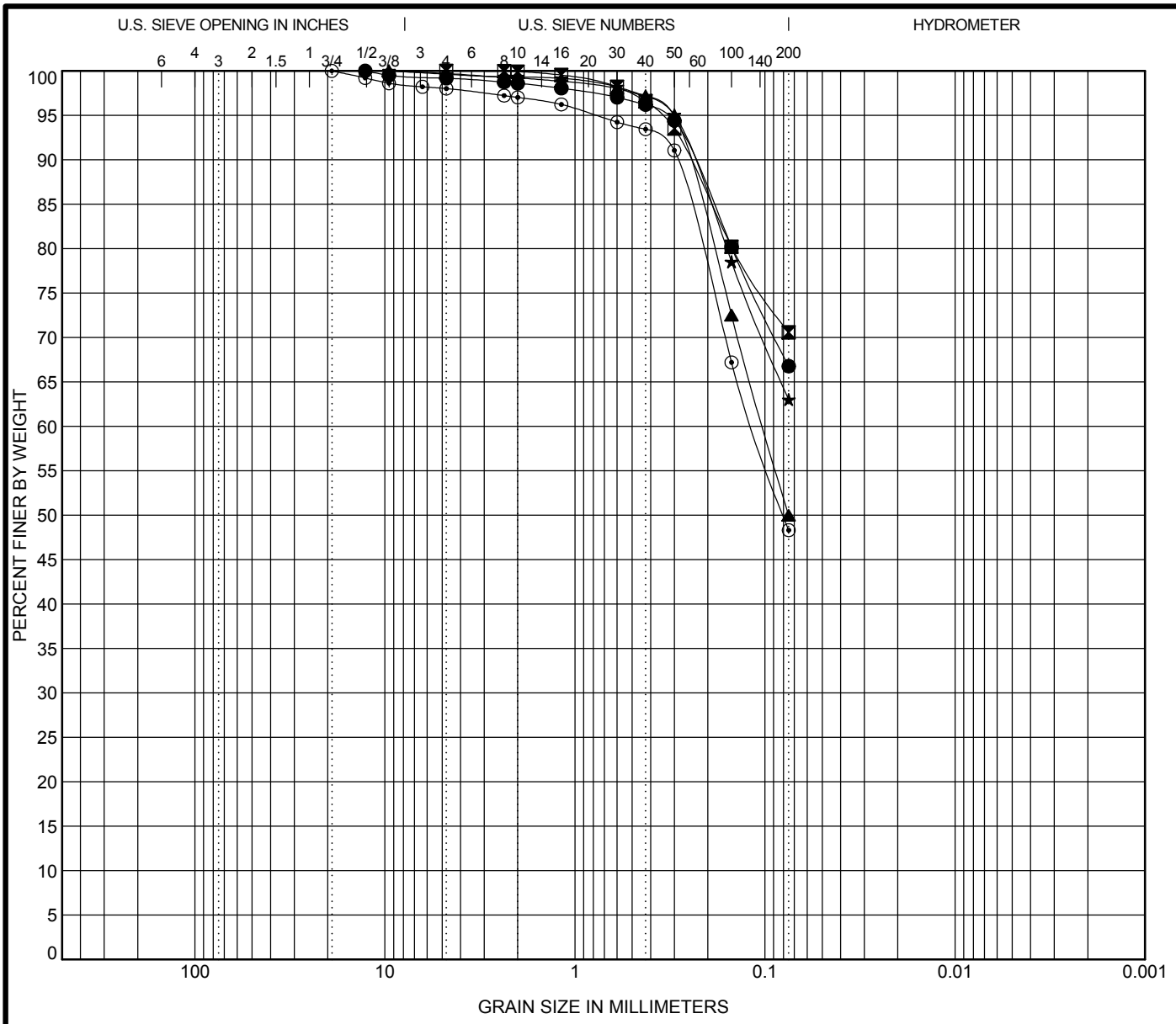
GRAIN SIZE DISTRIBUTION

Project: Mount Taylor Mine: Settling Pond Evaluations

Location: San Mateo, New Mexico

Project Number: 96450



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	MT-5-F	0.0	12.7				0.8	32.4	66.8	
⊠	MT-7-C	0.0	4.75				0.0	29.4	70.6	
▲	MT-8-F	0.0	9.525	0.102			0.3	49.7	50.0	
★	MT-OP-E	0.0	9.525				0.4	36.6	63.0	
⊙	MT-WP-SM1	0.0	19.05	0.115			2.0	49.7	48.3	

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GRAIN SIZE DISTRIBUTION

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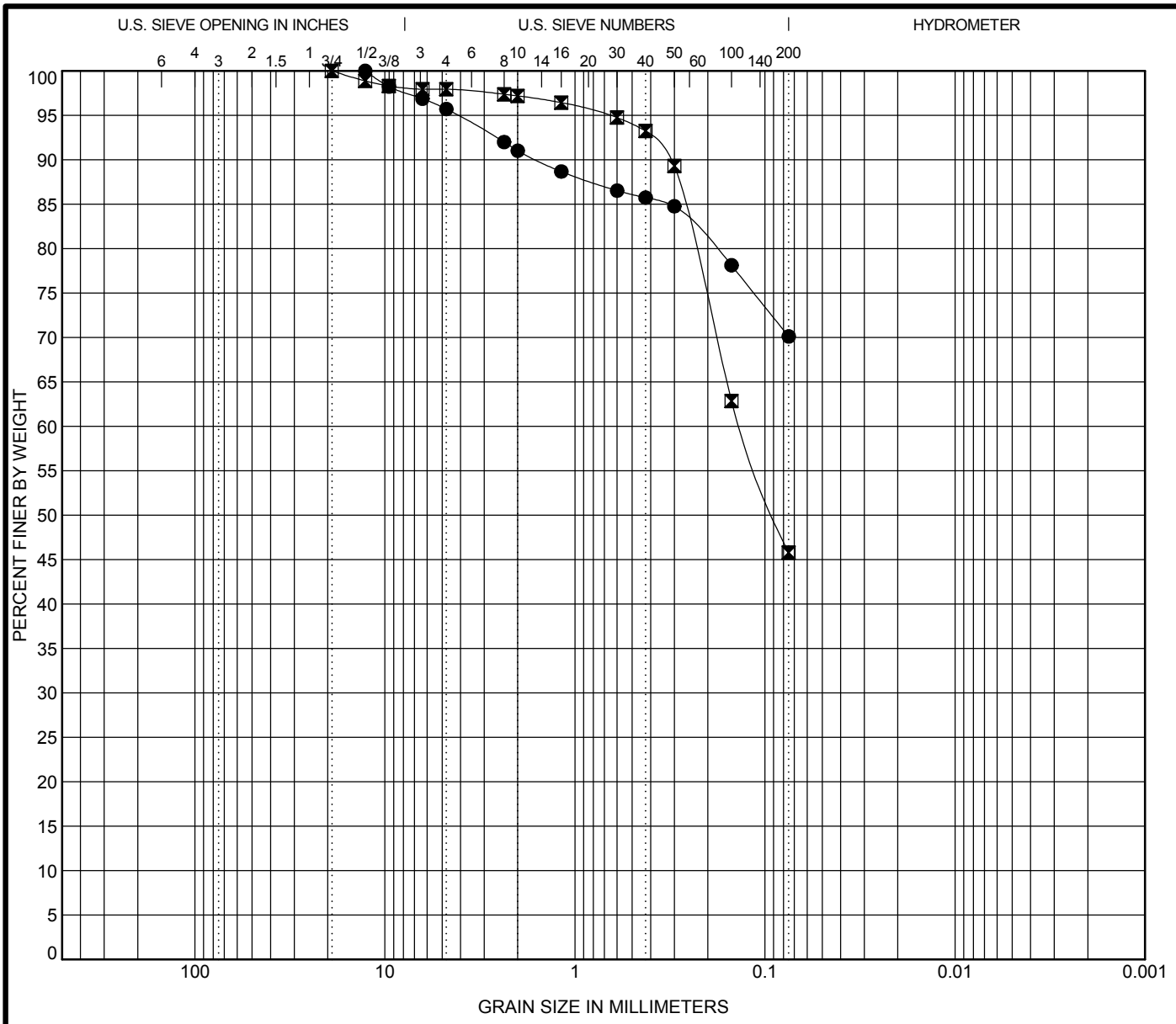
Location: San Mateo, New Mexico

Project Number: 96450



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	MT-WP-SM2	0.0	12.7				4.3	25.6	70.1	
⊠	MT-WP-SM3	0.0	19.05	0.134			2.1	52.2	45.8	

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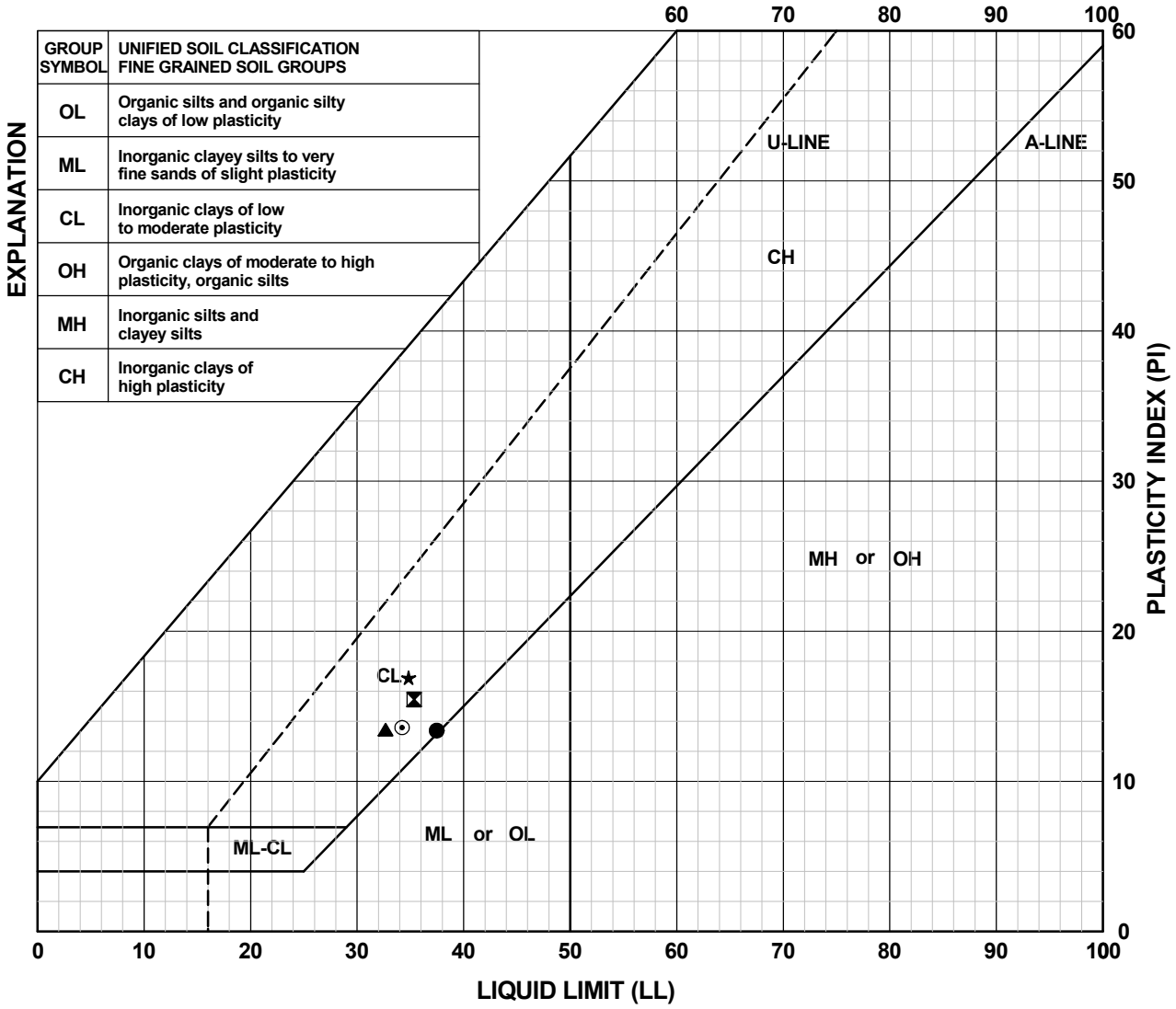
GRAIN SIZE DISTRIBUTION

Project: Mount Taylor Mine: Settling Pond Evaluations

Location: San Mateo, New Mexico

Project Number: 96450

ASTM D4318



Specimen Identification			Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)
●	Borrow Area	2.0	37	24	13
⊠	MT-1-F	0.0	35	20	15
▲	MT-2-D	0.0	33	19	14
★	MT-3-F	0.0	35	18	17
⊙	MT-4-F	0.0	34	21	13

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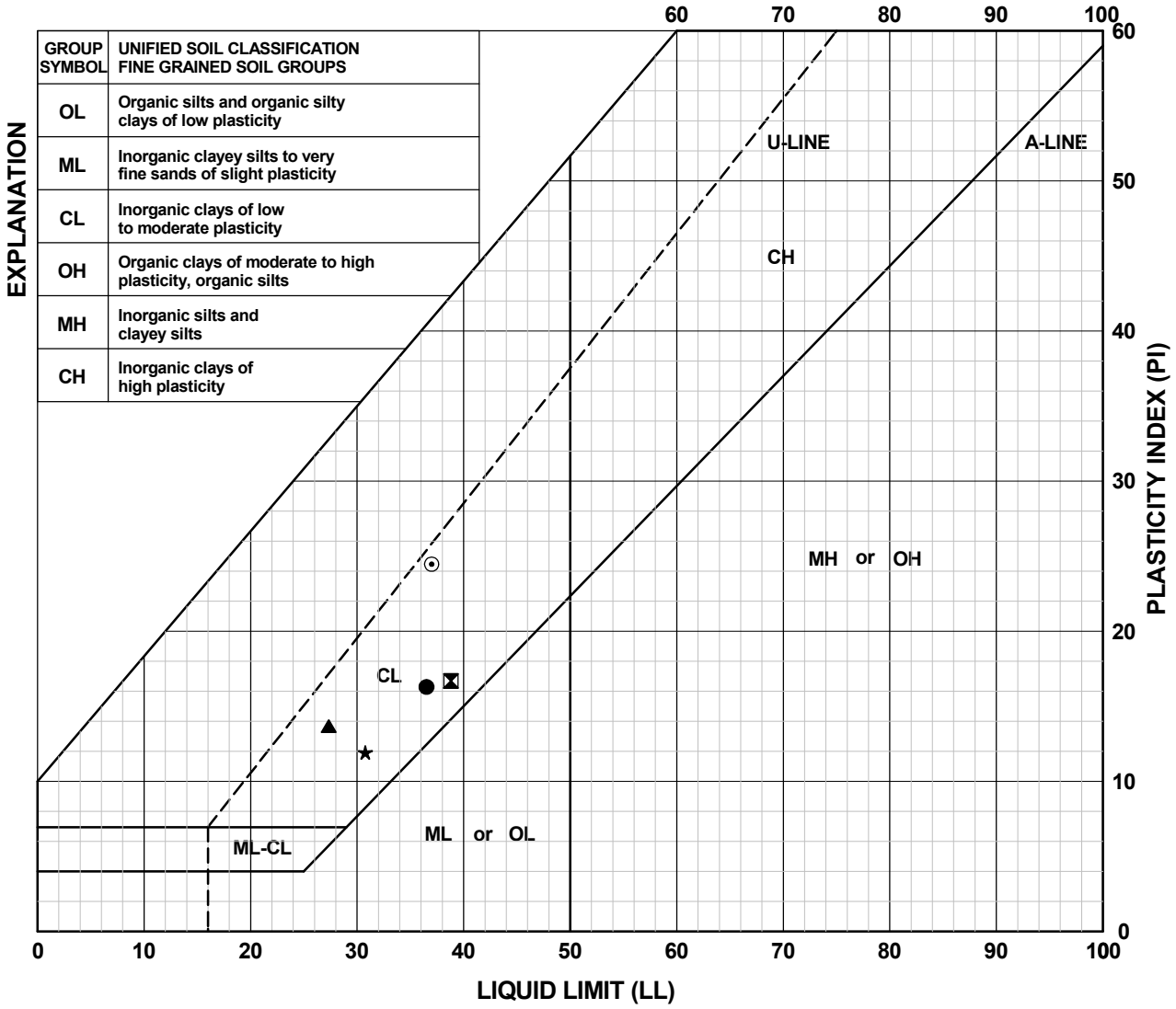
ATTERBERG LIMITS

Project: Mount Taylor Mine: Settling Pond Evaluations

Location: San Mateo, New Mexico

Project Number: 96450

ASTM D4318



Specimen Identification			Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)
●	MT-5-F	0.0	37	20	17
⊠	MT-7-C	0.0	39	22	17
▲	MT-8-F	0.0	27	14	13
★	MT-OP-E	0.0	31	19	12
⊙	MT-WP-SM1	0.0	37	13	24

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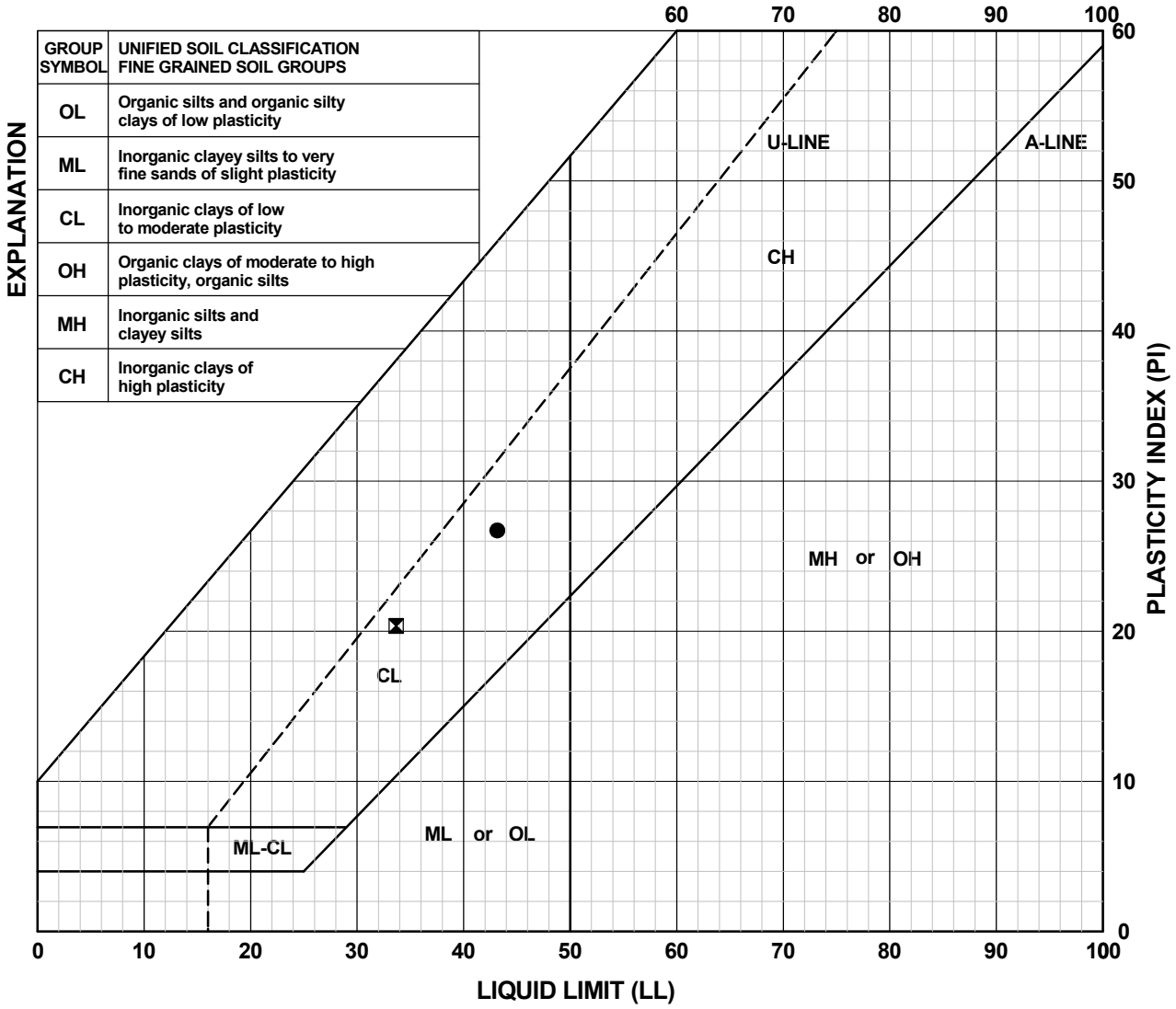
ATTERBERG LIMITS

Project: Mount Taylor Mine: Settling Pond Evaluations

Location: San Mateo, New Mexico

Project Number: 96450

ASTM D4318



Specimen Identification		Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)
●	MT-WP-SM2 0.0	43	16	27
⧓	MT-WP-SM3 0.0	34	13	21

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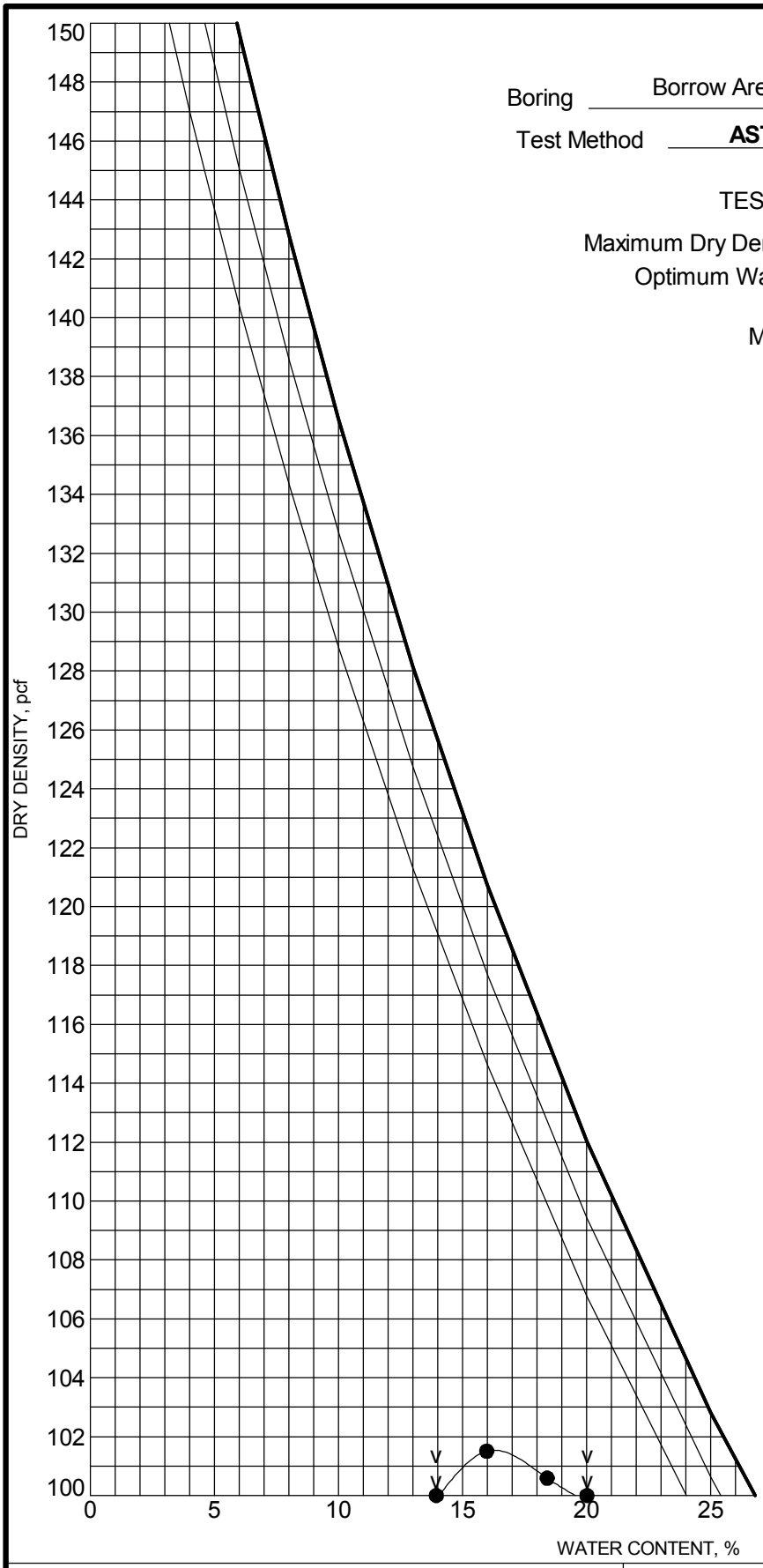
ATTERBERG LIMITS

Project: Mount Taylor Mine: Settling Pond Evaluations

Location: San Mateo, New Mexico

Project Number: 96450



Boring Borrow Area Depth 2.0 - 5.5

Test Method **ASTM D1557 Method B**

TEST RESULTS

Maximum Dry Density	**101.5**	**PCF**
Optimum Water Content	**16.2**	**%**

MATERIAL DESCRIPTION

% clay or silt	63.9
% sand	35.4
% gravel	0.7
Liquid Limit	37
Plastic Limit	24
Plasticity Index	13

CURVES OF 100% SATURATION
FOR SPECIFIC GRAVITY EQUAL TO:

2.80

2.70

2.60

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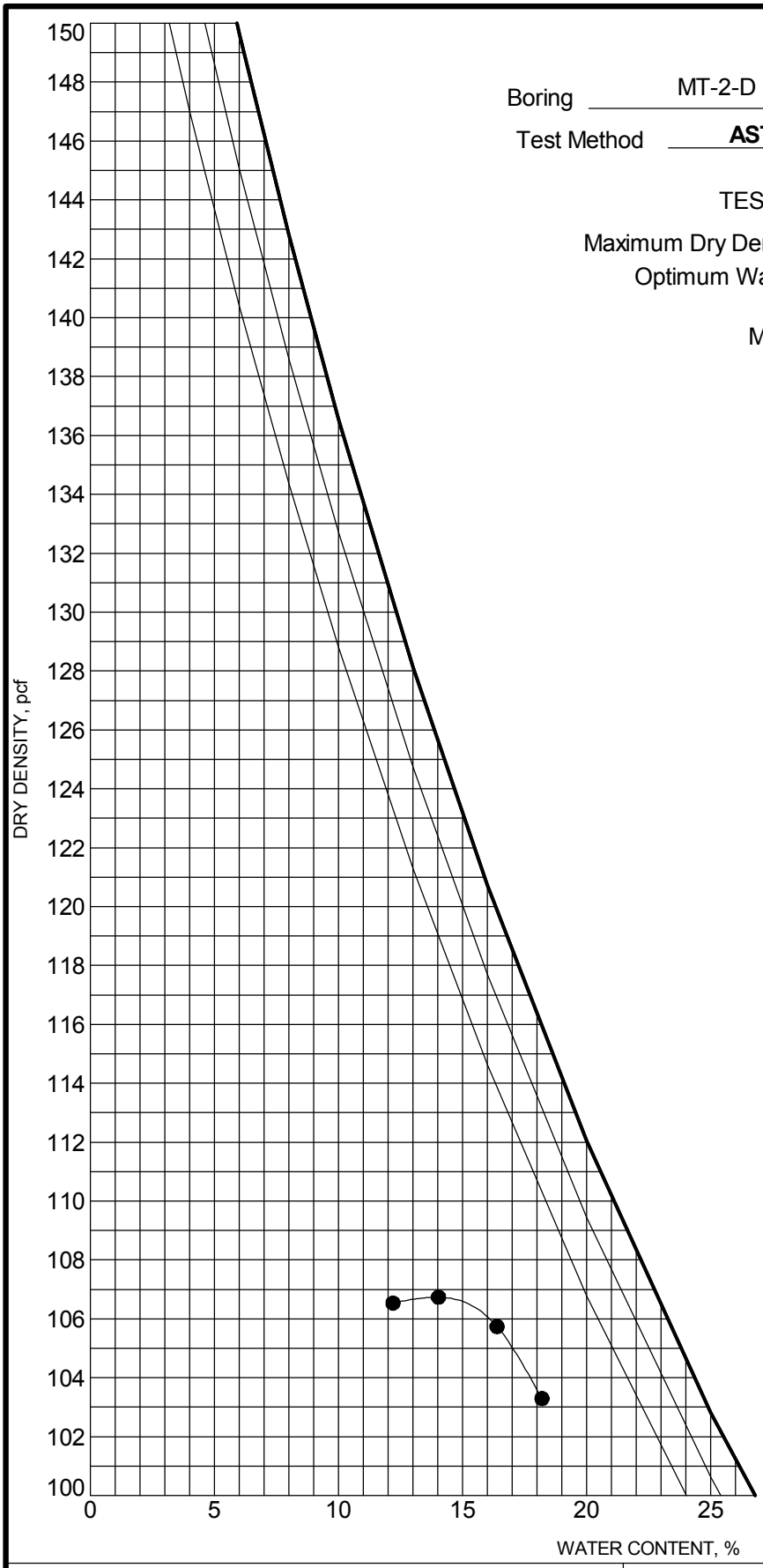
MOISTURE-DENSITY RELATIONSHIP

Project: Mount Taylor Mine: Settling Pond Evaluations

Location: San Mateo, New Mexico

Project Number: 96450



Boring MT-2-D Depth 0.0 - 0.5

Test Method **ASTM D1557 Method B**

TEST RESULTS

Maximum Dry Density **106.7** **PCF**

Optimum Water Content **13.9** **%**

MATERIAL DESCRIPTION

% clay or silt	56.3
% sand	43.2
% gravel	0.4
Liquid Limit	33
Plastic Limit	19
Plasticity Index	14

CURVES OF 100% SATURATION
FOR SPECIFIC GRAVITY EQUAL TO:

2.80

2.70

2.60

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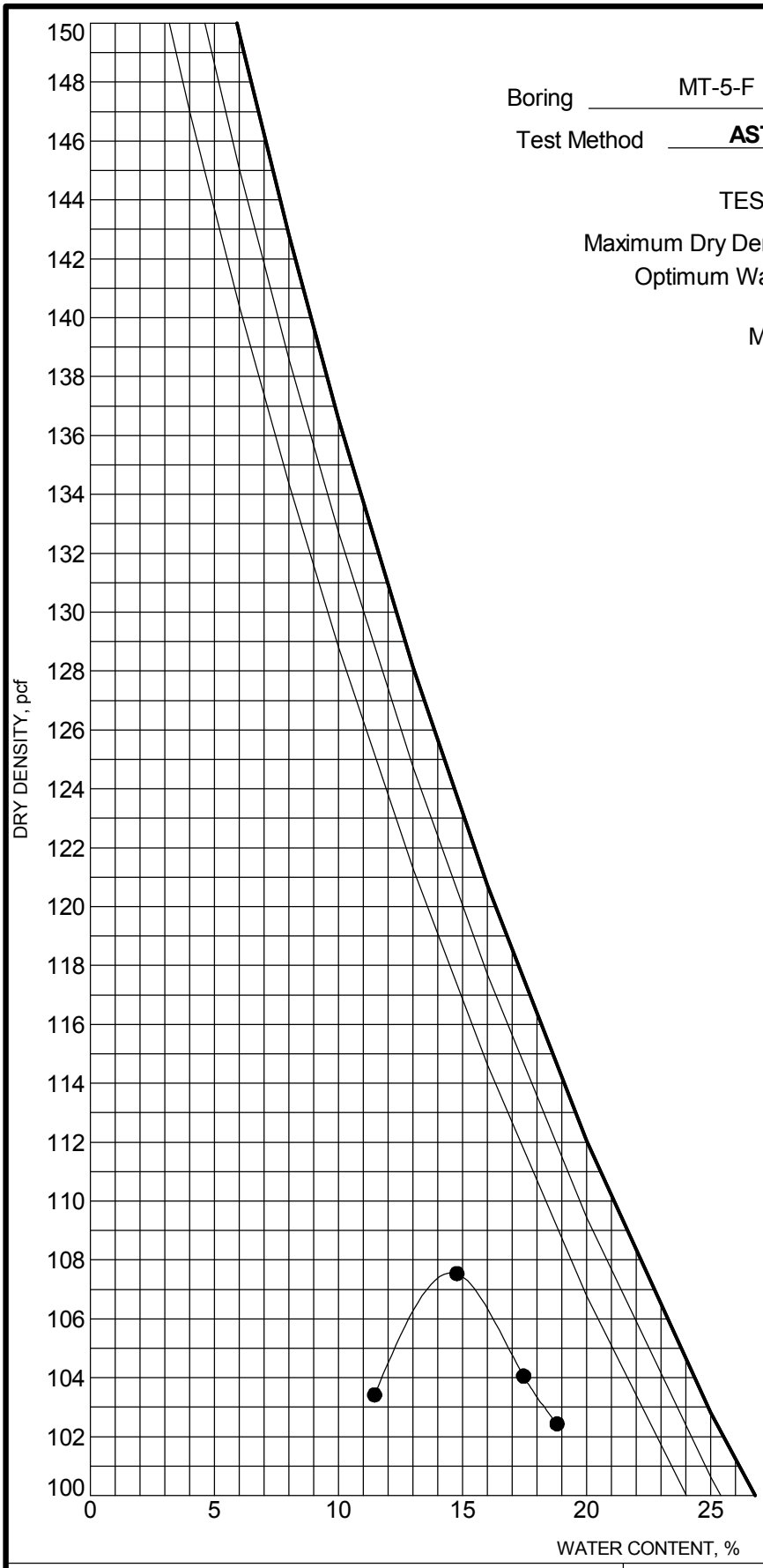
MOISTURE-DENSITY RELATIONSHIP

Project: Mount Taylor Mine: Settling Pond Evaluations

Location: San Mateo, New Mexico

Project Number: 96450



Boring MT-5-F Depth 0.0 - 0.5

Test Method **ASTM D1557 Method B**

TEST RESULTS

Maximum Dry Density	**107.6**	**PCF**
Optimum Water Content	**14.6**	**%**

MATERIAL DESCRIPTION

% clay or silt	66.8
% sand	32.4
% gravel	0.8
Liquid Limit	37
Plastic Limit	20
Plasticity Index	17

CURVES OF 100% SATURATION
FOR SPECIFIC GRAVITY EQUAL TO:

2.80

2.70

2.60

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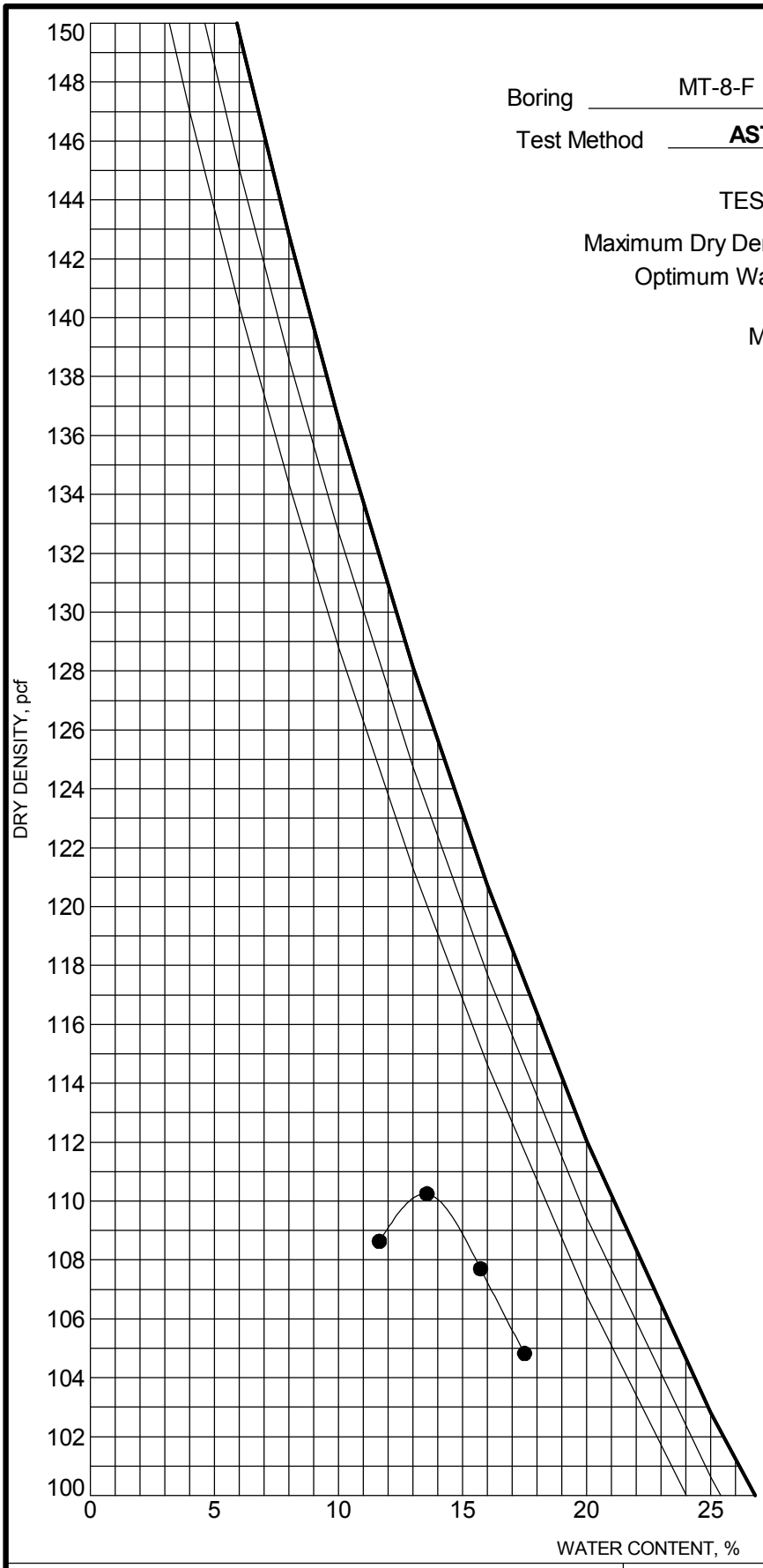
MOISTURE-DENSITY RELATIONSHIP

Project: Mount Taylor Mine: Settling Pond Evaluations

Location: San Mateo, New Mexico

Project Number: 96450



Boring MT-8-F Depth 0.0 - 0.5

Test Method **ASTM D1557 Method B**

TEST RESULTS

Maximum Dry Density **110.2** **PCF**

Optimum Water Content **13.5** **%**

MATERIAL DESCRIPTION

% clay or silt	50.0
% sand	49.7
% gravel	0.3
Liquid Limit	27
Plastic Limit	14
Plasticity Index	13

CURVES OF 100% SATURATION
FOR SPECIFIC GRAVITY EQUAL TO:

2.80

2.70

2.60

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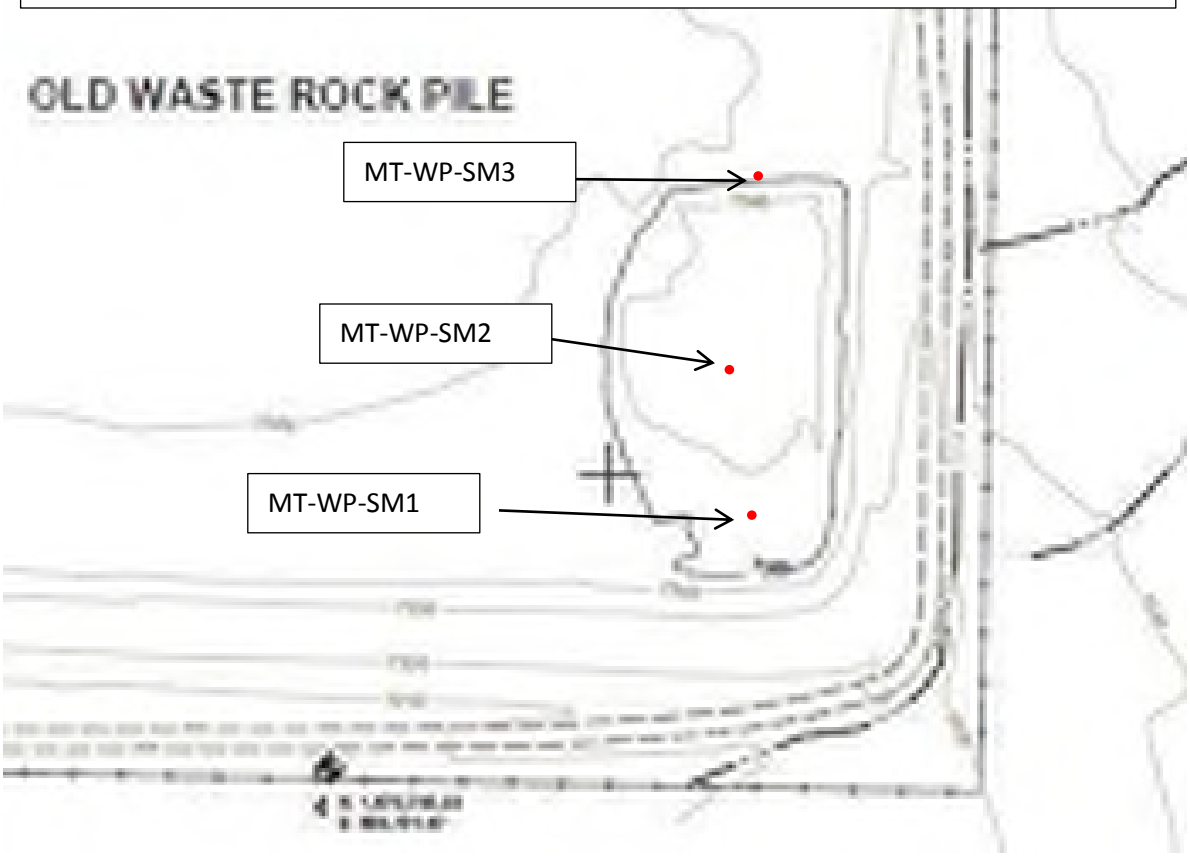
MOISTURE-DENSITY RELATIONSHIP

Project: Mount Taylor Mine: Settling Pond Evaluations

Location: San Mateo, New Mexico

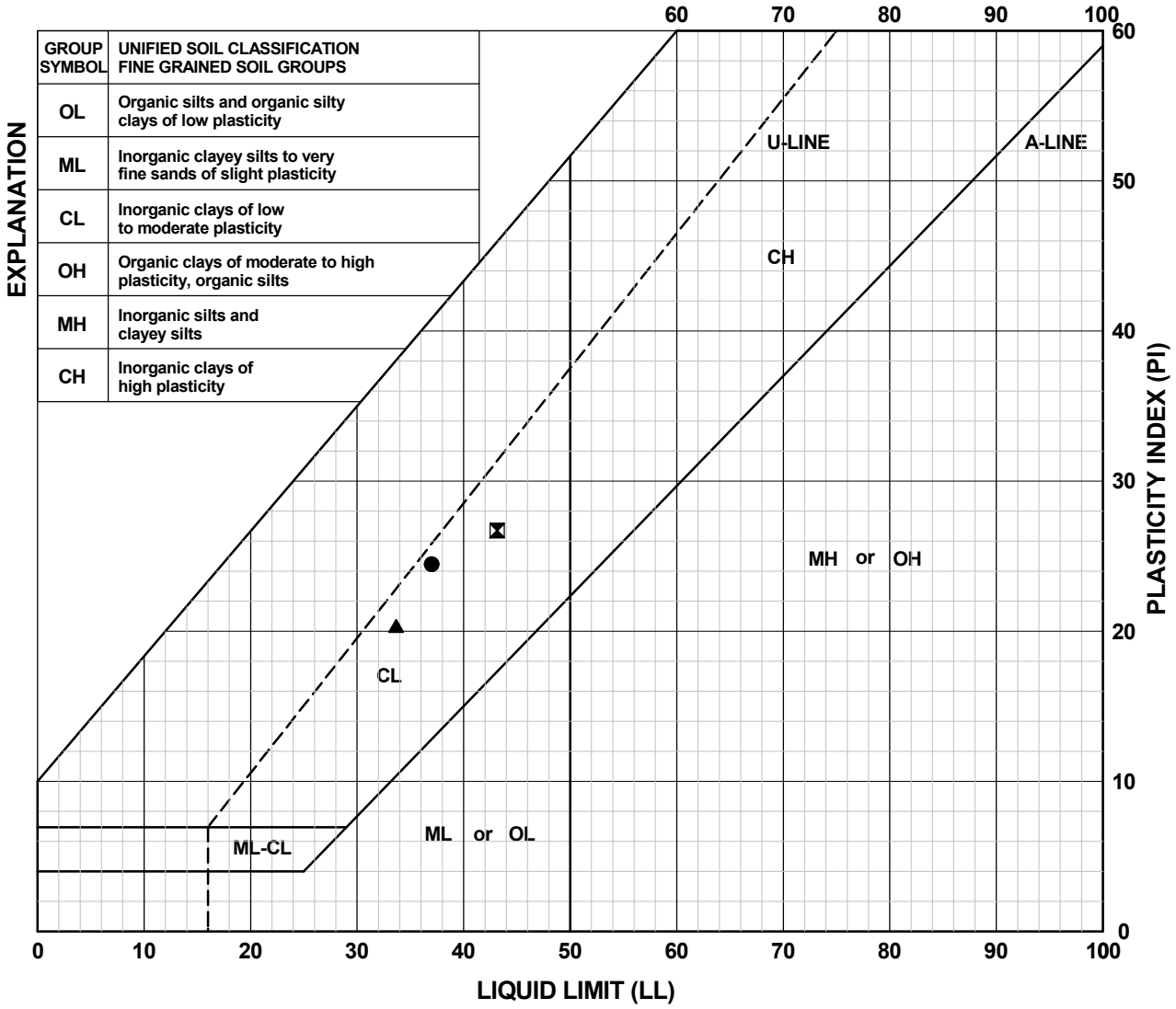
Project Number: 96450

MT TAYLOR MINE SHAFT MUCK SAMPLE LOCATIONS – 5/18/2010



Bulk samples of shaft muck from Mt. Taylor Mine waste rock pile collected on 5/18/2012 by Alan Kuhn. Locations are approximate (+/- 50 ft) based on visual reference to slopes. Splits delivered 5/18/12 to Kleinfelder Albuquerque for grain size analysis and plasticity tests. Other splits left with RGR Mine office for shipment to Energy Labs for testing of U and Ra concentration.

ASTM D4318



Specimen Identification		Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)
● MT-WP-SM1	0.0	37	13	24
⊠ MT-WP-SM2	0.0	43	16	27
▲ MT-WP-SM3	0.0	34	13	21

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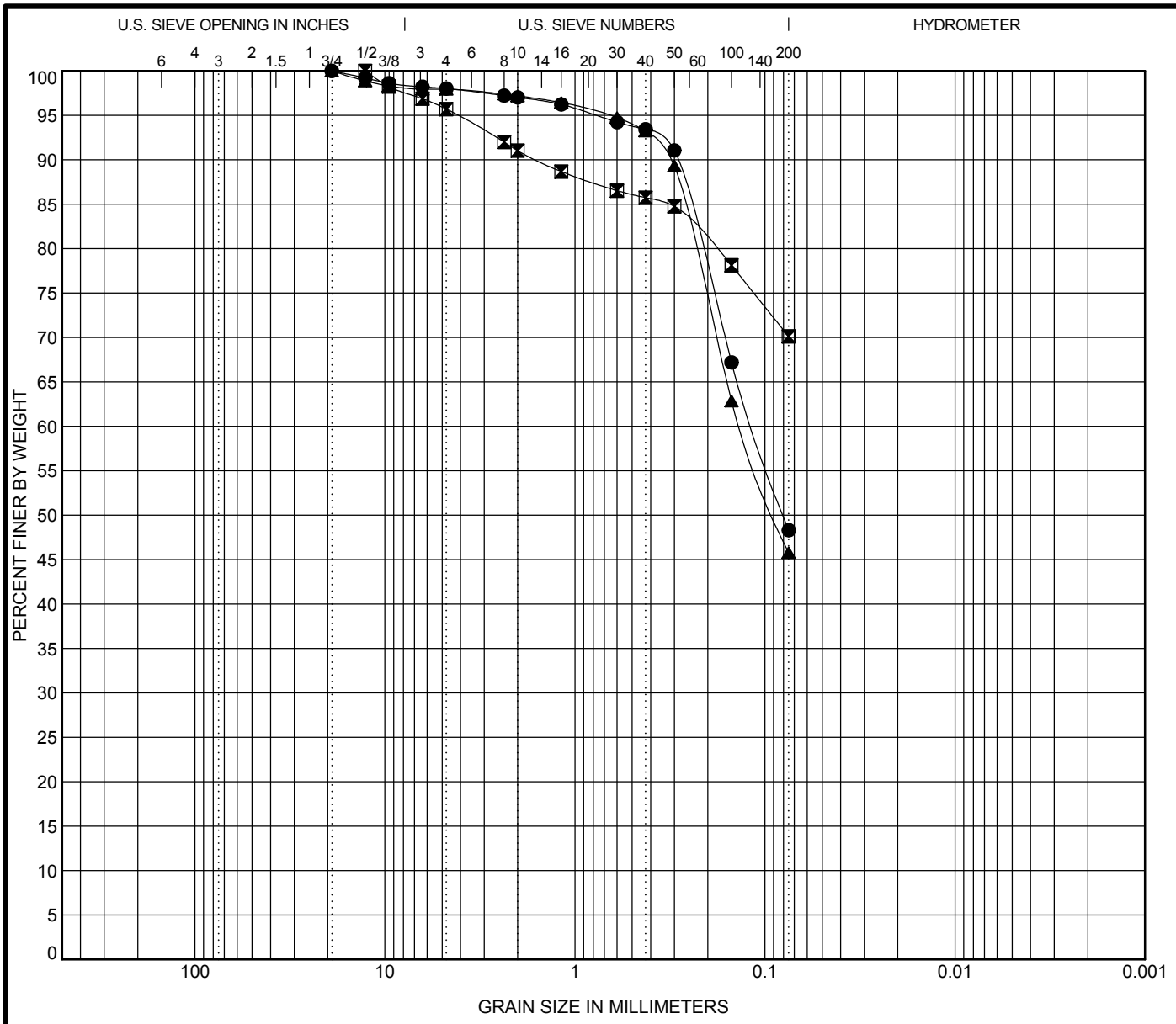
ATTERBERG LIMITS

Project: Mount Taylor Mine: Settling Pond Evaluations

Location: San Mateo, New Mexico

Project Number: 96450



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	MT-WP-SM1	0.0	19.05	0.115			2.0	49.7	48.3	
⊠	MT-WP-SM2	0.0	12.7				4.3	25.6	70.1	
▲	MT-WP-SM3	0.0	19.05	0.134			2.1	52.2	45.8	

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GRAIN SIZE DISTRIBUTION

Project: Mount Taylor Mine: Settling Pond Evaluations

Location: San Mateo, New Mexico

Project Number: 96450

SUMMARY OF LABORATORY ANALYSIS

Project: **Mount Taylor Mine: Settling Pond Evaluations** Location: **San Mateo, New Mexico**
Project Number: **96450**

Boring Number	Depth (ft.)	Soil Classification		Atterberg Limits		Sieve Analysis - Accumulative % Passing														Moisture Content (%)	Dry Density (pcf)	Unconfined Comp. Strength (psi)
		USCS	AASHTO	PI	LL	No. 200	No. 100	No. 50	No. 40	No. 30	No. 16	No. 10	No. 8	No. 4	3/8 in	1/2 in	3/4 in	1 in	1 1/2 in			
MT-WP-SM1	0.0 -	SC	A-6	24	37	48	67	91	93	94	96	97	97	98	99	99	100	--	--	5.9	--	--
MT-WP-SM2	0.0 -	CL	A-7-6	27	43	70	78	85	86	87	89	91	92	96	98	100	--	--	--	10.9	--	--
MT-WP-SM3	0.0 -	SC	A-6	21	34	46	63	89	93	95	96	97	97	98	98	99	100	--	--	3.0	--	--

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APPENDIX D.2

Field Sampling and Laboratory Test Data

Radiological Investigations

MEMORANDUM

Date: June 6, 2012

From: Stanley Fitch, CHP, Radiation Safety Officer

To: Joel Lister, Mine Manager, Mt. Taylor Mine

Subject: April 2012 Soil Investigation

On April 23, 2012, a soil sampling campaign was performed to investigate possible environmental dispersal of uranium and its progeny from the Mt. Taylor Mine. A total of 16 samples were retrieved, 2 background locations and 14 locations along arroyos that drain the mine property. In addition, gamma dose rate measurements were taken.

The purpose of this investigation is to determine background radionuclide concentrations and to evaluate the potential spread of uranium and radium from the mine. To wit, soil samples were taken at various locations adjacent to drainage features (e.g., Marquez Arroyo) and in the thalwegs of these features. The background locations selected are locations MTE-1 (up Marquez Canyon next to the Forest Service Boundary) and MTE-7 (North ¼ Corner of Section 24) for grades above drainage features.

MTE-2 was selected as the background location for the Marquez Canyon drainage. However, because the steepness of the arroyo created a sandy bed with very limited organics that would retain background naturally occurring radioactive material (NORM), it is believed that MTE-2 is a poor representation of the remainder of the drainage.

An aerial map is attached depicting the sample locations. The soil sample locations are also attached in Table 2 (below) with their respective New Mexico State Plane Coordinates and sample analysis results. See also Table 3.

The following observations are made based on the radionuclide data in Table 2:

- There appears to be no discernible dispersal of uranium and uranium progeny off the mine property.

- The concentrations of radionuclides in the Marquez Canyon arroyo adjacent and below Pond 8 (MTE-3, MTE-4, MTE-5, MTE-6) are equivalent to or lower than the background concentrations (MTE-1, MTE-2, MTE-7), indicating: 1) no discernible spread of contamination north of the current boundary; and 2) seasonal water flows purge organics from the Marquez arroyo thalweg that would contain naturally occurring radioactive material (NORM) and radionuclides from the mine (TENORM).

- Radionuclide concentrations in the alluvial deposits north and northeast of San Mateo (MTE-8, MTE-9, MTE-10, MTE-11, MTE-13, MTE-14) are consistent with NORM concentrations typical for this region at locales away from uranium mining operations. There are no identifiable patterns that would indicate the dispersal of uranium and radium into the plain from Mt. Taylor Mine.

- The slightly elevated ambient radiation readings north of Pond 8 were not explained by the soil sample analyses performed for this investigation. Please compare the survey results for MTE-3 and MTE-4 against the survey results for the background locations:

Table 1

Location	**Dose Rate** µrem/h	**U-238** pCi/g	**Ra-226** pCi/g
MTE-1 (Surface Grade BKG)	18	1.6	1.7
MTE-7 (Surface Grade BKG)	13	0.6	1.5
MTE-3 (Surface Grade)	26	0.5	1.4

Regressional analysis of the data in Table 2 indicates very poor statistical correlation between the dose rates and the concentrations of Radium-226 in the soil.

The conclusions are that: 1) radiation "shine" from nearby and elevated rock and soils could be affecting the instrument readings; and 2) soil sample analyses must be performed along with dose rate surveys when evaluating remediation requirements.

April 23, 2012
Soil Sample Locations
N
MTE-7
MTE-5
MTE-6
MTE-3
MTE-4
MTE-2
MTE-1
MTE-12
MTE-10
MTE-11
MTE-14
MTE-13
MTE-9
MTE-8
MTE-16
MTE-15

Table 2
RADIATION SURVEY AND SAMPLE RESULTS
April 23, 2012

Location #	Description	Sample Time	NAD 27 Northing	NAD 27 Easting	Dose Rate (µrem/h)	U-238 (pCi/g)	Ra-226 (pCi/g)	Gross Alpha (pCi/g)
MTE-1	Marquez Arroyo Top of Grade; clay	10:20	1580869	561223	18	1.6	1.7	6.8
MTE-2	Marquez Arroyo Thalweg; very sandy	10:25	1580963	561211	15	0.3	0.7	3.7
MTE-3	Marquez Arroyo Top of Grade; clay	10:50	1581289	559191	26	0.5	1.4	7.6
MTE-4	Marquez Arroyo Thalweg; sandy	10:58	1581226	559201	24	0.2	1.2	5.0
MTE-5	Marquez Arroyo Top of Grade; clay	11:05	1581507	558551	18	0.4	1.4	4.6
MTE-6	Marquez Arroyo Thalweg; sandy	11:10	1581479	558532	15	0.4	1.5	8.9
MTE-7	N¼ Corner Section 24; clay	11:30	1582031	558654	13	0.6	1.5	12.4
MTE-8	Drainage Top of Grade; clay	12:37	1579422	555004	14	1.2	2.8	9.8
MTE-9	Drainage Thalweg; clay	12:40	1579428	555009	14	1.1	1.8	7.6
MTE-10	Drainage Top of Grade; clay	12:52	1580023	555383	14	0.3	1.2	5.5
MTE-11	Drainage Thalweg; clay	12:54	1580047	555376	13	0.4	1.2	4.5
MTE-12	Marquez Arroyo fan; clay	13:40	1580724	556946	13	0.9	2.1	12.9
MTE-13	Drainage Thalweg; sandy clay	13:55	1579390	557582	14	1.4	2.7	8.0
MTE-14	Drainage Top of Grade; clay	14:05	1579410	557576	14	0.4	1.1	11.9
MTE-15	Drainage Thalweg; sandy	14:45	1578344	557794	14	1.0	2.0	5.8
MTE-16	Drainage Top of Grade; clay	14:50	1578386	557805	13	0.3	0.8	6.4

Notes:

1. The term "grade" above refers to the natural surface outside of and atop the drainage feature.
2. Dose Rate Instrument: Eberline PRM-7 #182, BKG = 10-12 µrem/h
3. Coordinates reported are New Mexico State Plane Coordinates in the New Mexico West UTM projection.

Table 3
COORDINATE CONVERSIONS

Location #	Description	NAD 83 Coordinates		NAD 27 Coordinates	
		N	E	N	E
MTE-1	Grade on South Side of Marquez Arroyo	1580937	2784129	1580869	561223
MTE-2	Thalweg of Marquez Arroyo	1581031	2784117	1580963	561211
MTE-3	Grade on North Side of Marquez Arroyo	1581357	2782097	1581289	559191
MTE-4	Thalweg of Marquez Arroyo	1581294	2782107	1581226	559201
MTE-5	Grade North Side of Marquez Arroyo	1581575	2781457	1581507	558551
MTE-6	Thalweg of Marquez Arroyo	1581547	2781438	1581479	558532
MTE-7	North 1/4 Corner Section 24	1582099	2781560	1582031	558654
MTE-8	Grade on South Side of Drainage	1579490	2777910	1579422	555004
MTE-9	Thalweg of Drainage	1579496	2777915	1579428	555009
MTE-10	Grade on South Side of Drainage	1580091	2778289	1580023	555383
MTE-11	Thalweg of Drainage	1580115	2778282	1580047	555376
MTE-12	Marquez Arroyo Fan	1580792	2779852	1580724	556946
MTE-13	Thalweg of Drainage	1579458	2780488	1579390	557582
MTE-14	Grade on North Side of Drainage	1579478	2780482	1579410	557576
MTE-15	Thalweg of Drainage	1578412	2780700	1578344	557794
MTE-16	Grade on North Side of Drainage	1578454	2780711	1578386	557805

Note: Coordinates reported are New Mexico State Plane Coordinates in the New Mexico West UTM projection.

ANALYTICAL SUMMARY REPORT

June 01, 2012

Rio Grande Resources Corporation
PO Box 1150
Grants, NM 87020

Workorder No.: C12041338

Project Name: Mt. Taylor Mine

Energy Laboratories, Inc. Casper WY received the following 16 samples for Rio Grande Resources Corporation on 4/30/2012 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C12041338-001	MTE-1	04/23/12 10:20	04/30/12	Soil	Digestion For RadioChemistry Gross Alpha, Gross Beta Sample Prep Gamma Sample Preparation Gross Alpha, Gross Beta Gross Gamma Uranium, Isotopic
C12041338-002	MTE-2	04/23/12 10:25	04/30/12	Soil	Same As Above
C12041338-003	MTE-3	04/23/12 10:50	04/30/12	Soil	Same As Above
C12041338-004	MTE-4	04/23/12 10:58	04/30/12	Soil	Same As Above
C12041338-005	MTE-5	04/23/12 11:05	04/30/12	Soil	Same As Above
C12041338-006	MTE-6	04/23/12 11:10	04/30/12	Soil	Same As Above
C12041338-007	MTE-7	04/23/12 11:30	04/30/12	Soil	Same As Above
C12041338-008	MTE-8	04/23/12 12:37	04/30/12	Soil	Same As Above
C12041338-009	MTE-9	04/23/12 12:40	04/30/12	Soil	Same As Above
C12041338-010	MTE-10	04/23/12 12:52	04/30/12	Soil	Same As Above
C12041338-011	MTE-11	04/23/12 12:56	04/30/12	Soil	Same As Above
C12041338-012	MTE-12	04/23/12 13:40	04/30/12	Soil	Same As Above
C12041338-013	MTE-13	04/23/12 13:55	04/30/12	Soil	Same As Above
C12041338-014	MTE-14	04/23/12 14:05	04/30/12	Soil	Same As Above
C12041338-015	MTE-15	04/23/12 14:45	04/30/12	Soil	Same As Above
C12041338-016	MTE-16	04/23/12 14:50	04/30/12	Soil	Same As Above

The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing. Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. Data corrected for moisture content are typically noted as -dry on the report. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

If you have any questions regarding these test results, please call.

Report Approved By:

CLIENT: Rio Grande Resources Corporation
Project: Mt. Taylor Mine
Sample Delivery Group: C12041338

Report Date: 06/01/12

CASE NARRATIVE

ORIGINAL SAMPLE SUBMITTAL(S)
All original sample submittals have been returned with the data package.

SAMPLE TEMPERATURE COMPLIANCE: 4°C (±2°C)
Temperature of samples received may not be considered properly preserved by accepted standards. Samples that are hand delivered immediately after collection shall be considered acceptable if there is evidence that the chilling process has begun.

GROSS ALPHA ANALYSIS
Method 900.0 for gross alpha and gross beta is intended as a drinking water method for low TDS waters. Data provided by this method for non potable waters should be viewed as inconsistent.

RADON IN AIR ANALYSIS
The desired exposure time is 48 hours (2 days). The time delay in returning the canister to the laboratory for processing should be as short as possible to avoid excessive decay. Maximum recommended delay between end of exposure to beginning of counting should not exceed 8 days.

SOIL/SOLID SAMPLES
All samples reported on an as received basis unless otherwise indicated.

ATRAZINE, SIMAZINE AND PCB ANALYSIS
Data for PCBs, Atrazine and Simazine are reported from EPA 525.2. PCB data reported by ELI reflects the results for seven individual Aroclors. When the results for all seven are ND (not detected), the sample meets EPA compliance criteria for PCB monitoring.

SUBCONTRACTING ANALYSIS
Subcontracting of sample analyses to an outside laboratory may be required. If so, ENERGY LABORATORIES will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

BRANCH LABORATORY LOCATIONS
eli-b - Energy Laboratories, Inc. - Billings, MT
eli-g - Energy Laboratories, Inc. - Gillette, WY
eli-h - Energy Laboratories, Inc. - Helena, MT
eli-r - Energy Laboratories, Inc. - Rapid City, SD
eli-t - Energy Laboratories, Inc. - College Station, TX

CERTIFICATIONS:
USEPA: WY00002, Radiochemical WY00937; FL-DOH NELAC: E87641, Radiochemical E871017; California: 02118CA; Oregon: WY200001, Radiochemical WY200002; Utah: WY00002; Virginia: 00057; Washington: C836

ISO 17025 DISCLAIMER:
The results of this Analytical Report relate only to the items submitted for analysis.

ENERGY LABORATORIES, INC. - CASPER,WY certifies that certain method selections contained in this report meet requirements as set forth by the above accrediting authorities. Some results requested by the client may not be covered under these certifications. All analysis data to be submitted for regulatory enforcement should be certified in the sample state of origin. Please verify ELI's certification coverage by visiting www.energylab.com

ELI appreciates the opportunity to provide you with this analytical service. For additional information and services visit our web page www.energylab.com.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine
Lab ID: C12041338-001
Client Sample ID: MTE-1

Report Date: 06/01/12
Collection Date: 04/23/12 10:20
DateReceived: 04/30/12
Matrix: Soil

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES							
Gross Alpha	6.8	pCi/g-dry				E900.0	05/02/12 12:00 / ep
Gross Alpha precision (±)	0.8	pCi/g-dry				E900.0	05/02/12 12:00 / ep
Uranium 234	1.7	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 234 precision (±)	0.4	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 234 MDC	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 235	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 235 precision (±)	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 235 MDC	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238	1.6	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238 precision (±)	0.4	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238 MDC	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
RADIONUCLIDES - GAMMA							
Potassium 40	19.2	pCi/g-dry		0.5		E901.1	05/22/12 13:10 / dpb
Potassium 40 precision (±)	3.8	pCi/g-dry				E901.1	05/22/12 13:10 / dpb
Radium 226	1.7	pCi/g-dry		0.3		E901.1	05/22/12 13:10 / dpb
Radium 226 precision (±)	0.5	pCi/g-dry				E901.1	05/22/12 13:10 / dpb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine
Lab ID: C12041338-002
Client Sample ID: MTE-2

Report Date: 06/01/12
Collection Date: 04/23/12 10:25
DateReceived: 04/30/12
Matrix: Soil

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES							
Gross Alpha	3.7	pCi/g-dry				E900.0	05/02/12 12:00 / ep
Gross Alpha precision (±)	0.7	pCi/g-dry				E900.0	05/02/12 12:00 / ep
Uranium 234	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 234 precision (±)	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 234 MDC	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 235	0.06	pCi/g-dry	U			E908.0	05/08/12 08:58 / dmf
Uranium 235 precision (±)	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 235 MDC	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238 precision (±)	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238 MDC	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
RADIONUCLIDES - GAMMA							
Potassium 40	0.0	pCi/g-dry	U	0.5		E901.1	05/22/12 13:10 / dpb
Potassium 40 precision (±)	0.5	pCi/g-dry				E901.1	05/22/12 13:10 / dpb
Radium 226	0.7	pCi/g-dry		0.3		E901.1	05/22/12 13:10 / dpb
Radium 226 precision (±)	0.3	pCi/g-dry				E901.1	05/22/12 13:10 / dpb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine
Lab ID: C12041338-003
Client Sample ID: MTE-3

Report Date: 06/01/12
Collection Date: 04/23/12 10:50
DateReceived: 04/30/12
Matrix: Soil

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES							
Gross Alpha	7.6	pCi/g-dry				E900.0	05/02/12 12:00 / ep
Gross Alpha precision (±)	0.8	pCi/g-dry				E900.0	05/02/12 12:00 / ep
Uranium 234	0.6	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 234 precision (±)	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 234 MDC	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 235	-0.02	pCi/g-dry	U			E908.0	05/08/12 08:58 / dmf
Uranium 235 precision (±)	0.1	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 235 MDC	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238	0.5	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238 precision (±)	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238 MDC	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
RADIONUCLIDES - GAMMA							
Potassium 40	0.0	pCi/g-dry	U	0.5		E901.1	05/22/12 13:10 / dpb
Potassium 40 precision (±)	0.5	pCi/g-dry				E901.1	05/22/12 13:10 / dpb
Radium 226	1.4	pCi/g-dry		0.3		E901.1	05/22/12 13:10 / dpb
Radium 226 precision (±)	0.3	pCi/g-dry				E901.1	05/22/12 13:10 / dpb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine
Lab ID: C12041338-004
Client Sample ID: MTE-4

Report Date: 06/01/12
Collection Date: 04/23/12 10:58
DateReceived: 04/30/12
Matrix: Soil

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES							
Gross Alpha	5.0	pCi/g-dry				E900.0	05/02/12 12:00 / ep
Gross Alpha precision (±)	0.7	pCi/g-dry				E900.0	05/02/12 12:00 / ep
Uranium 234	0.5	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 234 precision (±)	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 234 MDC	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 235	0.07	pCi/g-dry	U			E908.0	05/08/12 08:58 / dmf
Uranium 235 precision (±)	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 235 MDC	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238	0.2	pCi/g-dry	U			E908.0	05/08/12 08:58 / dmf
Uranium 238 precision (±)	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238 MDC	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
RADIONUCLIDES - GAMMA							
Potassium 40	0.0	pCi/g-dry	U	0.5		E901.1	05/22/12 13:10 / dpb
Potassium 40 precision (±)	0.5	pCi/g-dry				E901.1	05/22/12 13:10 / dpb
Radium 226	1.2	pCi/g-dry		0.3		E901.1	05/22/12 13:10 / dpb
Radium 226 precision (±)	0.4	pCi/g-dry				E901.1	05/22/12 13:10 / dpb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine
Lab ID: C12041338-005
Client Sample ID: MTE-5

Report Date: 06/01/12
Collection Date: 04/23/12 11:05
DateReceived: 04/30/12
Matrix: Soil

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES							
Gross Alpha	4.6	pCi/g-dry				E900.0	05/02/12 12:00 / ep
Gross Alpha precision (±)	0.7	pCi/g-dry				E900.0	05/02/12 12:00 / ep
Uranium 234	0.6	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 234 precision (±)	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 234 MDC	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 235	0.03	pCi/g-dry	U			E908.0	05/08/12 08:58 / dmf
Uranium 235 precision (±)	0.1	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 235 MDC	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238	0.4	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238 precision (±)	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238 MDC	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
RADIONUCLIDES - GAMMA							
Potassium 40	0.0	pCi/g-dry	U	0.5		E901.1	05/22/12 13:10 / dpb
Potassium 40 precision (±)	0.5	pCi/g-dry				E901.1	05/22/12 13:10 / dpb
Radium 226	1.4	pCi/g-dry		0.3		E901.1	05/22/12 13:10 / dpb
Radium 226 precision (±)	0.3	pCi/g-dry				E901.1	05/22/12 13:10 / dpb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine
Lab ID: C12041338-006
Client Sample ID: MTE-6

Report Date: 06/01/12
Collection Date: 04/23/12 11:10
DateReceived: 04/30/12
Matrix: Soil

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES							
Gross Alpha	8.9	pCi/g-dry				E900.0	05/02/12 12:00 / ep
Gross Alpha precision (±)	0.8	pCi/g-dry				E900.0	05/02/12 12:00 / ep
Uranium 234	0.5	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 234 precision (±)	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 234 MDC	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 235	0.09	pCi/g-dry	U			E908.0	05/08/12 08:58 / dmf
Uranium 235 precision (±)	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 235 MDC	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238	0.4	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238 precision (±)	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238 MDC	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
RADIONUCLIDES - GAMMA							
Potassium 40	0.0	pCi/g-dry	U	0.5		E901.1	05/22/12 13:10 / dpb
Potassium 40 precision (±)	0.5	pCi/g-dry				E901.1	05/22/12 13:10 / dpb
Radium 226	1.5	pCi/g-dry		0.3		E901.1	05/22/12 13:10 / dpb
Radium 226 precision (±)	0.5	pCi/g-dry				E901.1	05/22/12 13:10 / dpb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine
Lab ID: C12041338-007
Client Sample ID: MTE-7

Report Date: 06/01/12
Collection Date: 04/23/12 11:30
DateReceived: 04/30/12
Matrix: Soil

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES							
Gross Alpha	12.4	pCi/g-dry				E900.0	05/02/12 12:00 / ep
Gross Alpha precision (±)	0.9	pCi/g-dry				E900.0	05/02/12 12:00 / ep
Uranium 234	0.6	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 234 precision (±)	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 234 MDC	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 235	0.02	pCi/g-dry	U			E908.0	05/08/12 08:58 / dmf
Uranium 235 precision (±)	0.1	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 235 MDC	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238	0.6	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238 precision (±)	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238 MDC	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
RADIONUCLIDES - GAMMA							
Potassium 40	0.0	pCi/g-dry	U	0.5		E901.1	05/22/12 13:10 / dpb
Potassium 40 precision (±)	0.5	pCi/g-dry				E901.1	05/22/12 13:10 / dpb
Radium 226	1.5	pCi/g-dry		0.3		E901.1	05/22/12 13:10 / dpb
Radium 226 precision (±)	0.5	pCi/g-dry				E901.1	05/22/12 13:10 / dpb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine
Lab ID: C12041338-008
Client Sample ID: MTE-8

Report Date: 06/01/12
Collection Date: 04/23/12 12:37
DateReceived: 04/30/12
Matrix: Soil

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES							
Gross Alpha	9.8	pCi/g-dry				E900.0	05/02/12 12:00 / ep
Gross Alpha precision (±)	0.8	pCi/g-dry				E900.0	05/02/12 12:00 / ep
Uranium 234	1.4	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 234 precision (±)	0.4	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 234 MDC	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 235	0.1	pCi/g-dry	U			E908.0	05/08/12 08:58 / dmf
Uranium 235 precision (±)	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 235 MDC	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238	1.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238 precision (±)	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238 MDC	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
RADIONUCLIDES - GAMMA							
Potassium 40	0.0	pCi/g-dry	U	0.5		E901.1	05/22/12 13:10 / dpb
Potassium 40 precision (±)	0.5	pCi/g-dry				E901.1	05/22/12 13:10 / dpb
Radium 226	2.8	pCi/g-dry		0.3		E901.1	05/22/12 13:10 / dpb
Radium 226 precision (±)	0.6	pCi/g-dry				E901.1	05/22/12 13:10 / dpb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine
Lab ID: C12041338-009
Client Sample ID: MTE-9

Report Date: 06/01/12
Collection Date: 04/23/12 12:40
DateReceived: 04/30/12
Matrix: Soil

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES							
Gross Alpha	7.6	pCi/g-dry				E900.0	05/02/12 12:00 / ep
Gross Alpha precision (±)	0.8	pCi/g-dry				E900.0	05/02/12 12:00 / ep
Uranium 234	1.1	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 234 precision (±)	0.4	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 234 MDC	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 235	0.2	pCi/g-dry	U			E908.0	05/08/12 08:58 / dmf
Uranium 235 precision (±)	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 235 MDC	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238	1.1	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238 precision (±)	0.4	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238 MDC	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
RADIONUCLIDES - GAMMA							
Potassium 40	0.0	pCi/g-dry	U	0.5		E901.1	05/22/12 13:10 / dpb
Potassium 40 precision (±)	0.5	pCi/g-dry				E901.1	05/22/12 13:10 / dpb
Radium 226	1.8	pCi/g-dry		0.3		E901.1	05/22/12 13:10 / dpb
Radium 226 precision (±)	0.5	pCi/g-dry				E901.1	05/22/12 13:10 / dpb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine
Lab ID: C12041338-010
Client Sample ID: MTE-10

Report Date: 06/01/12
Collection Date: 04/23/12 12:52
DateReceived: 04/30/12
Matrix: Soil

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES							
Gross Alpha	5.5	pCi/g-dry				E900.0	05/02/12 12:00 / ep
Gross Alpha precision (±)	0.7	pCi/g-dry				E900.0	05/02/12 12:00 / ep
Uranium 234	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 234 precision (±)	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 234 MDC	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 235	0.08	pCi/g-dry	U			E908.0	05/08/12 08:58 / dmf
Uranium 235 precision (±)	0.1	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 235 MDC	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238 precision (±)	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238 MDC	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
RADIONUCLIDES - GAMMA							
Potassium 40	0.0	pCi/g-dry	U	0.5		E901.1	05/22/12 13:10 / dpb
Potassium 40 precision (±)	0.5	pCi/g-dry				E901.1	05/22/12 13:10 / dpb
Radium 226	1.2	pCi/g-dry		0.3		E901.1	05/22/12 13:10 / dpb
Radium 226 precision (±)	0.5	pCi/g-dry				E901.1	05/22/12 13:10 / dpb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine
Lab ID: C12041338-011
Client Sample ID: MTE-11

Report Date: 06/01/12
Collection Date: 04/23/12 12:56
DateReceived: 04/30/12
Matrix: Soil

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES							
Gross Alpha	4.5	pCi/g-dry				E900.0	05/02/12 12:00 / ep
Gross Alpha precision (±)	0.7	pCi/g-dry				E900.0	05/02/12 12:00 / ep
Uranium 234	0.4	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 234 precision (±)	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 234 MDC	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 235	0.02	pCi/g-dry	U			E908.0	05/08/12 08:58 / dmf
Uranium 235 precision (±)	0.1	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 235 MDC	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238	0.4	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238 precision (±)	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238 MDC	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
RADIONUCLIDES - GAMMA							
Potassium 40	0.0	pCi/g-dry	U	0.5		E901.1	05/22/12 13:10 / dpb
Potassium 40 precision (±)	0.5	pCi/g-dry				E901.1	05/22/12 13:10 / dpb
Radium 226	1.2	pCi/g-dry		0.3		E901.1	05/22/12 13:10 / dpb
Radium 226 precision (±)	0.4	pCi/g-dry				E901.1	05/22/12 13:10 / dpb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine
Lab ID: C12041338-012
Client Sample ID: MTE-12

Report Date: 06/01/12
Collection Date: 04/23/12 13:40
DateReceived: 04/30/12
Matrix: Soil

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES							
Gross Alpha	12.9	pCi/g-dry				E900.0	05/02/12 12:00 / ep
Gross Alpha precision (±)	0.9	pCi/g-dry				E900.0	05/02/12 12:00 / ep
Uranium 234	0.9	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 234 precision (±)	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 234 MDC	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 235	0.07	pCi/g-dry	U			E908.0	05/08/12 08:58 / dmf
Uranium 235 precision (±)	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 235 MDC	0.4	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238	0.9	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238 precision (±)	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238 MDC	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
RADIONUCLIDES - GAMMA							
Potassium 40	0.0	pCi/g-dry	U	0.5		E901.1	05/22/12 13:10 / dpb
Potassium 40 precision (±)	0.5	pCi/g-dry				E901.1	05/22/12 13:10 / dpb
Radium 226	2.1	pCi/g-dry		0.3		E901.1	05/22/12 13:10 / dpb
Radium 226 precision (±)	0.5	pCi/g-dry				E901.1	05/22/12 13:10 / dpb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine
Lab ID: C12041338-013
Client Sample ID: MTE-13

Report Date: 06/01/12
Collection Date: 04/23/12 13:55
DateReceived: 04/30/12
Matrix: Soil

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES							
Gross Alpha	8.0	pCi/g-dry				E900.0	05/02/12 12:00 / ep
Gross Alpha precision (±)	0.8	pCi/g-dry				E900.0	05/02/12 12:00 / ep
Uranium 234	1.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 234 precision (±)	0.4	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 234 MDC	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 235	0.08	pCi/g-dry	U			E908.0	05/08/12 08:58 / dmf
Uranium 235 precision (±)	0.1	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 235 MDC	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238	1.4	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238 precision (±)	0.4	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238 MDC	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
RADIONUCLIDES - GAMMA							
Potassium 40	0.0	pCi/g-dry	U	0.5		E901.1	05/22/12 13:10 / dpb
Potassium 40 precision (±)	0.5	pCi/g-dry				E901.1	05/22/12 13:10 / dpb
Radium 226	2.7	pCi/g-dry		0.3		E901.1	05/22/12 13:10 / dpb
Radium 226 precision (±)	0.5	pCi/g-dry				E901.1	05/22/12 13:10 / dpb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
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U - Not detected at minimum detectable concentration

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine
Lab ID: C12041338-014
Client Sample ID: MTE-14

Report Date: 06/01/12
Collection Date: 04/23/12 14:05
DateReceived: 04/30/12
Matrix: Soil

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES							
Gross Alpha	11.9	pCi/g-dry				E900.0	05/02/12 12:00 / ep
Gross Alpha precision (±)	0.9	pCi/g-dry				E900.0	05/02/12 12:00 / ep
Uranium 234	0.4	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 234 precision (±)	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 234 MDC	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 235	0.05	pCi/g-dry	U			E908.0	05/08/12 08:58 / dmf
Uranium 235 precision (±)	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 235 MDC	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238	0.4	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238 precision (±)	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238 MDC	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
RADIONUCLIDES - GAMMA							
Potassium 40	0.0	pCi/g-dry	U	0.5		E901.1	05/22/12 13:10 / dpb
Potassium 40 precision (±)	0.5	pCi/g-dry				E901.1	05/22/12 13:10 / dpb
Radium 226	1.1	pCi/g-dry		0.3		E901.1	05/22/12 13:10 / dpb
Radium 226 precision (±)	0.3	pCi/g-dry				E901.1	05/22/12 13:10 / dpb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine
Lab ID: C12041338-015
Client Sample ID: MTE-15

Report Date: 06/01/12
Collection Date: 04/23/12 14:45
DateReceived: 04/30/12
Matrix: Soil

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES							
Gross Alpha	5.8	pCi/g-dry				E900.0	05/02/12 12:00 / ep
Gross Alpha precision (±)	0.7	pCi/g-dry				E900.0	05/02/12 12:00 / ep
Uranium 234	0.8	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 234 precision (±)	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 234 MDC	0.1	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 235	0.02	pCi/g-dry	U			E908.0	05/08/12 08:58 / dmf
Uranium 235 precision (±)	0.09	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 235 MDC	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238	1	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238 precision (±)	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238 MDC	0.1	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
RADIONUCLIDES - GAMMA							
Potassium 40	0.0	pCi/g-dry	U	0.5		E901.1	05/22/12 13:10 / dpb
Potassium 40 precision (±)	0.5	pCi/g-dry				E901.1	05/22/12 13:10 / dpb
Radium 226	2.0	pCi/g-dry		0.3		E901.1	05/22/12 13:10 / dpb
Radium 226 precision (±)	0.3	pCi/g-dry				E901.1	05/22/12 13:10 / dpb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine
Lab ID: C12041338-016
Client Sample ID: MTE-16

Report Date: 06/01/12
Collection Date: 04/23/12 14:50
DateReceived: 04/30/12
Matrix: Soil

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES							
Gross Alpha	6.4	pCi/g-dry				E900.0	05/02/12 12:00 / ep
Gross Alpha precision (±)	0.8	pCi/g-dry				E900.0	05/02/12 12:00 / ep
Uranium 234	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 234 precision (±)	0.1	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 234 MDC	0.1	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 235	-0.01	pCi/g-dry	U			E908.0	05/08/12 08:58 / dmf
Uranium 235 precision (±)	0.06	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 235 MDC	0.2	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238	0.3	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238 precision (±)	0.1	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
Uranium 238 MDC	0.1	pCi/g-dry				E908.0	05/08/12 08:58 / dmf
RADIONUCLIDES - GAMMA							
Potassium 40	0.0	pCi/g-dry	U	0.5		E901.1	05/22/12 13:10 / dpb
Potassium 40 precision (±)	0.5	pCi/g-dry				E901.1	05/22/12 13:10 / dpb
Radium 226	0.8	pCi/g-dry		0.3		E901.1	05/22/12 13:10 / dpb
Radium 226 precision (±)	0.3	pCi/g-dry				E901.1	05/22/12 13:10 / dpb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation **Report Date:** 06/01/12

Project: Mt. Taylor Mine **Work Order:** C12041338

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E900.0										Batch: R159328
Sample ID: MB-R159328	2	Method Blank				Run: G5000W_120502A				05/02/12 12:00
Gross Alpha		-0.03	pCi/g-dry							U
Gross Alpha precision (±)		0.6	pCi/g-dry							
Sample ID: LCS-R159328		Laboratory Control Sample				Run: G5000W_120502A				05/02/12 12:00
Gross Alpha		487	pCi/g-dry		96	70	130			
Sample ID: C12040820-001ADUP	2	Sample Duplicate				Run: G5000W_120502A				05/02/12 12:00
Gross Alpha		3.28	pCi/g-dry			70	130	14	20	
Gross Alpha precision (±)		0.660	pCi/g-dry							
- Duplicate RPD for Gross Beta is outside of the acceptance range for this analysis.										
Sample ID: C12041338-010ADUP	2	Sample Duplicate				Run: G5000W_120502A				05/02/12 12:00
Gross Alpha		6.25	pCi/g-dry			70	130	13	20	
Gross Alpha precision (±)		0.750	pCi/g-dry							

Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation **Report Date:** 06/01/12

Project: Mt. Taylor Mine **Work Order:** C12041338

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E901.1									Batch: R160127	
Sample ID: LCS-R160127		Laboratory Control Sample				Run: GAM-HPGE_120522B			05/22/12 13:10	
Bismuth 214		2.30	pCi/g-dry	0.30	89	70	130			
Sample ID: MB-R160127	4	Method Blank				Run: GAM-HPGE_120522B			05/22/12 13:10	
Potassium 40		ND	pCi/g-dry							U
Potassium 40 precision (±)		ND	pCi/g-dry							
Radium 226		ND	pCi/g-dry							U
Radium 226 precision (±)		ND	pCi/g-dry							
Sample ID: C12041338-010ADUP	4	Sample Duplicate				Run: GAM-HPGE_120522B			05/22/12 13:10	
Potassium 40		ND	pCi/g-dry	0.50					20	U
Potassium 40 precision (±)		ND	pCi/g-dry							
Radium 226		1.80	pCi/g-dry	0.30				40	20	R
Radium 226 precision (±)		0.400	pCi/g-dry							
- Duplicate RPD for Ra226 is outside of the acceptance range for this analysis.										
Sample ID: C12041338-016ADUP	4	Sample Duplicate				Run: GAM-HPGE_120522B			05/22/12 13:10	
Potassium 40		ND	pCi/g-dry	0.50					20	U
Potassium 40 precision (±)		ND	pCi/g-dry							
Radium 226		1.00	pCi/g-dry	0.30				22	20	R
Radium 226 precision (±)		0.300	pCi/g-dry							
- Duplicate RPD for Ra226 is outside of the acceptance range for this analysis.										

Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

U - Not detected at minimum detectable concentration

ND - Not detected at the reporting limit.

R - RPD exceeds advisory limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Report Date: 06/01/12
Project: Mt. Taylor Mine
Work Order: C12041338

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E908.0										Batch: 33540
Sample ID: C12041338-016AMS	2	Sample Matrix Spike				Run: EGG-ORTEC_120504B				05/08/12 13:12
Uranium 234		29.3	pCi/g-dry		105	70	130			
Uranium 238		31.8	pCi/g-dry		112	70	130			
Sample ID: C12041338-016AMSD	2	Sample Matrix Spike Duplicate				Run: EGG-ORTEC_120504B				05/08/12 13:12
Uranium 234		30.7	pCi/g-dry		109	70	130	4.3	28.4	
Uranium 238		31.8	pCi/g-dry		111	70	130	0.1	28.1	
Sample ID: LCS-33540	2	Laboratory Control Sample				Run: EGG-ORTEC_120504B				05/08/12 13:12
Uranium 234		2.44	pCi/g-dry		105	80	120			
Uranium 238		2.53	pCi/g-dry		107	80	120			
Sample ID: MB-33540	9	Method Blank				Run: EGG-ORTEC_120504B				05/08/12 13:12
Uranium 234		0.002	pCi/g-dry							U
Uranium 234 precision (±)		0.02	pCi/g-dry							
Uranium 234 MDC		0.03	pCi/g-dry							
Uranium 235		-0.004	pCi/g-dry							U
Uranium 235 precision (±)		0.01	pCi/g-dry							
Uranium 235 MDC		0.03	pCi/g-dry							
Uranium 238		0.0001	pCi/g-dry							U
Uranium 238 precision (±)		0.009	pCi/g-dry							
Uranium 238 MDC		0.02	pCi/g-dry							

Qualifiers:

RL - Analyte reporting limit.
MDC - Minimum detectable concentration
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration

Workorder Receipt Checklist

Rio Grande Resources Corporation

C12041338

Login completed by: Corinne Wagner
Date Received: 4/30/2012
Reviewed by: BL2000\cwagner
Received by: tj
Reviewed Date: 5/2/2012
Carrier name: Ground

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Container/Temp Blank temperature:	14.2°C		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Contact and Corrective Action Comments:

None

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name:	Project Name, PWS, Permit, Etc.	Sample Origin	EPA/State Compliance:
Rio Grande Resources Corporation #C11115	Mt. Taylor Mine	State: NM	Yes ☒ No ☐
Report Mail Address: PO Box 1150 Grants, NM 87020-1150	**Contact Name:** Joe Lister, Manager **Phone/Fax:** (505) 287-7971	**Email:**	**Sampler: (Please Print)** Stan Fitch
Invoice Address: Rio Grande Resources PO Box 1150 Grants, New mexico 87020	**Invoice Contact & Phone:** Joe Lister 505-287-7971	**Purchase Order:**	**Quote/Bottle Order:** Soil Samples

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ A2LA
☐ GSA ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP **Format:**_____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

RUSH Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Sample results needed within 30 days.

Shipped by: UPS-G
Cooler ID(s): 3539 / 29
Receipt Temp 14.2 °C
On Ice: Yes (No)
Custody Seal Intact Signature Match: Y (N)

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	Isotopic Uranium	Radium-226	Potassium-40	Gross Alpha	SEE ATTACHED	Normal Turnaround (TAT)
1	MTE-1	04/23/12	10:20	soil	X	X	X	X		X
2	MTE-2	04/23/12	10:25	soil	X	X	X	X		X
3	MTE-3	04/23/12	10:50	soil	X	X	X	X		X
4	MTE-4	04/23/12	10:58	soil	X	X	X	X		X
5	MTE-5	04/23/12	11:05	soil	X	X	X	X		X
6	MTE-6	04/23/12	11:10	soil	X	X	X	X		X
7	MTE-7	04/23/12	11:30	soil	X	X	X	X		X
8	MTE-8	04/23/12	12:37	soil	X	X	X	X		X
9	MTE-9	04/23/12	12:40	soil	X	X	X	X		X
10	MTE-10	04/23/12	12:52	soil	X	X	X	X		X

LABORATORY USE ONLY

Custody Record MUST be Signed

	Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
1	Stan Fitch	04/26/12 11:00				
2						
Laboratory					4-30-12 9:20	

Sample Disposal: Return to Client: _____ Lab Disposal: XXXXX

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Grande Resources Corporation #C11115	Project Name, PWS, Permit, Etc.: Mt. Taylor Mine	Sample Origin State: NM	EPA/State Compliance: Yes ☑ No ☐
Report Mail Address: PO Box 1150 Grants, NM 87020-1150	Contact Name: Joe Lister, Manager Phone/Fax: (505) 287-7971	Email:	Sampler: (Please Print) Stan Fitch
Invoice Address: PO Box 1150 Grants, New Mexico 87020	Invoice Contact & Phone: Joe Lister 505-287-7971	Purchase Order:	Quote/Bottle Order: Soil Samples

Special Report/Formats -- ELI must be notified prior to sample submittal for the following:

☐ DW ☐ A2LA
☐ GSA ☐ EDD/EDT (Electronic Data) Format: _____
☐ POTW/WWTP ☐ LEVEL IV
☐ State: _____ ☐ NELAC
☐ Other: _____

Number of Containers
Sample Type: A W S V B O
Air Water Soils/Solids Vegetation Bioassay Other

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	Isotopic Uranium	Radium-226	Potassium-40	Gross Alpha	SEE ATTACHED	Normal Turnaround (TAT)
1 MTE-11	04/23/12	12:56	soil	X	X	X	X		X
2 MTE-12	04/23/12	13:40	soil	X	X	X	X		X
3 MTE-13	04/23/12	13:55	soil	X	X	X	X		X
4 MTE-14	04/23/12	14:05	soil	X	X	X	X		X
5 MTE-15	04/23/12	14:45	soil	X	X	X	X		X
6 MTE-16	04/23/12	14:50	soil	X	X	X	X		X
7									
8									
9									
10									

R U S H — Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:

Sample results needed within 30 days.

Shipped by:

Cooler ID(s):

Receipt Temp _____ °C

On Ice: Yes No

Custody Seal Y N
Intact Y N
Signature Match Y N

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): Stan Fitch	Date/Time: 04/26/12 11:00	Signature:	Received by (print):	Date/Time:	Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
Sample Disposal: Return to Client: _____ Lab Disposal: XXXXX			Received by Laboratory: 4-30-12	Date/Time: 9:20	Signature:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

RGR Mt. Taylor Mine Stan Fitch
Gamma Radiation Survey 4/25/2016
Clean Borrow Pile

Instrument: Eberline PRM-7 #182, BKG = 15 µrem/h, readings waist high

NAD 83 Datum			
Northing	Easting	Dose Rate µrem/h	Notes
1581153	2783831	16	Fence Angle
1581120	2783737	20	
1581085	2783638	22	
1581053	2783536	32	
1581017	2783451	60	East toe of levy
1580986	2783331	60	Crown -- top of pile, west side
1580885	2783375	60	Crown -- top of pile, west side
1580910	2783477	30	East toe of levy
1580942	2783575	26	
1580972	2783678	22	
1580990	2783776	18	
1581020	2783874	18	
1581098	2783955	16	Northeasterly Fence Corner
1580992	2783937	16	Fence Line
1580955	2783843	20	
1580911	2783751	24	
1580867	2783656	25	
1580819	2783560	35	
1580785	2783471	60	East toe of levy
1580759	2783383	60	Crown -- top of pile, west side
1580652	2783371	80	Crown -- top of pile, west side
1580686	2783463	35	East toe of levy
1580709	2783562	30	
1580735	2783664	24	
1580757	2783770	26	
1580792	2783895	20	Fence line
1580703	2783873	16	Southeasterly Fence Corner

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

April 30, 2018

Report to:
Alan Kuhn
Alan Kuhn Associates LLC
13212 Manitoba Dr NE
Albuquerque, NM 87111

cc: Joe Lister

Bill to:
Alan Kuhn
Alan Kuhn Associates LLC
13212 Manitoba Dr NE
Albuquerque, NM 87111

Project ID: AKA-ACZ-2018.1
ACZ Project ID: L43559

Alan Kuhn:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on April 05, 2018. This project has been assigned to ACZ's project number, L43559. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L43559. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after May 30, 2018. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Alan Kuhn Associates LLC
Project ID: AKA-ACZ-2018.1
Sample ID: SMC1-1

ACZ Sample ID: ***L43559-01***
Date Sampled: *04/02/18 15:00*
Date Received: *04/05/18*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Selenium, total (3050)	M6020 ICP-MS	520	0.68		*	mg/Kg	0.05	0.1	04/17/18 13:26	bsu
Uranium, total (3050)	M6020 ICP-MS	520	32.9		*	mg/Kg	0.05	0.3	04/17/18 13:26	bsu

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	88.5		*	%	0.1	0.5	04/09/18 16:11	ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/09/18 8:50	ajm
Digestion - Hot Plate	M3050B ICP-MS								04/12/18 9:07	jlw
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/10/18 10:15	ajm

Alan Kuhn Associates LLC
Project ID: AKA-ACZ-2018.1
Sample ID: SMC1-2

ACZ Sample ID: ***L43559-02***
Date Sampled: *04/02/18 15:00*
Date Received: *04/05/18*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Selenium, total (3050)	M6020 ICP-MS	515	0.73		*	mg/Kg	0.05	0.1	04/17/18 13:30	bsu
Uranium, total (3050)	M6020 ICP-MS	515	28.6		*	mg/Kg	0.05	0.3	04/17/18 13:30	bsu

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	86.2		*	%	0.1	0.5	04/09/18 17:19	ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/09/18 8:53	ajm
Digestion - Hot Plate	M3050B ICP-MS								04/12/18 9:28	jlw
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/10/18 10:19	ajm

Alan Kuhn Associates LLC
Project ID: AKA-ACZ-2018.1
Sample ID: SMC2-1

ACZ Sample ID: ***L43559-03***
Date Sampled: *04/02/18 15:15*
Date Received: *04/05/18*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Selenium, total (3050)	M6020 ICP-MS	510	0.15		*	mg/Kg	0.05	0.1	04/17/18 13:39	bsu
Uranium, total (3050)	M6020 ICP-MS	510	1.30		*	mg/Kg	0.05	0.3	04/17/18 13:39	bsu

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	92.5		*	%	0.1	0.5	04/09/18 18:27	ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/09/18 8:57	ajm
Digestion - Hot Plate	M3050B ICP-MS								04/12/18 10:30	jlw
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/10/18 10:23	ajm

Alan Kuhn Associates LLC
Project ID: AKA-ACZ-2018.1
Sample ID: SMC2-2

ACZ Sample ID: ***L43559-04***
Date Sampled: *04/02/18 15:15*
Date Received: *04/05/18*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Selenium, total (3050)	M6020 ICP-MS	515	0.17		*	mg/Kg	0.05	0.1	04/17/18 13:40	bsu
Uranium, total (3050)	M6020 ICP-MS	515	1.93		*	mg/Kg	0.05	0.3	04/17/18 13:40	bsu

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	90.2		*	%	0.1	0.5	04/09/18 19:35	ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/09/18 9:01	ajm
Digestion - Hot Plate	M3050B ICP-MS								04/12/18 10:51	jlw
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/10/18 10:27	ajm

Alan Kuhn Associates LLC
Project ID: AKA-ACZ-2018.1
Sample ID: SMC3-1

ACZ Sample ID: ***L43559-05***
Date Sampled: *04/02/18 10:30*
Date Received: *04/05/18*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Selenium, total (3050)	M6020 ICP-MS	505	0.12		*	mg/Kg	0.05	0.1	04/17/18 13:42	bsu
Uranium, total (3050)	M6020 ICP-MS	505	0.73		*	mg/Kg	0.05	0.3	04/17/18 13:42	bsu

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	94.6		*	%	0.1	0.5	04/09/18 20:43	ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/09/18 9:04	ajm
Digestion - Hot Plate	M3050B ICP-MS								04/12/18 11:11	jlw
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/10/18 10:31	ajm

Alan Kuhn Associates LLC
Project ID: AKA-ACZ-2018.1
Sample ID: SMC3-2

ACZ Sample ID: ***L43559-06***
Date Sampled: *04/02/18 10:30*
Date Received: *04/05/18*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Selenium, total (3050)	M6020 ICP-MS	505	0.17		*	mg/Kg	0.05	0.1	04/17/18 13:44	bsu
Uranium, total (3050)	M6020 ICP-MS	505	1.25		*	mg/Kg	0.05	0.3	04/17/18 13:44	bsu

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	93.5		*	%	0.1	0.5	04/09/18 21:51	ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/09/18 9:08	ajm
Digestion - Hot Plate	M3050B ICP-MS								04/12/18 11:32	jlw
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/10/18 10:35	ajm

Alan Kuhn Associates LLC
Project ID: AKA-ACZ-2018.1
Sample ID: SMC4-1

ACZ Sample ID: ***L43559-07***
Date Sampled: *04/02/18 10:45*
Date Received: *04/05/18*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Selenium, total (3050)	M6020 ICP-MS	505	0.14		*	mg/Kg	0.05	0.1	04/17/18 13:46	bsu
Uranium, total (3050)	M6020 ICP-MS	505	1.26		*	mg/Kg	0.05	0.3	04/17/18 13:46	bsu

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	92.8		*	%	0.1	0.5	04/09/18 22:59	ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/09/18 9:12	ajm
Digestion - Hot Plate	M3050B ICP-MS								04/12/18 11:53	jlw
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/10/18 10:39	ajm

Alan Kuhn Associates LLC
Project ID: AKA-ACZ-2018.1
Sample ID: SMC4-2

ACZ Sample ID: ***L43559-08***
Date Sampled: *04/02/18 10:45*
Date Received: *04/05/18*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Selenium, total (3050)	M6020 ICP-MS	505	0.31		*	mg/Kg	0.05	0.1	04/17/18 13:48	bsu
Uranium, total (3050)	M6020 ICP-MS	505	5.99		*	mg/Kg	0.05	0.3	04/17/18 13:48	bsu

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	93.3		*	%	0.1	0.5	04/10/18 0:06	ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/09/18 9:15	ajm
Digestion - Hot Plate	M3050B ICP-MS								04/12/18 12:14	jlw
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/10/18 10:43	ajm

Alan Kuhn Associates LLC
Project ID: AKA-ACZ-2018.1
Sample ID: SMC5-1

ACZ Sample ID: ***L43559-09***
Date Sampled: *04/02/18 11:00*
Date Received: *04/05/18*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Selenium, total (3050)	M6020 ICP-MS	505	0.19		*	mg/Kg	0.05	0.1	04/17/18 13:49	bsu
Uranium, total (3050)	M6020 ICP-MS	505	0.96		*	mg/Kg	0.05	0.3	04/17/18 13:49	bsu

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	91.4		*	%	0.1	0.5	04/10/18 1:14	ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/09/18 9:19	ajm
Digestion - Hot Plate	M3050B ICP-MS								04/12/18 12:34	jlw
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/10/18 10:47	ajm

Alan Kuhn Associates LLC
Project ID: AKA-ACZ-2018.1
Sample ID: SMC5-2

ACZ Sample ID: ***L43559-10***
Date Sampled: *04/02/18 11:00*
Date Received: *04/05/18*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Selenium, total (3050)	M6020 ICP-MS	505	0.15		*	mg/Kg	0.05	0.1	04/17/18 13:51	bsu
Uranium, total (3050)	M6020 ICP-MS	505	0.98		*	mg/Kg	0.05	0.3	04/17/18 13:51	bsu

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	92.5		*	%	0.1	0.5	04/10/18 2:22	ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/09/18 9:23	ajm
Digestion - Hot Plate	M3050B ICP-MS								04/12/18 12:55	jlw
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/10/18 10:51	ajm

Alan Kuhn Associates LLC
Project ID: AKA-ACZ-2018.1
Sample ID: SMC6-1

ACZ Sample ID: ***L43559-11***
Date Sampled: *04/02/18 11:15*
Date Received: *04/05/18*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Selenium, total (3050)	M6020 ICP-MS	505	0.17		*	mg/Kg	0.05	0.1	04/17/18 13:53	bsu
Uranium, total (3050)	M6020 ICP-MS	505	0.68		*	mg/Kg	0.05	0.3	04/17/18 13:53	bsu

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	92.8		*	%	0.1	0.5	04/10/18 3:30	ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/09/18 9:26	ajm
Digestion - Hot Plate	M3050B ICP-MS								04/12/18 13:16	jlw
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/10/18 10:55	ajm

Alan Kuhn Associates LLC
Project ID: AKA-ACZ-2018.1
Sample ID: SMC6-2

ACZ Sample ID: ***L43559-12***
Date Sampled: *04/02/18 11:15*
Date Received: *04/05/18*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Selenium, total (3050)	M6020 ICP-MS	505	0.29		*	mg/Kg	0.05	0.1	04/17/18 13:58	bsu
Uranium, total (3050)	M6020 ICP-MS	505	1.20		*	mg/Kg	0.05	0.3	04/17/18 13:58	bsu

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	93.7		*	%	0.1	0.5	04/10/18 4:38	ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/09/18 9:30	ajm
Digestion - Hot Plate	M3050B ICP-MS								04/12/18 13:37	jlw
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/10/18 10:59	ajm

Alan Kuhn Associates LLC
Project ID: AKA-ACZ-2018.1
Sample ID: SMC7-1

ACZ Sample ID: ***L43559-13***
Date Sampled: *04/02/18 11:30*
Date Received: *04/05/18*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Selenium, total (3050)	M6020 ICP-MS	500	0.11		*	mg/Kg	0.05	0.1	04/17/18 14:00	bsu
Uranium, total (3050)	M6020 ICP-MS	500	0.44		*	mg/Kg	0.05	0.3	04/17/18 14:00	bsu

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	95.0		*	%	0.1	0.5	04/10/18 5:46	ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/09/18 9:34	ajm
Digestion - Hot Plate	M3050B ICP-MS								04/12/18 13:57	jlw
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/10/18 11:03	ajm

Alan Kuhn Associates LLC
Project ID: AKA-ACZ-2018.1
Sample ID: SMC7-2

ACZ Sample ID: ***L43559-14***
Date Sampled: *04/02/18 11:30*
Date Received: *04/05/18*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Selenium, total (3050)	M6020 ICP-MS	500	0.10		*	mg/Kg	0.05	0.1	04/17/18 14:02	bsu
Uranium, total (3050)	M6020 ICP-MS	500	0.51		*	mg/Kg	0.05	0.3	04/17/18 14:02	bsu

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	93.3		*	%	0.1	0.5	04/10/18 6:54	ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/09/18 9:37	ajm
Digestion - Hot Plate	M3050B ICP-MS								04/12/18 14:18	jlw
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/10/18 11:07	ajm

Alan Kuhn Associates LLC
Project ID: AKA-ACZ-2018.1
Sample ID: SMC8-1

ACZ Sample ID: ***L43559-15***
Date Sampled: *04/02/18 12:30*
Date Received: *04/05/18*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Selenium, total (3050)	M6020 ICP-MS	505	0.17		*	mg/Kg	0.05	0.1	04/17/18 14:04	bsu
Uranium, total (3050)	M6020 ICP-MS	505	0.78		*	mg/Kg	0.05	0.3	04/17/18 14:04	bsu

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	90.8		*	%	0.1	0.5	04/10/18 8:02	ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/09/18 9:41	ajm
Digestion - Hot Plate	M3050B ICP-MS								04/12/18 14:39	jlw
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/10/18 11:11	ajm

Alan Kuhn Associates LLC
Project ID: AKA-ACZ-2018.1
Sample ID: SMC8-2

ACZ Sample ID: ***L43559-16***
Date Sampled: *04/02/18 12:30*
Date Received: *04/05/18*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Selenium, total (3050)	M6020 ICP-MS	505	0.14		*	mg/Kg	0.05	0.1	04/17/18 14:06	bsu
Uranium, total (3050)	M6020 ICP-MS	505	0.67		*	mg/Kg	0.05	0.3	04/17/18 14:06	bsu

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	92.3		*	%	0.1	0.5	04/10/18 9:10	ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/09/18 9:45	ajm
Digestion - Hot Plate	M3050B ICP-MS								04/12/18 15:00	jlw
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/10/18 11:15	ajm

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #5). Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit. Synonymous with the EPA term "minimum level".
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4)	EPA SW-846. Test Methods for Evaluating Solid Waste.
(5)	Standard Methods for the Examination of Water and Wastewater.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4)	An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5)	If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Alan Kuhn Associates LLC

ACZ Project ID: ***L43559***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Selenium, total (3050) M6020 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG445528													
WG445528ICV	ICV	04/17/18 13:10	MS180329-2	.05		.04911	mg/L	98	90	110			
WG445528ICB	ICB	04/17/18 13:12				U	mg/L		-0.0003	0.0003			
WG445221PBS	PBS	04/17/18 13:21				U	mg/Kg		-0.15	0.15			
WG445221LCSS	LCSS	04/17/18 13:23	PCN55863	117		117.61	mg/Kg		91.8	141			
WG445221LCSSD	LCSSD	04/17/18 13:25	PCN55863	117		118.42	mg/Kg		91.8	141	1	20	
L43559-02MS	MS	04/17/18 13:32	MS180321-2	12.887875	.73	13.425	mg/Kg	99	75	125			
L43559-02MSD	MSD	04/17/18 13:37	MS180321-2	12.887875	.73	12.827	mg/Kg	94	75	125	5	20	

Solids, Percent D2216-80

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG444935													
WG444935PBS	PBS	04/09/18 11:40				U	%		-0.1	0.1			
L43555-01DUP	DUP	04/09/18 13:55			73.8	73.6	%				0	20	

Uranium, total (3050) M6020 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG445528													
WG445528ICV	ICV	04/17/18 13:10	MS180329-2	.05		.04956	mg/L	99	90	110			
WG445528ICB	ICB	04/17/18 13:12				U	mg/L		-0.0003	0.0003			
WG445221PBS	PBS	04/17/18 13:21				U	mg/Kg		-0.15	0.15			
WG445221LCSS	LCSS	04/17/18 13:23	PCN55863	109		105.36	mg/Kg		83	135			
WG445221LCSSD	LCSSD	04/17/18 13:25	PCN55863	109		107.95	mg/Kg		83	135	2	20	
L43559-02MS	MS	04/17/18 13:32	MS180321-2	12.875	28.6	29.887	mg/Kg	10	75	125			M2
L43559-02MSD	MSD	04/17/18 13:37	MS180321-2	12.875	28.6	32.046	mg/Kg	27	75	125	7	20	M2

Alan Kuhn Associates LLC ACZ Project ID: ***L43559***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L43559-01	WG445528	Selenium, total (3050)	M6020 ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Uranium, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L43559-02	WG445528	Selenium, total (3050)	M6020 ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Uranium, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L43559-03	WG445528	Selenium, total (3050)	M6020 ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Uranium, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L43559-04	WG445528	Selenium, total (3050)	M6020 ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Uranium, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L43559-05	WG445528	Selenium, total (3050)	M6020 ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Uranium, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L43559-06	WG445528	Selenium, total (3050)	M6020 ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Uranium, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L43559-07	WG445528	Selenium, total (3050)	M6020 ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Uranium, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L43559-08	WG445528	Selenium, total (3050)	M6020 ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Uranium, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L43559-09	WG445528	Selenium, total (3050)	M6020 ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Uranium, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L43559-10	WG445528	Selenium, total (3050)	M6020 ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Uranium, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L43559-11	WG445528	Selenium, total (3050)	M6020 ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Uranium, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.

Alan Kuhn Associates LLC ACZ Project ID: ***L43559***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L43559-12	WG445528	Selenium, total (3050)	M6020 ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Uranium, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L43559-13	WG445528	Selenium, total (3050)	M6020 ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Uranium, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L43559-14	WG445528	Selenium, total (3050)	M6020 ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Uranium, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L43559-15	WG445528	Selenium, total (3050)	M6020 ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Uranium, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L43559-16	WG445528	Selenium, total (3050)	M6020 ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Uranium, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.

Alan Kuhn Associates LLC
Project ID: AKA-ACZ-2018.1
Sample ID: SMC1-1
Locator:

ACZ Sample ID: ***L43559-01***
Date Sampled: *04/02/18 15:00*
Date Received: *04/05/18*
Sample Matrix: *Soil*

Radium 226 (3050) Prep Method:
M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226 (3050)	04/26/18 0:00		11	0.71	0.25	pCi/g	*	leb

Radium 228, 3050 Prep Method:
M904.0

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, 3050	04/18/18 11:08		0.13	1.3	1.4	pCi/g	*	jlg

Alan Kuhn Associates LLC
Project ID: AKA-ACZ-2018.1
Sample ID: SMC1-2
Locator:

ACZ Sample ID: ***L43559-02***
Date Sampled: *04/02/18 15:00*
Date Received: *04/05/18*
Sample Matrix: *Soil*

Radium 226 (3050) Prep Method:
M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226 (3050)	04/26/18 0:00		13	0.72	0.08	pCi/g	*	leb

Radium 228, 3050 Prep Method:
M904.0

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, 3050	04/18/18 11:08		1.1	1.3	1.3	pCi/g	*	jlg

Alan Kuhn Associates LLC
Project ID: AKA-ACZ-2018.1
Sample ID: SMC2-1
Locator:

ACZ Sample ID: ***L43559-03***
Date Sampled: *04/02/18 15:15*
Date Received: *04/05/18*
Sample Matrix: *Soil*

Radium 226 (3050) Prep Method:
M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226 (3050)	04/26/18 0:00		0.81	0.26	0.45	pCi/g	*	leb

Radium 228, 3050 Prep Method:
M904.0

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, 3050	04/18/18 11:08		0.31	1.2	1.3	pCi/g	*	jlg

Alan Kuhn Associates LLC
Project ID: AKA-ACZ-2018.1
Sample ID: SMC2-2
Locator:

ACZ Sample ID: ***L43559-04***
Date Sampled: *04/02/18 15:15*
Date Received: *04/05/18*
Sample Matrix: *Soil*

Radium 226 (3050) Prep Method:
M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226 (3050)	04/26/18 0:00		0.67	0.23	0.53	pCi/g	*	leb

Radium 228, 3050 Prep Method:
M904.0

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, 3050	04/18/18 11:08		0.03	1.4	1.5	pCi/g	*	jlg

Alan Kuhn Associates LLC
Project ID: AKA-ACZ-2018.1
Sample ID: SMC3-1
Locator:

ACZ Sample ID: ***L43559-05***
Date Sampled: *04/02/18 10:30*
Date Received: *04/05/18*
Sample Matrix: *Soil*

Radium 226 (3050) Prep Method:
M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226 (3050)	04/26/18 0:00		0.73	0.34	0.5	pCi/g	*	leb

Radium 228, 3050 Prep Method:
M904.0

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, 3050	04/18/18 11:08		0.12	1.3	1.3	pCi/g	*	jlg

Alan Kuhn Associates LLC
Project ID: AKA-ACZ-2018.1
Sample ID: SMC3-2
Locator:

ACZ Sample ID: ***L43559-06***
Date Sampled: *04/02/18 10:30*
Date Received: *04/05/18*
Sample Matrix: *Soil*

Radium 226 (3050) Prep Method:
M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226 (3050)	04/26/18 0:00		0.49	0.3	0.33	pCi/g	*	leb

Radium 228, 3050 Prep Method:
M904.0

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, 3050	04/18/18 11:08		1.1	1.2	1.2	pCi/g	*	jlg

Alan Kuhn Associates LLC
Project ID: AKA-ACZ-2018.1
Sample ID: SMC4-1
Locator:

ACZ Sample ID: ***L43559-07***
Date Sampled: *04/02/18 10:45*
Date Received: *04/05/18*
Sample Matrix: *Soil*

Radium 226 (3050) Prep Method:
M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226 (3050)	04/26/18 0:00		1.2	0.33	0.57	pCi/g	*	leb

Radium 228, 3050 Prep Method:
M904.0

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, 3050	04/18/18 11:08		-0.27	1.4	1.5	pCi/g	*	jlg

Alan Kuhn Associates LLC
Project ID: AKA-ACZ-2018.1
Sample ID: SMC4-2
Locator:

ACZ Sample ID: ***L43559-08***
Date Sampled: *04/02/18 10:45*
Date Received: *04/05/18*
Sample Matrix: *Soil*

Radium 226 (3050) Prep Method:
M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226 (3050)	04/26/18 0:00		0.96	0.35	0.56	pCi/g	*	leb

Radium 228, 3050 Prep Method:
M904.0

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, 3050	04/18/18 11:08		0.22	1.5	1.5	pCi/g	*	jlg

Alan Kuhn Associates LLC
Project ID: AKA-ACZ-2018.1
Sample ID: SMC5-1
Locator:

ACZ Sample ID: ***L43559-09***
Date Sampled: *04/02/18 11:00*
Date Received: *04/05/18*
Sample Matrix: *Soil*

Radium 226 (3050) Prep Method:
M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226 (3050)	04/26/18 0:00		0.92	0.26	0.19	pCi/g	*	leb

Radium 228, 3050 Prep Method:
M904.0

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, 3050	04/18/18 11:08		0.97	1.8	1.9	pCi/g	*	jlg

Alan Kuhn Associates LLC
Project ID: AKA-ACZ-2018.1
Sample ID: SMC5-2
Locator:

ACZ Sample ID: ***L43559-10***
Date Sampled: *04/02/18 11:00*
Date Received: *04/05/18*
Sample Matrix: *Soil*

Radium 226 (3050) Prep Method:
M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226 (3050)	04/26/18 0:00		4.2	0.5	0.7	pCi/g	*	leb

Radium 228, 3050 Prep Method:
M904.0

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, 3050	04/18/18 13:28		0.68	1.4	1.4	pCi/g	*	jlg

Alan Kuhn Associates LLC
Project ID: AKA-ACZ-2018.1
Sample ID: SMC6-1
Locator:

ACZ Sample ID: ***L43559-11***
Date Sampled: *04/02/18 11:15*
Date Received: *04/05/18*
Sample Matrix: *Soil*

Radium 226 (3050) Prep Method:
M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226 (3050)	04/26/18 0:00		0.36	0.25	0.31	pCi/g		leb

Radium 228, 3050 Prep Method:
M904.0

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, 3050	04/18/18 13:28		-0.24	1.1	1.2	pCi/g	*	jlg

Alan Kuhn Associates LLC
Project ID: AKA-ACZ-2018.1
Sample ID: SMC6-2
Locator:

ACZ Sample ID: ***L43559-12***
Date Sampled: *04/02/18 11:15*
Date Received: *04/05/18*
Sample Matrix: *Soil*

Radium 226 (3050) Prep Method:
M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226 (3050)	04/26/18 0:00		2.2	0.35	0.5	pCi/g		leb

Radium 228, 3050 Prep Method:
M904.0

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, 3050	04/18/18 13:28		-0.01	1.1	1.2	pCi/g	*	jlg

Alan Kuhn Associates LLC
Project ID: AKA-ACZ-2018.1
Sample ID: SMC7-1
Locator:

ACZ Sample ID: ***L43559-13***
Date Sampled: *04/02/18 11:30*
Date Received: *04/05/18*
Sample Matrix: *Soil*

Radium 226 (3050) Prep Method:
M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226 (3050)	04/26/18 0:00		1.5	0.26	0.51	pCi/g		leb

Radium 228, 3050 Prep Method:
M904.0

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, 3050	04/18/18 13:28		-0.76	1.2	1.3	pCi/g	*	jlg

Alan Kuhn Associates LLC
Project ID: AKA-ACZ-2018.1
Sample ID: SMC7-2
Locator:

ACZ Sample ID: ***L43559-14***
Date Sampled: *04/02/18 11:30*
Date Received: *04/05/18*
Sample Matrix: *Soil*

Radium 226 (3050) Prep Method:
M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226 (3050)	04/26/18 0:00		0.74	0.24	0.32	pCi/g		leb

Radium 228, 3050 Prep Method:
M904.0

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, 3050	04/18/18 13:28		0.76	1.2	1.2	pCi/g	*	jlg

Alan Kuhn Associates LLC
Project ID: AKA-ACZ-2018.1
Sample ID: SMC8-1
Locator:

ACZ Sample ID: ***L43559-15***
Date Sampled: *04/02/18 12:30*
Date Received: *04/05/18*
Sample Matrix: *Soil*

Radium 226 (3050) Prep Method:
M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226 (3050)	04/26/18 0:00		1.2	0.29	0.22	pCi/g		leb

Radium 228, 3050 Prep Method:
M904.0

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, 3050	04/18/18 13:28		0.43	1.4	1.5	pCi/g	*	jlg

Alan Kuhn Associates LLC
Project ID: AKA-ACZ-2018.1
Sample ID: SMC8-2
Locator:

ACZ Sample ID: ***L43559-16***
Date Sampled: *04/02/18 12:30*
Date Received: *04/05/18*
Sample Matrix: *Soil*

Radium 226 (3050) Prep Method:
M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226 (3050)	04/26/18 0:00		1.1	0.3	0.18	pCi/g		leb

Radium 228, 3050 Prep Method:
M904.0

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, 3050	04/18/18 13:28		1	1.3	1.4	pCi/g	*	jlg

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Error(+/-)	Calculated sample specific uncertainty
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
LCL	Lower Control Limit, in % (except for LCSS, mg/Kg)
LLD	Calculated sample specific Lower Limit of Detection
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RER	Relative Error Ratio, calculation used for Dup. QC taking into account the error factor.
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
UCL	Upper Control Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

DUP	Sample Duplicate	*MS/MSD*	Matrix Spike/Matrix Spike Duplicate
LCSS	Laboratory Control Sample - Soil	*PBS*	Prep Blank - Soil
LCSW	Laboratory Control Sample - Water	*PBW*	Prep Blank - Water

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Matrix Spikes	Determines sample matrix interferences, if any.

ACZ Qualifiers (Qual)

H	Analysis exceeded method hold time.

Method Prefix Reference

M	EPA methodology, including those under SDWA, CWA, and RCRA
SM	Standard Methods for the Examination of Water and Wastewater.
D	ASTM
RP	DOE
ESM	DOE/ESM

Comments

(1)	Solid matrices are reported on a dry weight basis.
(2)	Preparation method: "Method" indicates preparation defined in analytical method.
(3)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(4)	An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Alan Kuhn Associates LLC

ACZ Project ID: ***L43559***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Radium 226 (3050) M903.1 **Units:** pCi/g

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec%	Lower	Upper	RPD/RER	Limit	Qual
WG446162																
L43559-04DUP	DUP-RER	04/26/18			0.67	0.23	0.53	1.9	0.28	0.13				3.39	2	RC
WG445113PBS	PBS	04/26/18						.14	0.18	0.15			0.3			
WG445113LCSS	LCSS	04/26/18	PCN54812	40				33	1.1	0.12	83	43	148			
L43559-14MS	MS	04/26/18	PCN54812	40	0.74	0.24	0.32	34	1.2	0.2	83	43	148			
L43559-08DUP	DUP-RER	04/26/18			0.96	0.35	0.56	.25	0.21	0.13				1.74	2	

Radium 228, 3050 M904.0 **Units:** pCi/g

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec%	Lower	Upper	RPD/RER	Limit	Qual
WG445692																
WG445110PBS	PBS	04/18/18						-.75	1.2	1.4			2.8			
WG445110LCSS	LCSS	04/18/18	PCN53179	17.56				17	2	1.3	97	47	123			
L43559-08MS	MS	04/18/18	PCN53179	17.92	0.22	1.5	1.5	36	3.9	2.5	200	47	123			M1
L43559-14DUP	DUP-RER	04/18/18			0.76	1.2	1.2	-.22	1	1.1				0.63	2	
L43559-04DUP	DUP-RER	04/18/18			0.03	1.4	1.5	1.1	1.1	1.1				0.6	2	

Alan Kuhn Associates LLC ACZ Project ID: ***L43559***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L43559-01	WG446162	Radium 226 (3050)	M903.1	RC	For a solid matrix, the matrix duplicate precision assessment (RPD or RER) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG445692	Radium 228, 3050	M904.0	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L43559-02	WG446162	Radium 226 (3050)	M903.1	RC	For a solid matrix, the matrix duplicate precision assessment (RPD or RER) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG445692	Radium 228, 3050	M904.0	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L43559-03	WG446162	Radium 226 (3050)	M903.1	RC	For a solid matrix, the matrix duplicate precision assessment (RPD or RER) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG445692	Radium 228, 3050	M904.0	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L43559-04	WG446162	Radium 226 (3050)	M903.1	RC	For a solid matrix, the matrix duplicate precision assessment (RPD or RER) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG445692	Radium 228, 3050	M904.0	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L43559-05	WG446162	Radium 226 (3050)	M903.1	RC	For a solid matrix, the matrix duplicate precision assessment (RPD or RER) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG445692	Radium 228, 3050	M904.0	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L43559-06	WG446162	Radium 226 (3050)	M903.1	RC	For a solid matrix, the matrix duplicate precision assessment (RPD or RER) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG445692	Radium 228, 3050	M904.0	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L43559-07	WG446162	Radium 226 (3050)	M903.1	RC	For a solid matrix, the matrix duplicate precision assessment (RPD or RER) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG445692	Radium 228, 3050	M904.0	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L43559-08	WG446162	Radium 226 (3050)	M903.1	RC	For a solid matrix, the matrix duplicate precision assessment (RPD or RER) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG445692	Radium 228, 3050	M904.0	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L43559-09	WG446162	Radium 226 (3050)	M903.1	RC	For a solid matrix, the matrix duplicate precision assessment (RPD or RER) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG445692	Radium 228, 3050	M904.0	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L43559-10	WG446162	Radium 226 (3050)	M903.1	RC	For a solid matrix, the matrix duplicate precision assessment (RPD or RER) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG445692	Radium 228, 3050	M904.0	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L43559-11	WG445692	Radium 228, 3050	M904.0	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L43559-12	WG445692	Radium 228, 3050	M904.0	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L43559-13	WG445692	Radium 228, 3050	M904.0	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.

Alan Kuhn Associates LLC ACZ Project ID: ***L43559***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L43559-14	WG445692	Radium 228, 3050	M904.0	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L43559-15	WG445692	Radium 228, 3050	M904.0	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L43559-16	WG445692	Radium 228, 3050	M904.0	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.

Radiochemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Radium 228, 3050	M904.0

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Solids, Percent	D2216-80

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Alan Kuhn Associates LLC
AKA-ACZ-2018.1

ACZ Project ID: L43559
Date Received: 04/05/2018 10:42
Received By:
Date Printed: 4/6/2018

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody form or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?		X	
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody form complete and accurate?	X		
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?	X		

A change was made in the Page 1 Sampler's Name. Relinquished By. Page 2 Copy of Report to. Invoice to. Relinquished By Date:Time section prior to ACZ custody.

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits? [1]			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

NA indicates Not Applicable

Chain of Custody Related Remarks

The 'Relinquished By' field on the COC was not completed. The project manager is contacting the client.

Client Contact Remarks

Shipping Containers

Cooler Id	Temp(°C)	Temp Criteria(°C)	Rad(µR/Hr)	Custody Seal Intact?
5350	15.5	NA	17	N/A
NA28102	14.2	NA	13	N/A

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Alan Kuhn Associates LLC
AKA-ACZ-2018.1

ACZ Project ID: L43559
Date Received: 04/05/2018 10:42
Received By:
Date Printed: 4/6/2018

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

[1] The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

ACZ Laboratories, Inc. L43559

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Alan Kuhn
Company: Alan Kuhn Associates LLC
E-mail: akkuhn41@gmail.com
Address: 13212 Manitoba Dr NE
Albuquerque NM 87111
Telephone: 505 350 9188

Copy of Report to:

Name: Joe Lister
Company: Rio Grande Resources
E-mail: joel.lister@riogranderesources.com
Telephone: 505 287 7971

Invoice to:

Name: Alan Kuhn
Company: Alan Kuhn Associates
E-mail: akkuhn41@gmail.com
Address: 13212 Manitoba Dr NE
Albuquerque NM 87111
Telephone: 505 350 9188

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? N/A YES [ ] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: A. Kuhn **Sampler's Site Information** **State** NM **Zip code** 87020 **Time Zone** MDT

***Sampler's Signature:** Alan Kuhn

*"I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #:
PO#: AKA-ACZ-2018.1
Reporting state for compliance testing: NM
Check box if samples include NRC licensed material? NO

ANALYSES REQUESTED (attach list or use quote number)

	SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	U	Ra	Sr
1.	SMC1-1	4/2/18 1500	Soil	1			
2.	SMC1-2	4/2/18 1500		1			
3.	SMC2-1	4/2/18 1515		1			
4.	SMC2-2	4/2/18 1515		1			
5.	SMC3-1	4/2/18 1030		1			
6.	SMC3-2	4/2/18 1030		1			
7.	SMC4-1	4/2/18 1045		1			
8.	SMC4-2	4/2/18 1045		1			
9.	SMC5-1	4/2/18 1100		1			
10.	SMC5-2	4/2/18 1100		1			

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME:	RECEIVED BY:	DATE:TIME
Alan Kuhn	4/2/18 1530	Bruce Wright	4/2/18 3:30 P
~~Bruce Wright~~	~~4/3/18 2:00 P~~		

L43559 Chain of Custody

FORM-001R-08 01/30/08

White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc. L43559

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Alan Kuhn
Company: Alan Kuhn Associates LLC
E-mail: akkuhn41@gmail.com
Address: 13212 Manitoba Drive NE
Albuquerque NM 87111
Telephone: 505-350-9155

Copy of Report to:

Name: Joe Lister
Company: Rio Grande Resources
E-mail: joel.lister@riogranderesources.com
Telephone: 505-237-7971

Invoice to:

Name: Alan Kuhn
Company: Alan Kuhn Associates LLC
E-mail: akkuhn41@gmail.com
Address: 13212 Manitoba Dr NE
Albuquerque NM 87111
Telephone: 505-350-9155

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? N/A YES [ ] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: A Kuhn **Sampler's Site Information** **State** NM **Zip code** 87020 **Time Zone** MDT

***Sampler's Signature:** Alan Kuhn

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #:
PO#: AKA-ACZ-2015.1
Reporting state for compliance testing: NM
Check box if samples include NRC licensed material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

	SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	V	Ra	Se						
11.	SMC6-1	4/2/18 1115	SO										
12.	SMC6-2	4/2/18 1115											
13.	SMC7-1	4/2/18 1130											
14.	SMC7-2	4/2/18 1130											
15.	SMC8-1	4/2/18 1230											
16.	SMC8-2	4/2/18 1230											

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Alan Kuhn	4/2/18 1530	Bruce Young	4/3/18 330

ACZ Laboratories, Inc.
Steamboat Springs, CO 80487

(800) 334-5493

No ice

Project Number: L 43559

Cooler Number	Cooler Tag
1	NA28102 10:43 04/05/18 Temp: 14.2 By: bce Rad: 13 uR Seal: N/A
2	5350 10:42 04/05/18 Temp: 15.5 By: bce Rad: 17 uR Seal: N/A
3	
4	
5	
6	
7	
8	
9	
10	

Sample Number	Associated Cooler
1	2
2	2
3	2
4	2
5	2
6	2
7	2
8	2
9	2
10	2
11	1
12	1
13	1
14	1
15	1
16	1
17	
18	
19	
20	

Log-In Order Verified:

Initials/Date: 4.5.18

RGR Mt. Taylor Mine Stan Fitch
Gamma Radiation Survey 4/25/2016
Waste Pile North/East Delineation

Instrument: Eberline PRM-7 #182, BKG = 10 µrem/h, readings waist high

NAD 83 Datum			
Northing	Easting	Dose Rate µrem/h	Notes
1578877	2782337	80	NW Fence Corner - Car Shop yard
1578747	2782327	70	
1578645	2782320	40	
1578544	2782314	30	
1578467	2782308	27	SW Fence Corner - Car Shop yard
1578363	2782303	20	
1578264	2782295	18	
1578163	2782287	15	
1578063	2782279	11	
1578062	2782181	12	
1578165	2782185	20	
1578263	2782188	30	
1578364	2782192	24	
1578450	2782200	36	
1578564	2782192	110	
1578675	2782197	80	
1578779	2782193	160	
1578880	2782192	150	
1578984	2782188	130	
1579038	2782202	40	Fire Hydrant
1579004	2782130	28	South-Easterly Corner of Fan Shop
1578882	2782090	115	
1578783	2782088	80	
1578683	2782081	100	
1578577	2782084	100	
1578500	2782082	100	
1578377	2782080	30	
1578276	2782081	40	
1578178	2782084	26	
1578179	2781985	110	
1578277	2781992	100	
1578043	2781993	18	
1578275	2782007	90	
1578373	2782012	50	
1578471	2782009	120	
1578571	2782006	110	
1578672	2782000	100	
1578772	2782000	80	
1578871	2782003	110	
1578917	2782011	50	Shoulder of slope
1578962	2782013	30	Natural grade at foot of small hill
1578973	2781898	28	
1578973	2781795	32	
1578974	2781700	44	Inside of southerly end of stormwater pond
1578914	2781717	120	Drainage ditch, near toe

RGR Mt. Taylor Mine Stan Fitch
Gamma Radiation Survey 4/25/2016
Waste Pile North/East Delineation

Instrument: Eberline PRM-7 #182, BKG = 10 µrem/h, readings waist high

NAD 83 Datum			
Northing	Easting	Dose Rate µrem/h	Notes
1578907	2781815	110	Toe of waste pile (at drainage ditch)
1578911	2781896	80	Toe of waste pile (at drainage ditch)
1578911	2781958	50	Toe of waste pile (NE corner of pile)
1578880	2781968	90	Crown -- top of waste pile slope, NE corner
1578864	2781901	110	Crown -- top of waste pile slope
1578862	2781801	110	Crown -- top of waste pile slope
1578836	2781702	120	Crown -- top of waste pile slope, NW corner
1578776	2781682	100	Crown -- top of waste pile slope
1578765	2781795	125	
1578771	2781900	110	
1578670	2781901	80	
1578565	2781900	80	
1578470	2781902	50	
1578369	2781900	50	
1578252	2781899	60	

Environmental Restoration Group, Inc.
8809 Washington St NE, Suite 150
Albuquerque, NM 87113
ph: (505) 298-4224
www.ERGoffice.com

TECHNICAL MEMORANDUM	
To: Bruce Norquist (RGR)	**Date**: July 06, 2020
From: Randy Whicker (ERG)	**Project**: Mt. Taylor Mine
Direct: 970-556-1174	**Task(s)**: Site closeout/closure Support
Cc: Chuck Farr (ERG)	
Subject: Radiological survey results for discharge pipeline and soils along pipeline corridor.	

Dear Mr. Norquist,

This Technical Memorandum provides the results of radiological surveys of the discharge pipeline and underlying/adjacent soils at the Rio Grande Resources (RGR) Mt. Taylor Mine near San Mateo, New Mexico. This work was conducted June 23-24, 2020 to support mine closeout/closure activities.

Please let me know if you have questions or need more information.

Regards,

Randy Whicker, CHP
Radiation Safety Officer
Mt. Taylor Mine

Environmental Restoration Group, Inc.
8809 Washington St. NE, Suite 150
Albuquerque, NM 87113
Email: RandyWhicker@ergoffice.com

Radiological Surveys of Discharge Pipeline

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1. INTRODUCTION

The Mt. Taylor Mine (Site) is a former underground uranium mine in Cibola County near the town of San Mateo, New Mexico. Owned and operated by Rio Grande Resources (RGR), the Site is situated at the foot of Mount Taylor, an extinct volcano. Gulf Mineral Resources Company (Gulf) acquired the property and began mine development in 1971. Ore production occurred between 1979 – 1982, and after a transfer of ownership to Chevron Resources Company (Chevron) in 1985, production resumed through 1990. RGR acquired the mine and other Chevron property in 1991. In 1999 the Mine entered standby status under Mine Permit C1002RE with MMD. On December 29, 2017, the permit changed to an active status, and on December 3, 2019, RGR notified MMD of intentions to begin the Site closeout/closure process.

Discharge permit DP-61 with the New Mexico Environment Department (NMED) was first issued to Gulf in 1979. Mine water was treated to meet applicable water quality standards prior to conveyance through a pipeline and surface discharge at Outfall 001 located 4.3 miles north of the Site in San Lucas Canyon (Figure 1). RGR intends to dismantle and remove the pipeline and remediate any impacted soils along the pipeline corridor, along with impacted sediments at Outfall 001 in the San Lucas Canyon drainage.

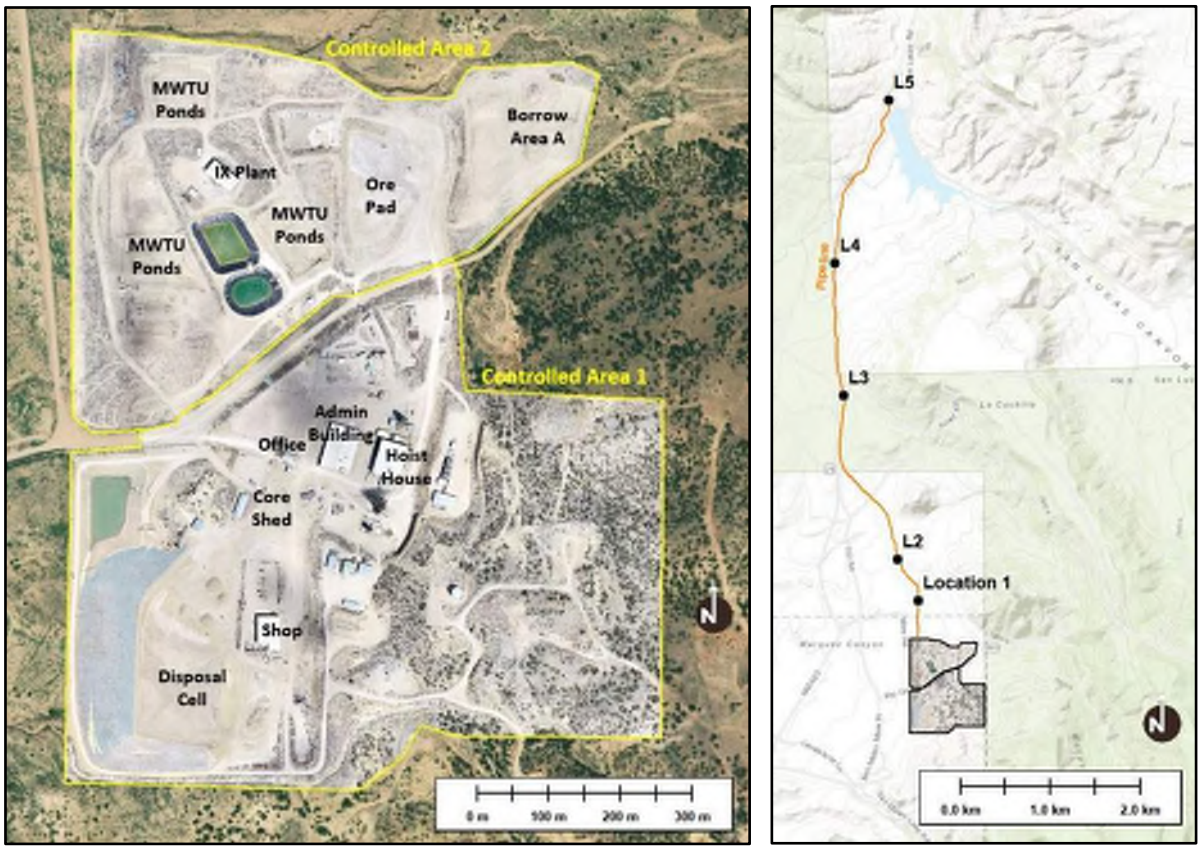


Figure 1: Mine features within operationally Controlled Areas at the Site (left) and the 4.3 mile pipeline for conveyance of treated mine water for discharge at Outfall 001 in San Lucas Canyon under DP-61 (right). Locations for interior/exterior measurements of radiological properties of steel pipeline materials are also shown (right).

Once dismantled and removed, the disposition of steel pipeline materials is dependent on the radiological condition of the material. The status of land areas along the pipeline corridor depends on the magnitude and extent of any radiological impacts to soils underlying and adjacent to the pipeline. This Technical Memorandum provides the results of radiological field screening measurements for pipeline materials (interior and exterior surfaces of steel piping material) at five (5) representative locations along the 4.3 mile length of the discharge pipeline (Figure 1), along with continuous GPS-based gamma scans adjacent to the pipeline to characterize terrestrial gamma radiation emissions from soils along the pipeline corridor.

Characterization survey results are presented in this report and values compared to applicable criteria for clearance or release from current radiological and regulatory controls on these mine-related features. The objective of these surveys was to help inform decisions on the future disposition of pipeline materials and infrastructure, and to estimate the extent of soil remediation that may be required along the pipeline corridor to meet Mine reclamation and closure objectives as specified in the *Mt. Taylor Mine Closeout/Closure Plan* (RGR, 2013).

2. CLEARANCE CRITERIA

2.1 Pipeline Materials and Equipment

The clearance criteria for surface radioactivity levels on pipeline walls and volumetric criteria for loose sediments or scales are based on a national standard published jointly by the American National Standards Institute (ANSI) and the Health Physics Society (ANSI/HPS, 2013). More stringent than the U.S. Nuclear Regulatory Commission's criteria for unrestricted release of materials and equipment (M/E) from uranium recovery facilities (NRC, 2002), the ANSI/HPS standard is designed to protect human health by limiting potential radiological doses from future use of the M/E to a de-minimis value of 1 millirem (mrem)/year.

Clearance in the ANSI/HPS standard is defined as "the removal of items or materials that contain or *may* contain residual levels of radioactive materials within authorized practices from further radiological control for radiation protection purposes." This standard applies to the clearance of M/E from areas controlled to protect individuals from exposure to radiation or radioactive material during or after operations. This dose-based standard provides derived screening levels for surface and volume radioactivity. The derived screening levels that apply are presented in Table 1.

Table 1: Surface activity screening levels for clearance of materials and equipment (adapted from ANSI/HPS, 2013).

Radionuclide Group	Surface Activity Limit	Volumetric Concentration Limit
Group 1: ^{Nat}U, ^{Nat}Th, and associated decay products: Pb210, Po210, Ra226, Ra228, Th228, Th230	600 dpm/100 cm^2	3 pCi/g

The surface activity limit in Table 1 can be partitioned into alpha and beta components for the uranium and thorium decay series as follows:

The uranium decay series has 14 particles emitted, with 8 alphas (57%) and 6 betas (43%)
The thorium decay series has 12 particles emitted, with 7 alphas. (58%) and 5 betas (42%)

Since it is unknown what mixture of primordial decay series radionuclides may be present in any surface contamination on M/E at the Site, it is conservative to assume that all alpha emissions are from uranium decay series radionuclides only and an equivalent alpha screening level, assuming secular equilibrium between all uranium decay series radionuclides, is as follows:

600 dpm / 100 cm^2 * (0.57 α dpm/total dpm) ≈ **340 dpm α / 100 cm^2**

A similar calculation for beta activity gives a conservative beta screening level of 252 dpm β / 100 cm^2, a value that is well below the minimum detectable activity (MDA) achievable with a one-minute static count (the count time needed to meet an MDA of 250 dpm β / 100 cm^2 is on the order of 20-25 minutes). Given the need for a screening level that is practical to measure in the field, a screening level for alpha activity of 340 dpm/100 cm^2 will be used as the primary criterion for determination of compliance with the total surface activity clearance limit given in Table 1. In addition, a maximum alpha reading equivalent to 10 times the screening level (3,400 dpm α / 100 cm^2) for any single measurement (a secondary "hotspot" criterion) will be applied for consistency with related specifications in the ANSI/HPS standard. Individual items may be grouped into similar types of M/E to represent a "survey unit", and alpha readings within each survey unit may be used to determine compliance with both the average and hotspot alpha screening levels.

Because the ANSI clearance criteria in Table 1 were derived from a conservative receptor dose assessment that assumed infinite plane source term conditions (ANSI/HPS, 1999; Annex B), the averaging approach described above is consistent with regulatory guidance for comparison against clearance criteria as provided in MARSAME, the *Multi-Agency Radiation Survey and Assessment of Materials and Equipment Manual* (NRC, 2009). In other words, if a receptor were exposed to all M/E within a survey unit where average and maximum surface alpha activities are below respective alpha screening levels, the potential radiological dose to a receptor is conservatively assumed to be less than the de-minimis 1 mrem/year radiation dose limit specified in the ANSI/HPS standard.

If the average for the survey unit is below the primary alpha screening level, and no single measurement is greater than the secondary alpha hotspot criterion, then all M/E within the survey unit can be released from further radiological controls on the future disposition of the M/E. These criteria do not apply to offsite disposal as commercial disposal facilities may have their own radiological acceptance criteria and approved characterization methods for waste profiling. Pipeline materials that do not meet these clearance criteria will be flagged for either decontamination efforts, or for onsite disposal in the engineered waste disposal cell or offsite at an approved industrial waste disposal facility.

2.2 Pipeline Corridor and Outfall Soils/Sediments

With respect to land areas along the pipeline corridor and the San Lucas Canyon drainage below discharge Outfall 001, the release criterion for surface soil or sediment (0-15 cm) is equivalent to a Ra-226 concentration of 5 pCi/g above background based on the "*Joint Guidance for the Cleanup and Reclamation*

of Existing Uranium Mining Operations in New Mexico" from the Mining and Minerals Division (MMD) and the Mining Environmental and Compliance Section of the New Mexico Environment Department (NMED) (MMD/NMED, 2016). The approved background Ra-226 concentration for the Site is 1.8 pCi/g, giving a total (gross) release criterion of 6.8 pCi/g of Ra-226. In addition, the "*Joint Guidance*" from MMD/NMED describes an additional criterion for ambient gamma radiation called the "post reclamation radiation level" (PRRL). As determined in RGR's "*Work Plan for Post-Mining Radiological Surveys of Permit Area and Impacted Lands Mount Taylor Mine*" (RGR, 2020a), the PRRL for the Mount Taylor Site is equivalent to a gamma exposure rate of 24.5 micro-roentgen per hour (µR/hr). If surface soils along the pipeline corridor or sediments at Outfall 001 have Ra-226 concentrations below 6.8 pCi/g, and ambient gamma exposure rates are below 24.5 µR/hr, respective land areas can be released for the Post-Mining Land Use (PMLU) as described in the *Joint Guidance* (MMD/NMED, 2016). Otherwise, soil excavation will be required until these release criteria are achieved.

3. METHODS

The methods used for the radiological characterization measurements and gamma surveys along the pipeline were based on applicable standard operating procedures (SOPs) provided in the Radiation Protection Program (RPP) Manual for the Mt. Taylor Mine (RGR, 2020b), including:

- SOP-2: Instrument Testing and Calibration
- SOP-3: Radiological Contamination Surveys
- SOP-7: GPS-based Gamma Radiation Surveys
- SOP-8: Soil Sampling for Radiometric Analysis

Total alpha and beta surface radioactivity levels were measured on June 24, 2020 at multiple systematic locations (top, bottom and sides) both inside and outside accessible portions of the pipeline walls at each of the locations shown in Figure 1. In order to access the interior of the pipeline at each location, a welding torch was used to cut a hole through the steel pipeline walls approximately 2 feet in diameter. Swipe (smear) samples were collected at each measurement location to evaluate readily removable surface activity. Gamma exposure rates were also measured inside of the pipeline (center and bottom). Samples of scale/sediment accumulated in the bottom of the pipeline were sampled, then screened onsite to estimate Ra-226 levels based on gross gamma readings inside of a lead-shielded, low-background counting well. These samples were then sent offsite to a qualified commercial laboratory for quantitative determination of U-nat, Th-230, Ra-226, and Pb-210 concentrations.

All field measurement data were recorded in the field logbook. Swipe samples for removable surface activity were measured in the radiation control office and recorded. Instrument quality control (QC) measurements were taken and documented to ensure proper instrument function. Photos were taken of the interior/exterior of the pipeline at each sampling/measurement location. GPS-based gamma transects were walked parallel to the pipeline just adjacent to the pipe and about 5 meters away from the pipeline. Gamma readings were manually monitored while scanning, and locations with evidence of elevated readings (above apparent background) were investigated further with additional scans to identify the outer bounds of potential radiological impacts to soil related to the pipeline.

4. PIPELINE MATERIALS SURVEY RESULTS

The results of alpha/beta surface activity and gamma emission measurements, along with sampling of loose residual solids (scale/sediments) inside the pipeline, are presented in the following Subsections for the five representative pipeline survey locations shown in Figure 1.

4.1 Pipeline Location 1

Table 2A: Alpha/beta surface activity measurement results for pipeline survey Location 1.

Pipeline Location 1	Total Alpha Activity (DPM/100 cm²)	Total Beta Activity (DPM/100 cm²)	Removable Alpha Activity (DPM/100 cm²)	Removable Beta Activity (DPM/100 cm²)
Clearance Criterion	340	252	N/A*	N/A*
Ambient Background	2	345	0	92
Measurement Point	**Net (above background) Surface Activity**			
Outside Top	944	2080	6	0
Outside East	367	1220	17	0
Outside West	33	11560	0	0
Outside Bottom	378	1220	17	0
Inside Top	122	1240	6	0
Inside East	133	1860	0	0
Inside West	44	1960	17	0
Inside Bottom	33	3480	0	0

*Removable activity criteria not applicable under the ANSI/HPS standard. NRC's release criterion for removable natural uranium in equilibrium with its decay progeny is 1,000 DPM/100 cm² (NRC, 2002).

≤ clearance criterion
> clearance criterion

Table 2B: Gamma emission data and radionuclide activity concentrations for residual solids at pipeline survey Location 1.

Gamma Exposure Rate (µR/h)		Residual Solids Concentration (pCi/g)	
Outside Background	16	Ra-226*	118
Interior Center	38	Ra-226	125
Interior Bottom	75	U-nat**	139
		Th-230	24.1
		Pb-210	27.6

*Screening-level estimate from shielded onsite sample counting
** Analytical result from offsite lab = 206 mg/kg

4.2 Pipeline Location 2

Table 3A: Alpha/beta surface activity measurement results for pipeline survey Location 2.

Pipeline Location 2	Total Alpha Activity (DPM/100 cm²)	Total Beta Activity (DPM/100 cm²)	Removable Alpha Activity (DPM/100 cm²)	Removable Beta Activity (DPM/100 cm²)
Clearance Criterion	340	252	N/A*	N/A*
Ambient Background	2	382	0	92
Measurement Point	**Net (above background) Surface Activity**			
Outside Top	944	3100	6	114
Outside East	211	760	0	0
Outside West	356	1480	11	0
Outside Bottom	89	13760	6	0
Inside Top	89	5200	0	0
Inside East	456	6740	17	14
Inside West	4656	138560	139	443
Inside Bottom	2456	86900	44	57

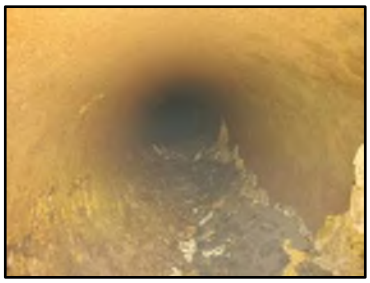
*Removable activity criteria are not applied under the ANSI/HPS standard. NRC's release criterion for removable natural uranium in equilibrium with its decay progeny is 1,000 DPM/100 cm² (NRC, 2002).

≤ clearance criterion
> clearance criterion

Table 3B: Gamma emission data and radionuclide activity concentrations for residual solids at pipeline survey Location 2.

Gamma Exposure Rate (µR/h)		Residual Solids Concentration (pCi/g)	
Outside Background	17	Ra-226*	524
Interior Center	60	Ra-226	529
Interior Bottom	100	U-nat**	290
		Th-230	31.6
		Pb-210	91.3

*Screening-level estimate from shielded onsite sample counting
** Analytical result from offsite lab = 428 mg/kg



4.3 Pipeline Location 3

Table 4A: Alpha/beta surface activity measurement results for pipeline survey Location 3.

Pipeline Location 3	Total Alpha Activity (DPM/100 cm²)	Total Beta Activity (DPM/100 cm²)	Removable Alpha Activity (DPM/100 cm²)	Removable Beta Activity (DPM/100 cm²)
Clearance Criterion	340	252	N/A*	N/A*
Ambient Background	3	319	0	92
Measurement Point	**Net (above background) Surface Activity**			
Outside Top	911	3000	17	29
Outside East	211	620	6	0
Outside West	378	1160	17	0
Outside Bottom	78	7080	6	0
Inside Top	600	7320	17	0
Inside East	1400	12420	39	143
Inside West	444	4420	33	0
Inside Bottom	2700	61320	44	0

*Removable activity criteria are not applied under the ANSI/HPS standard. NRC's release criterion for removable natural uranium in equilibrium with its decay progeny is 1,000 DPM/100 cm² (NRC, 2002).

≤ clearance criterion
> clearance criterion

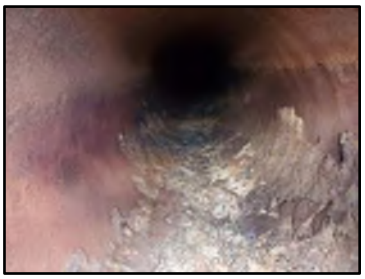


Table 4B: Gamma emission data and radionuclide activity concentrations for residual solids at pipeline survey Location 3.

Gamma Exposure Rate (µR/h)		Residual Solids Concentration (pCi/g)	
Outside Background	15	Ra-226*	340
Interior Center	39	Ra-226	316
Interior Bottom	90	U-nat**	170
		Th-230	16.2
		Pb-210	62.8

*Screening-level estimate from shielded onsite sample counting
** Analytical result from offsite lab = 251 mg/kg

4.4 Pipeline Location 4

Table 5A: Alpha/beta surface activity measurement results for pipeline survey Location 4.

Pipeline Location 4	Total Alpha Activity (DPM/100 cm²)	Total Beta Activity (DPM/100 cm²)	Removable Alpha Activity (DPM/100 cm²)	Removable Beta Activity (DPM/100 cm²)
Clearance Criterion	340	252	N/A*	N/A*
Ambient Background	8	337	0	92
Measurement Point	**Net (above background) Surface Activity**			
Outside Top	822	2880	28	0
Outside East	344	1080	6	0
Outside West	500	2040	6	0
Outside Bottom	N/A	N/A	N/A	N/A
Inside Top	356	5360	0	0
Inside East	167	7500	22	0
Inside West	0	3920	22	0
Inside Bottom	89	12920	0	129

*Removable activity criteria are not applied under the ANSI/HPS standard. NRC's release criterion for removable natural uranium in equilibrium with its decay progeny is 1,000 DPM/100 cm² (NRC, 2002).

≤ clearance criterion
> clearance criterion

Table 5B: Gamma emission data and radionuclide activity concentrations for residual solids at pipeline survey Location 4.

Gamma Exposure Rate (µR/h)		Residual Solids Concentration (pCi/g)	
Outside Background	17	Ra-226*	253
Interior Center	45	Ra-226	247
Interior Bottom	100	U-nat**	159
		Th-230	7.7
		Pb-210	41.4

*Screening-level estimate from shielded onsite sample counting
** Analytical result from offsite lab = 235 mg/kg

4.5 Pipeline Location 5

Table 6A: Alpha/beta surface activity measurement results for pipeline survey Location 5.

Pipeline Location 5	Total Alpha Activity (DPM/100 cm²)	Total Beta Activity (DPM/100 cm²)	Removable Alpha Activity (DPM/100 cm²)	Removable Beta Activity (DPM/100 cm²)
Clearance Criterion	340	252	N/A*	N/A*
Ambient Background	4	317	0	92
Measurement Point	**Net (above background) Surface Activity**			
Outside Top	1144	3220	6	57
Outside East	378	120	17	57
Outside West	256	1100	11	0
Outside Bottom	11	6200	11	0
Inside Top	1900	10280	28	386
Inside East	1800	7680	39	29
Inside West	156	3320	100	100
Inside Bottom	989	16160	6	0

*Removable activity criteria are not applied under the ANSI/HPS standard. NRC's release criterion for removable natural uranium in equilibrium with its decay progeny is 1,000 DPM/100 cm² (NRC, 2002).

≤ clearance criterion
> clearance criterion

Table 6B: Gamma emission data and radionuclide activity concentrations for residual solids at pipeline survey Location 5.

Gamma Exposure Rate (µR/h)		Residual Solids Concentration (pCi/g)	
Outside Background	15	Ra-226*	314
Interior Center	30	Ra-226	306
Interior Bottom	70	U-nat**	64.3
		Th-230	8.6
		Pb-210	98.3

*Screening-level estimate from shielded onsite sample counting
**Analytical result from offsite lab = 95 mg/kg

5. PIPELINE CORRIDOR GAMMA SURVEY RESULTS

The gamma survey of the pipeline corridor indicates that the vast majority of soils underlying and adjacent to the discharge pipeline have terrestrial gamma emissions consistent with local background conditions (Figure 2). Approximately 7 small, localized areas of elevated gamma radiation, indicative of radiological impacts to surface soils due to historic pipeline operations, are present at various discrete locations along the corridor as depicted by the white boxes in Figure 2. Gamma exposure rate readings for six of these small "hotspots" are shown in closer detail in the insets to Figure 2. These results suggest that the volume of contaminated soil that may require excavation and removal to release pipeline corridor lands to the PRLU as described in the Mine Closeout/Closure Plan (RGR, 2013), is likely to be relatively small, perhaps a few tens to a few hundreds of cubic yards of material that may be contaminated in excess of the 6.8 pCi/g release criterion for Ra-226 concentrations in soil.

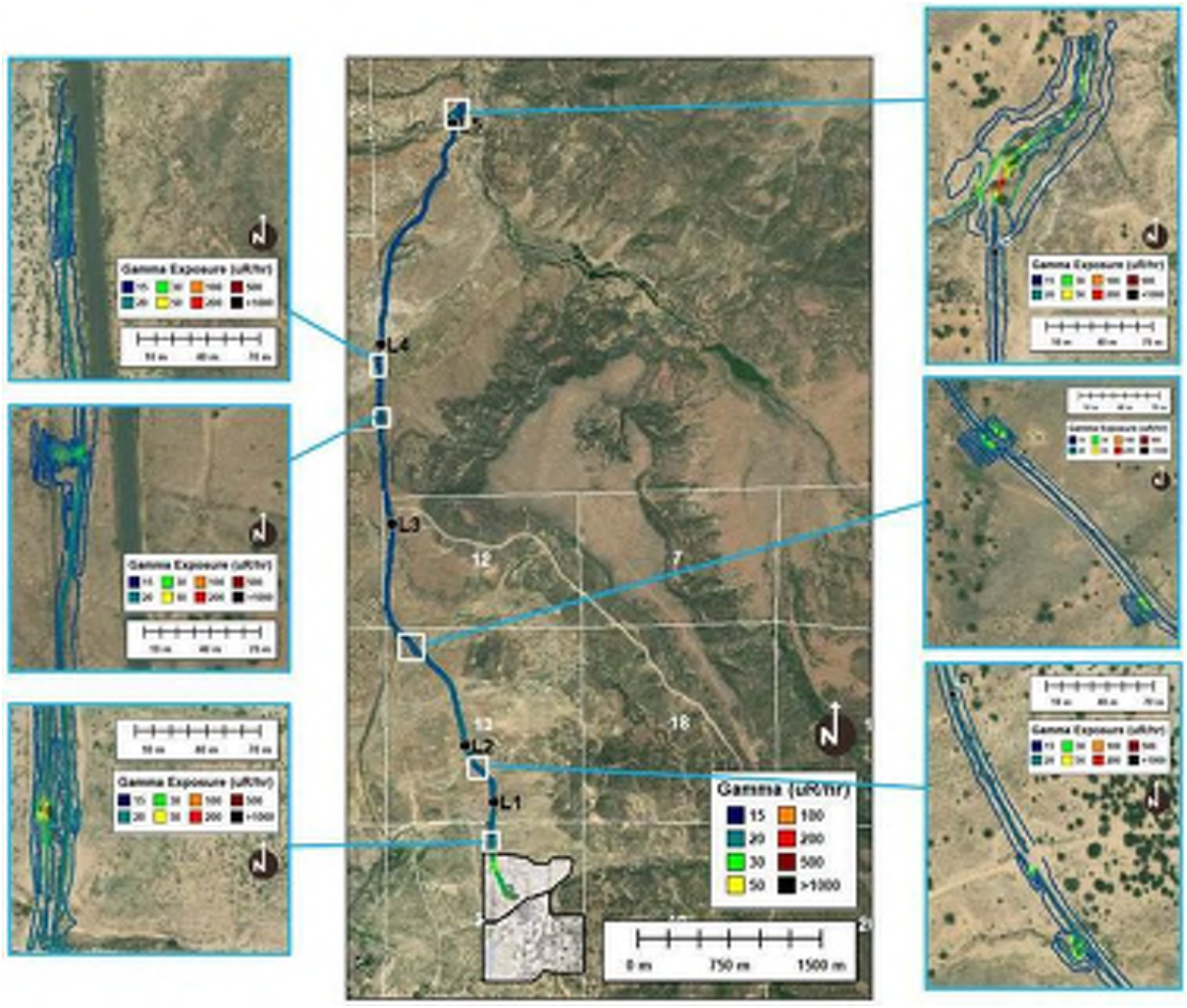


Figure 2: Gamma survey results with detail insets to identify areas of small, localized hotspots that may require some relatively minor soil cleanup to meet the radiological criteria for release to the post remediation land use (PRLU).

6. CONCLUSIONS

The results of the pipeline materials surveys (Section 4) indicate that in general, radiological impacts to the steel pipe along the length of the pipeline corridor exceed conservative, ANSI/HPS criteria for clearance from future radiological controls on access or reuse. Therefore, the options for future disposition of the pipeline materials are currently limited to 1) decontamination until the release criteria are met, or 2) onsite disposal in the engineered waste disposal cell or offsite disposal at an appropriate industrial waste disposal facility.

With respect to radiological impacts to soils, the gamma survey data suggest that spills or leaks were limited and the extent of impacts to soil that may require remediation are relatively small, perhaps involving excavation and removal of a few tens to a few hundreds of cubic yards of material. Removal of these small hotspots should result in compliance with the radiological soil release criteria specified in Section 2 along the entire length of the pipeline (including impacted sediments in the San Lucas drainage below Outfall 001 under DP-61).

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Surface and Subsurface Soil Radiologic Characterization

Windblown Area, Ore Pad Area and Mine Compound

Mount Taylor Mine Site

San Mateo, NM

Prepared by:

AVM Environmental Services, Inc.

1717 Del Norte Blvd.

Grants, NM 87020

Prepared for:

Rio Grande Resource Corporation

PO Box 1150

Grants, NM 87020

August 14, 2023

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Appendices

Appendix A Surface Gamma Radiation Static Survey Forms
Appendix B Surface and Subsurface Contamination Field Investigation Documentation (Soil Sample Log Forms, Field Soil Sample Ex-Situ Gamma Radiation Screening Forms Soil Sample COCs and Laboratory Analytical Result Reports)
Appendix C Radiologic Instrument Calibration and Operational Function Check and Collimated Detector Correlation Documentation

1.0 Introduction and Background

This report provides the results of the Soil Radiologic Characterization (SRC) that was conducted at the Mt. Taylor Mine (Site) in Cibola County, near San Mateo, New Mexico. This SRC was performed to evaluate the lateral and vertical extent of radiologic contamination exceeding the Site Radiation Cleanup Criteria (RCC) of 6.8 pCi/g Ra-226 to estimate radiologic impacted material volumes within three specified areas of the Site; the Windblown Area, Ore Pad Area and portions of the Mine Compound Area, also known as the "Service and Support area". The methods and procedures used were consistent with the June 2020 Work Plan for Post-Mining Radiological Surveys of Permit Area and Impacted Lands (2020 Work Plan) and the applicable survey methods described in the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM, EPA 2000a). The RCC specified in the March 2016 *Joint Guidance for the Cleanup and Reclamation of Existing Uranium Mining Operations in New Mexico* (EMNRD, 2016) (2016 Guidance) by the Energy, Minerals & Natural Resources Department (EMNRD) and the New Mexico Environment Department (NMED) was used for the investigation level (IL). The Ra-226 cleanup criteria of 5.0 pCi/g above the background level in land averaged over 100 square meters in surface soil (top six inches) specified in the Joint Guidance is taken from the UMTRCA (40 CFR 192) regulation, which is based on an unrestricted land use exposure scenario. A 6.8 pCi/g Ra-226 IL (5.0 pCi/g plus 1.8 pCi/g background level) has been established for the Site.

The Site was an underground uranium mine located in Cibola County, near San Mateo, New Mexico. The mine was developed by Gulf Mineral Resources Company (Gulf) in the 1970s and ore production occurred from 1979 to 1982. Following transfer of Site to Chevron Resources Company in 1985, the ore production resumed and continued until 1990. Rio Grande Resources (RGR) acquired the Site in 1991. In 1999 the Site entered standby status under Mine Permit C1002RE with EMNRD. On December 29, 2017, the permit changed to an active status, and on December 3, 2019, RGR notified MMD of intentions to begin the Site closeout/closure process. The following sections describe the strategy, methods and procedures that were used and the results of the SRC conducted at the Site.

2.0 Previous Characterization

Surface gamma radiation surveys were performed periodically within operationally controlled areas of the Site to monitor changes in radiological conditions during a period of remedial excavations in the Mine Water Treatment Unit (MWTU) ponds, construction of the disposal cell and placement of contaminated mine materials, and gradual removal of ore from the ore stockpile. The most recent gamma survey prior to this characterization, conducted March 27, 2021, showed elevated gamma radiation levels in certain operational areas within the Controlled Area boundaries, including the three areas included in this SRC, the Windblown Area, Ore Pad Area and the Mine Compound Area. The survey results are summarized in The June 2020 Work Plan, and indicate surface soils in portions of the Windblown Area, the Mine Compound and the entire Ore Pad Area exceed the 6.8 pCi/g Ra-226 IL.

Additionally, a radiologic subsurface soil investigation was performed in a portion of the Mine Compound Area as part of the 2020 Diesel Investigation. The results are summarized in the Mount Taylor Mine, Diesel Release Investigation Report of Finding, April 2021, Ensero Solutions, Inc. (Ensero 2021). The soil borings sample results within the Mine Compound Area indicate Ra-226 levels exceeding the IL in subsurface soils ranging from a depth of ground surface to 10 feet below ground surface (bgs) in the area around the Production Shaft.

3.0 Objective of the Radiological Characterization

The Site is a former uranium mine, therefore the surface and subsurface soil is expected to be impacted by radionuclides associated with the uranium decay series, with Ra-226 being the primary Constituent of Concern (COC). The objective of this characterization is to evaluate Ra-226 contamination exceeding the Site IL of 6.8 pCi/g Ra-226 in surface and subsurface soils to estimate volumes of radiologic impacted material within the Windblown, Ore Pad and Mine Compound Areas.

4.0 Field Investigation

Field investigations for this characterization were conducted consistent with the 2020 Work Plan and were conducted during the period of April 11, 2023 through June 14, 2023. The three specified soil characterization areas are shown in Figure 1. The field investigations included, both static 0.5 inch thick lead (Pb) collimated and uncollimated (bare) 2x2 sodium iodide (NaI) detector gamma radiologic survey measurements and Differential Global Positioning System (DGPS) based bare detector gamma scan surveys, along with ex-situ soil screening, soil sampling and offsite vendor laboratory analysis. The geo-located gamma scans were conducted to provide Ra-226 concentration level estimates in surface soil and to determine the test pit and sampling locations to assess subsurface radiologic contamination relative to the IL. Ex-situ gamma radiation soil screening was performed to provide real-time information to estimate subsurface contamination depths. Subsurface soil sampling and offsite vendor laboratory analysis was performed to confirm subsurface contamination depths below the IL as estimated by field ex-situ gamma radiation soil screening. Additionally, gamma radiation static surveys count per minute (cpm) measurements, exposure rate (µR/hr) measurements and surface soil samples and analysis were performed at selected locations to update the Site-specific correlation.

4.1 Surface Gamma Radiation Scan and Static Survey

The instrument configuration for direct gamma radiation level measurements during this characterization consisted of lead collimated and bare 2x2 NaI scintillation detectors (Eberline SPA-3 or Ludlum 44-10) for detection of gamma radiation, coupled to a scaler/rate meter (Ludlum 2221 or Ludlum 2241). This instrument configuration is used widely for this type of survey and is recommended by the MARSSIM. The scaler/rate meters were interfaced with a sub-meter accurate DGPS with surveying software and a data

logger/controller for electronically recording the gamma radiation levels to the corresponding geo-location coordinates. The coordinate system that was used for this work was the State Plane Coordinate System (NAD83, New Mexico West, US Feet) system. Direct gamma radiation surveys using a NaI scintillation detector provide radiation levels in counts per unit time, generally obtained as cpm. A Ludlum Model 19 µR Meter was used for gamma exposure rate (µR/hr) measurements.

During this characterization, systematic gamma radiation scan surveys using bare 2x2 NaI detectors were performed at the Site to determine the level of Ra-226 in surface soil within the characterization areas. Although bare detectors do not avoid lateral gamma radiation shine, bare detectors have a large field of view and provide a large scan coverage area for an efficient and conservative lateral extent of contamination assessment. The gamma scan surveys were performed consistent with the 2020 Work Plan. Thirty-feet spaced geo-projected transects for each area were digitally created using mapping software and loaded on the field data logger/controller. Based on a conservative field of view (FOV) of at least six feet diameter for a bare 2x2 NaI detector for Ra-226 gamma radiations, a scanning transects spacing of 30 feet would provide at least a 20% scan coverage. The gamma scan survey was performed by scanning along these transects with a bare 2x2 NaI detector at 12 inches above the ground surface at a scan rate of about three feet per second, with a data collection time interval of two seconds.

The geo-located gamma scan data includes the gamma scan point ID, date and time, location coordinates, and bare detector gamma cpm. The scan data was exported from the data logger and the bare detector cpm were converted to equivalent Ra-226 estimate using the Site-specific correlation (Ra-226 pCi/g = 0.0005 x CPM)-7.3228 R^2 = 0.97)(2020 Work Plan). The scan data was mapped using a mapping software, arranged in color coded ranges and then reviewed to identify areas that exceeded the IL. The color-coded range was structured to include the Ra-226 6.8 pCi/g IL as shown in Figures 2 and 3. The characterization gamma scan survey included approximately 12,107 gamma scan data points within a total of approximately 40 acres at the Site. The gamma scan data was exported from the scan system data logger into an Excel file. The detector cpm was converted into equivalent estimated surface soil Ra-226 concentration in pCi/g using the Site-specific correlation for bare detectors as discussed in Section 4.5 of the 2020 Work Plan. A typical gamma scan data export table from the scan system data logger is shown in Table 1. Gamma scan survey data for this characterization are provided in electronic file.

One-minute static gamma radiation surveys were performed prior to collecting a soil sample at each surface soil sampling and test pit location using a bare 2x2 NaI detector and collimated 2x2 NaI detector. The survey data were recorded on Static Gamma Radiation Survey Forms, which are included in Appendix A. The bare detector cpm data was converted to equivalent Ra-226 estimate using the Site-specific correlation. A site-specific correlation for a 2x2 NaI 0.5-inch thick lead collimated detector was developed using the surface (0 – 6 Inch) soil samples collected from the Windblown Area and the co-located collimated detector survey performed during this characterization, which is included in Appendix C. This correlation regression yielded an equation of Ra=226 = (CPM x 0.0016) – 8.41 with an acceptable R^2 value

of 0.83 The collimated detector measurements were converted to soil Ra-226 concentrations using this correlation equation. The static gamma survey results are summarized in Table 2.

4.2 Ra-226 Radiation Cleanup Criteria Contamination Boundary

The Windblown area Ra-226 6.8 pCi/g RCC contamination boundary delineated based on the surface gamma scan survey and a 6.8 pCi/g Ra-226 RCC contamination boundary based on the surface soil sample ex-situ screening and vendor laboratory results are shown in Figure 4. The ex-situ and vendor lab Ra-226 pCi/g surface soil sample results are lower than the Ra-226 pCi/g concentrations estimated by the bare 2x2 NaI detector surface soil gamma scan. Based on the results of the soil sample analysis and static gamma radiation surveys, the area of the Windblown Area that exceeds the IL is smaller than previously estimated by bare detector gamma scan surveys alone, as shown in Figure 4. The primary cause of the overestimated Ra-226 concentrations in the Windblown Area determined by the bare detector gamma scan survey appears to be the lateral gamma radiation shine interference from nearby areas with elevated Ra-226 concentrations, specifically the close proximity to the Ore Pad Area. As discussed previously, one-minute static gamma radiation level measurements were performed prior to collecting a soil sample at each location using a bare and a 0.5 inch lead collimated 2x2 NaI detector. As shown in Tables 2 and 3, the Ra-226 concentration estimates determined using the collimated detector are comparable to the on-Site ex-situ gamma screening and the vendor laboratory Ra-226 analytical results. Thus, delineation of the Windblown Area surface soils exceeding the 6.8 pCi/g Ra-226 IL using the collimated static gamma survey, the on-Site ex-situ gamma screening and the vendor laboratory Ra-226 analytical results are appropriate, as shown in Figure 4.

As shown in Tables 2 and 4, and Figure 2 the entire Ore Pad Area surface soil far exceeds the 6.8 pCi/g Ra-226 IL. Additionally, surface soil gamma scans previously performed in 2018 and 2020 (2020 Work Plan) for area exposure rates (µR/hr) included the Mine Compound Area and showed that the majority of the Mine Compound Area exceeds the IL. As shown in Figure 3, the surface gamma scan performed during this characterization also shows that the surface soil in the majority of the Mine Compound Area exceeds the 6.8 pCi/g Ra-226 IL. To better characterize the surface soil and to assist in the selection of test pit locations, the surface gamma scan survey was performed at a higher density, 30-feet transect spacing, compared to the previous scan (2021) density of 60-ft transect spacing.

4.3 Test Pits, Soil Sampling and Ex-Situ Gamma Radiation Soil Screening

Test pit trench excavations, subsurface soil sampling and on-Site ex-situ gamma radiation soil screening were performed from May 17 through June 7, 2023. These methods were used to determine the subsurface soil Ra-226 contamination depth exceeding the IL at the test pit locations within the three characterization areas. The ex-situ gamma radiation soil screening was conducted to provide a real-time estimate of Ra-226 concentrations in subsurface soil samples. This method is more reliable than the in-situ

direct gamma radiation level measurements and allows for real-time Ra-226 concentration assessments. The on-Site ex-situ soil screening method consists of selectively measuring the 609 KeV region gamma radiations of Bi-214, a decay product of Ra-226. A single channel analyzer (Ludlum L2221) integrated with a Ludlum 44-20 3x3 NaI scintillation detector was used to measure the 609 keV energy peak region of Bi-214. The soil sample was placed around the plastic lined detector in a heavily lead shielded counting chamber. The heavily shielded counting chamber lowers the system background counts, thus improving the system's minimum detectable concentration (MDC). A reference soil with the Ra-226 concentration of 6.6 pCi/g, comparable to the 6.8 pCi/g IL, was prepared as described in Appendix C and was used for soil screening during this characterization. The 6.6 pCi/g reference soil provides a conservative estimate of Ra-226 concentration in samples below the IL.

A total of 12 locations were selected in the Windblown Area for surface and subsurface soil sampling in areas that exceeded the IL determined by the surface soil gamma scan survey, as shown in Figure 2. Twenty-eight test pit locations were selected for subsurface soil sampling based on the surface soil gamma scan survey and Site operational history where Ra-226 contamination was likely to be deeper than one-foot bgs, twenty test pits in the Mine Compound Area and eight in the Ore Pad Area, as shown in Figures 2 and 3.

Hand augers and sampling trowels were used to collect surface and subsurface soil samples up to a depth of 1.5 feet in the Windblown Area. At each of the 11 sample locations selected in the Windblown Area, a surface (0 – 6”) and a subsurface (1’ – 1.5’) soil sample were collected. At one location, a sample was collected at 0-1” and 2"-6” depths for surface soils Ra-226 contamination distribution analysis. A backhoe was used to excavate a trench at each selected test pit location for subsurface soil sample collection in the Ore Pad and Mine Compound areas. The trenches were excavated at approximately one-to-two-foot depth intervals depending on visual observations of the type and consistency of the soil. At each interval, a subsurface soil sample was collected from the base of the excavation for ex-situ soil screening. The excavation continued at least 2 feet after native soil was observed and on-Site ex-situ soil screening indicated Ra-226 concentrations were below the 6.8 pCi/g IL. The test pit excavation soil sample logs and the field soil screening forms are included in Appendix B. The test pit subsurface soil ex-situ gamma screening data is summarized in Tables 3, 4 and 5, which includes Ra-226 concentrations of the samples relative to the 6.8 pCi/g IL.

Although the primary objective of the ex-situ gamma radiation soil screening was to determine the Ra-226 concentrations above or below the 6.8 pCi/g IL, Ra-226 concentrations were estimated in all test pit excavation subsurface soil samples collected and screened. During the setup of the soil screening system prior to mobilizing in the field, a calibration/correlation of the ex-situ soil screening system was performed using a 6.6 pCi/g, a 25 pCi/g and a 50 pCi/g reference soil. This correlation is included in Appendix C. The estimated Ra-226 concentration of the subsurface soil samples determined using this correlation are included in Tables 3, 4 and 5.

Fourteen samples out of a total of 24 surface and subsurface soil samples screened on-Site from the Windblown Area were sent to the off-Site vendor laboratory, Energy Laboratories, in Casper, WY. From the Ore Pad and Mine Compound Areas, 34 samples out of a total of 88 subsurface soil samples screened onsite were sent to the off-site vendor laboratory. These soil samples were analyzed for Ra-226 using EPA Method 901.1 (modified for soil matrix) for confirmation of the on-Site ex-situ soil screening results. The 53 samples sent to the laboratory included at least one sample from each test pit excavation that screened below the IL. Also, 10% (5 samples) of the samples sent to the lab were split in the field and sent to the lab for quality assurance/quality control (QA/QC) duplicates. The laboratory results reports are included in Appendix B and are summarized in Table 3, 4 and 5. As shown in these tables, the estimated Ra-226 levels by on-Site ex-situ soil screening are comparable with the laboratory Ra-226 results, specifically in regard to determining the depth of Ra-226 levels above or below the IL.

4.4 Windblown Area Characterization Summary

As shown in Table 3 and Table 6, 11 of the 12 surface soil (0 – 6”) samples from the Windblown Area screened on-Site and analyzed by the vendor laboratory show Ra-226 pCi/g below the 6.8 pCi/g IL. The only location above the IL was WBSB-08 at 9.7 pCi/g. The Ra-226 concentration in all of the Windblown Area subsurface samples screened on-Site and analyzed by the vendor laboratory show Ra-226 pCi/g concentrations below the Ra-226 6.8 pCi/g IL, which is far below the Ra-226 15 pCi/g 2016 Guidance for 6-inch soil layers six inches bgs. This demonstrates that the Ra-226 levels exceeding the IL are contained only within the surface soil (0 – 6”) in the Windblown area, as shown in Figure 4 and Table 3. Furthermore, analyzing the 0-1” and 2”-6” soil samples resulted in Ra-226 concentrations of 2.0 pCi/g in the 0-1” sample and 1.0 pCi/g in the 2”-6” sample. Based upon the lab results in the Windblown area, the majority of the contamination is distributed within the top one inch of soil.

4.5 Ore Pad Area Characterization Summary

Results of test pit excavation observations and subsurface soil sampling analysis in the Ore Pad Area show waste rock depth from surface level to the native soil at approximately three to five feet bgs at four (OPSB-02, OPSB-03, OPSB-04 and OPSB-05) out of the five selected test pit locations, as shown in Table 4 and 6. The on-Site ex-situ gamma screening results show Ra-226 concentrations ranging from about 22 to 510 pCi/g as shown in Table 4. At test pit location OPSB-01, waste rock was observed at depths greater than five feet. A thin dark clay layer was observed at about five feet bgs. Excavation continued as light gray waste rock material and debris was constantly observed to a depth of 13.5 feet bgs, the excavation depth limit of the trenching equipment. The on-Site ex-situ gamma screening results show a Ra-226 concentration in the 0 to 13 feet composite sample from this location at 74 pCi/g, and 31 pCi/g Ra-226 in the sample from a depth of 13.5 feet. Since waste rock depth at all other test pit locations in the Ore Pad Area was approximately four to five feet, three additional test pits were excavated east of OPSB-01 to determine the

extent of waste rock depth in the area. Test pit locations OPSB-06 and OPSB-07 were selected at approximately 150' and 100' east of OPSB-01, respectively. Both of these test pits showed waste rock depths of approximately 4' bgs before observing native soil. Test pit location OPSB-08 was selected approximately 62' east of OPSB-01 and showed a waste rock and debris depth similar to that of OPSB-01. According to Site operational history, a portion of the nearby treatment pond may have been backfilled with low grade waste rock and used as part of the foundation for the Ore Pad Area. The waste rock depth in the OPSB-01 area is estimated to be about 15 feet bgs based on the nearby ore-pad runoff retention pond depth.

4.6 Mine Compound Area Characterization Summary

Results of test pit excavation observations and subsurface soil sampling analysis in the Mine Compound Area show subsurface soil exceeding the 6.8 pCi/g Ra-226 IL at varying depths ranging from ground surface to about seven feet bgs as shown in Tables 5 and 6 and Figure 5. Soil exceeding the IL is generally limited to only the surface soil (<1.0 feet) in the areas around test pit locations MCSB-04, MCSB-10, MCSB-12, MCSB-13, MCSB-14, MCSB-15, MCSB-16, MCSB-17 and MCSB-18. At the other nine test pit locations, soil/ material depths bgs exceeding the IL are shown in Table 6, except at test pit locations MCSB-02 and MCSB-05. Test pits MCSB-02 and MCSB-05 had an isolated layer of soil/gravel that exceeded the IL while the soil above and below the layer screened below the IL. At test pit location MCSB-02, soil exceeding the IL was found in a gravel layer at a depth of 3.5 to 4.5 feet bgs, while at a depth of 5.5 to 6.5 feet bgs at test pit location MCSB-05, as shown in Tables 5 and 6, and Figure 5. At each test pit location, when native soil was observed, excavation continued into the native soil at least two feet to ensure that the soil/material exceeding the IL had been identified. Two additional observation test pit excavations up to nine feet were performed at locations MCSB-19 and MCSB-20. These two test pits are located east of locations MCSB-08 and MCSB-11, between the shop yard fence and the road. The purpose of these two observational test pit excavations was to estimate the lateral extent of subsurface waste rock material found at locations MCSB-08 and MCSB-11. Identification of any waste rock material was noted by visual observation. No waste rock material was observed in test pit MCSB-19, east of Test Pit MCSB-08. A thin (approximately 3") layer of waste rock material at a depth of 2.0 to 2.25' was observed in Test Pit MCSB-20, indicating that the lateral extent boundary of subsurface waste rock material is between MCSB-11 and the shop yard fence line. Based on the field soil screening and the laboratory sample results, depths of Ra-226 concentrations above the 6.8 pCi/g IL at each Ore Pad and Mine Compound Area test pit and Windblown Area sampling location are summarized in Table 6.

5.0 Soil Sampling and Analysis

Soil samples from the Windblown Area and subsurface soil samples from the test pit excavations collected for on-Site ex-situ gamma radiation soil screening were collected consistent with the 2020 Work Plan. Field QA/QC duplicate samples were split at a frequency of 10% of the total number of soil samples collected. A total of 112 surface and subsurface soil samples were collected during this characterization. Field sampling

equipment used for soil sampling included: stainless steel scoops, bowls, spoons, and hand auger barrels were decontaminated between sample locations. The soil sampling equipment decontamination was conducted by brushing off loose visible soil and wiped with clean towels. Excavator buckets were cleaned by removing any loose, visible soil. Any soils excavated from the test pits were returned to the test pit excavations from which the soil came. Personal protection equipment (PPE), such as gloves, were brushed off and scanned for residual contamination and were disposed of.

Surface and subsurface soil samples were analyzed by on-Site ex-situ gamma radiation soil screening (AVM SOP-4) to estimate Ra-226 concentrations. A completed Chain-of-Custody (COC) along with the surface soil samples and confirmatory soil samples were placed in labeled Ziploc bags, and packaged in coolers with sealed lids and shipped to Energy Laboratories, Inc for Ra-226 analysis. The soil samples were analyzed for Ra-226 with a reporting limit of 0.5 pCi/g, using EPA Method 901.1 (modified for soil matrix). The completed COCs are included with the analytical results reports in Appendix B.

6. 0 Quality Assurance and Quality Control Measures

QA/QC measures were implemented during this characterization to ensure that decisions were made based on data of acceptable quality. All radiologic survey instruments have been calibrated at least annually. Additionally, operational functions checks were performed on all radiologic instruments daily prior to use. The calibration and function check documents are included in Appendix C. During this characterization, no instruments were found to be out of calibration or inoperable as indicated by the operational function checks. The instrument background measurements for bare 2x2 NaI detectors during daily operational function checks were less than 10,000 cpm as shown in Appendix C. The bare detector field of view (FOV) at 12 inches above the ground surface is conservatively assumed at an area of six feet diameter. The 2x2 NaI detector response factor is determined to be 0.0005 pCi/g/cpm from the linear regression for the Site-specific correlation included in Appendix C. Based on the above detector parameters, the Ra-226 minimum detectable concentrations (MDCs) for a scan survey at a scan speed of three feet per second, calculated using MARSSIM guidance, were less than 1.0 pCi/g, which is significantly less than 50% of the 6.8 pCi/g IL. The ex-situ soil gamma radiation screening system was calibrated prior to mobilization in the field and daily operational function checks were performed prior to use. The calibration and function check documentation are included in Appendix C. Based on the highest system background (blank) measurements from daily operational function checks and efficiency (pCi/g/cpm), the highest Ra-226 MDC for the screening system calculated was less than 0.8 pCi/g, significantly less than the 6.8 pCi/g IL. The MDCs during the supplemental characterization met the QA objective.

The QA/QC measures also included field QA/QC duplicate soil sampling at a frequency of 10% of the soil samples collected for laboratory analysis. As discussed above, field QA/QC duplicate soil samples were collected and sent to the laboratory for analysis, and the QA/QC duplicate results are included in appropriate summary tables.

Tables

Table 1
Typical Gamma Scan Data Exported from the Scan System Data Logger

ID	Time	Northing(1) (feet)	Easting(1) (feet)	MSL Elevation (feet)	CPM 2x2 Bare NaI Detector	Ra-226 pCi/g(2)	Zone_ID
1	4/11/2023 12:58	1579644.59	2782922.79	7350	37181	11.27	Mine_Compound
2	4/11/2023 12:58	1579644.55	2782925.05	7350	35699	10.53	Mine_Compound
3	4/11/2023 12:58	1579644.42	2782929.34	7350	34119	9.74	Mine_Compound
4	4/11/2023 12:58	1579644.62	2782934.44	7350	33580	9.47	Mine_Compound
5	4/11/2023 12:58	1579645.02	2782938.58	7350	36088	10.72	Mine_Compound
6	4/11/2023 12:58	1579644.99	2782943.19	7350	36656	11.01	Mine_Compound
7	4/11/2023 12:58	1579643.77	2782946.70	7350	38855	12.11	Mine_Compound
8	4/11/2023 12:58	1579643.87	2782947.05	7350	35564	10.46	Mine_Compound
9	4/11/2023 12:58	1579644.03	2782950.60	7350	37249	11.30	Mine_Compound
10	4/11/2023 12:58	1579645.17	2782955.46	7351	34818	10.09	Mine_Compound
11	4/11/2023 12:58	1579644.44	2782960.55	7350	33211	9.29	Mine_Compound
12	4/11/2023 12:58	1579644.36	2782966.24	7350	35848	10.60	Mine_Compound
13	4/11/2023 12:58	1579645.40	2782971.43	7351	44480	14.92	Mine_Compound
14	4/11/2023 12:58	1579644.95	2782976.50	7351	40445	12.90	Mine_Compound
15	4/11/2023 12:59	1579644.04	2782981.35	7351	38310	11.84	Mine_Compound
16	4/11/2023 12:59	1579644.89	2782986.75	7351	34757	10.06	Mine_Compound
17	4/11/2023 12:59	1579645.26	2782992.08	7351	35607	10.48	Mine_Compound
18	4/11/2023 12:59	1579645.28	2782997.28	7351	34693	10.03	Mine_Compound
19	4/11/2023 12:59	1579644.62	2783002.45	7352	31665	8.51	Mine_Compound
20	4/11/2023 12:59	1579644.26	2783008.07	7352	34754	10.06	Mine_Compound
21	4/11/2023 12:59	1579644.42	2783013.72	7352	32487	8.92	Mine_Compound
22	4/11/2023 12:59	1579645.39	2783019.31	7352	31633	8.50	Mine_Compound
23	4/11/2023 12:59	1579645.34	2783024.97	7352	35967	10.66	Mine_Compound
24	4/11/2023 12:59	1579645.52	2783030.66	7352	40738	13.05	Mine_Compound
25	4/11/2023 12:59	1579644.54	2783036.55	7352	44013	14.69	Mine_Compound
26	4/11/2023 12:59	1579643.73	2783042.37	7353	43985	14.67	Mine_Compound
27	4/11/2023 12:59	1579644.36	2783047.96	7353	39949	12.65	Mine_Compound
28	4/11/2023 12:59	1579644.72	2783053.66	7353	40529	12.94	Mine_Compound
29	4/11/2023 12:59	1579644.62	2783058.85	7353	39350	12.36	Mine_Compound
30	4/11/2023 12:59	1579644.57	2783064.21	7354	37544	11.45	Mine_Compound
31	4/11/2023 12:59	1579644.14	2783069.71	7354	35781	10.57	Mine_Compound
32	4/11/2023 12:59	1579643.88	2783075.08	7354	35911	10.64	Mine_Compound
33	4/11/2023 12:59	1579644.60	2783080.73	7355	31419	8.39	Mine_Compound
34	4/11/2023 12:59	1579645.54	2783086.33	7355	33426	9.39	Mine_Compound
35	4/11/2023 12:59	1579645.93	2783091.25	7355	37444	11.40	Mine_Compound

(1) projection: StatePlane NAD 1983 NM West-feet
(2) Ra-226 pCi/g is determined from surface soil gamma radiation scan using 2x2 NaI detector and Site-specific gamma radiation level (cpm) correlation

Table 2
Static Gamma Radiation Survey at Soil Sampling/Test Pit Locations

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD83 StatePlane NM West, Feet		Static Gamma Radiation Survey				Gamma Exposure Rate µR/hr
				Bare 2x2 NaI Detector		Collimated (0.5" Pb) 2x2 NaI Detector		
		Northing	Easting	CPM	Estimated Ra-226 pCi/g	CPM	Estimated Ra-226 pCi/g	
05/17/23	WBSB-01	1,581,413	2,782,866	26,897	6.1	6,297	1.7	33
05/17/23	WBSB-02	1,581,390	2,782,444	26,749	6.1	6,350	1.7	33
05/17/23	WBSB-03	1,581,356	2,783,329	24,529	4.9	6,073	1.3	31
05/17/23	WBSB-04	1,581,339	2,782,706	30,064	7.7	6,069	1.3	37
05/17/23	WBSB-05	1,581,329	2,783,062	31,828	8.6	6,945	2.7	41
05/17/23	WBSB-06	1,581,271	2,782,942	35,410	10.4	7,288	3.3	47
05/17/23	WBSB-07	1,581,187	2,783,253	37,965	11.7	8,183	4.7	47
05/17/23	WBSB-08	1,581,164	2,782,988	55,849	20.6	11,042	9.3	70
05/31/23	WBSB-09	1,581,254	2,782,870	36,491	10.9	6,599	2.1	44
05/31/23	WBSB-10	1,581,263	2,783,140	34,898	10.1	7,286	3.2	48
05/31/23	WBSB-11	1,581,277	2,783,335	29,002	7.2	6,602	2.2	34
05/31/23	WBSB-12	1,581,228	2,782,908	40,341	12.9	7,153	3.0	55
05/31/23	OPSB-01	1,580,834	2,782,884	2,328,550	1157	716,621	1138	2,100
05/31/23	OPSB-02	1,580,812	2,783,138	505,097	245	160,357	248	650
05/31/23	OPSB-03	1,580,599	2,783,013	700,063	343	247,434	387	900
05/31/23	OPSB-04	1,580,328	2,782,874	408,698	197	133,199	205	450
05/31/23	OPSB-05	1,580,386	2,783,136	446,083	216	156,044	241	450
05/30/23	MCSB-01	1,579,585	2,783,019	35,807	10.6	10,538	8.5	41
05/30/23	MCSB-02	1,579,573	2,783,167	34,096	9.7	9,678	7.1	39
05/30/23	MCSB-03	1,579,343	2,782,883	34,019	9.7	9,832	7.3	39
05/30/23	MCSB-04	1,579,317	2,783,098	34,656	10.0	10,811	8.9	40
05/24/23	MCSB-05	1,579,183	2,782,702	52,231	18.8	14,892	15	65
05/24/23	MCSB-06	1,579,162	2,783,064	31,976	8.7	8,548	5.3	37
05/24/23	MCSB-07	1,579,040	2,783,010	52,974	19.2	18,511	21	65
05/23/23	MCSB-08	1,578,849	2,782,249	107,010	46.2	39,626	55.0	125
05/23/23	MCSB-09	1,578,850	2,782,582	28,188	6.8	8,193	4.7	33
05/23/23	MCSB-10	1,578,758	2,782,444	39,814	12.6	12,984	12	43
05/22/23	MCSB-11	1,578,611	2,782,258	53,106	19.2	18,055	20	60
05/22/23	MCSB-12	1,578,521	2,782,569	29,299	7.3	9,090	6.1	33
05/22/23	MCSB-13	1,578,301	2,782,557	21,952	3.7	6,254	1.6	25
05/23/23	MCSB-14	1,578,278	2,782,258	21,642	3.5	6,366	1.8	25
05/18/23	MCSB-15	1,578,214	2,782,398	48,059	16.7	15,633	17	51
05/18/23	MCSB-16	1,578,084	2,782,313	30,445	7.9	11,069	9.3	33
05/18/23	MCSB-17	1,578,085	2,782,599	18,059	1.7	5,891	1.0	19
05/18/23	MCSB-18	1,578,071	2,782,424	17,170	1.3	5,046	<0.6	19
05/31/23	MCSB-19	1,578,837	2,782,317	69,850	27.6	24,522	31	80
05/31/23	MCSB-20	1,578,650	2,782,298	55,167	20.3	18,497	21	65

Table 3
Windblown Area Surface and Subsurface Soil Sample Field Ex-Situ Gamma Screening and Vendor Laboratory Results Summary

Sampling Data					Field Soil Screening Data							Laboratory Data			
Sample ID	Sample Depth (ft)	Sample Date	Sample Time	Description	Screen Date	Sample Weight grams	609 (559-669) Kev Gross Counts CP5M	CPM	6.6 pCi/g Ra-226 Reference Soil CPM	Soil Gamma Screening Estimated Ra-226 pCi/g	SSL (< or >)	Sample Sent to Lab	Ra-226 pCi/g	Error Estimate pCi/g	MDC pCi/g
WBSB-01 0-6"	0.5	5/17/2023	855	Light brown alluvium, sandy-loam	5/17/2023	3000	1406	281	536	2.5	<	Y	0.9	0.1	0.1
WBSB-01 1'-1.5'	1.5	5/17/2023	906	Brown silty clay	5/17/2023	3000	1244	249	536	2.1	<	N	-	-	-
WBSB-02 0-6"	0.5	5/17/2023	815	Light brown alluvium, sandy-loam	5/17/2023	3000	1577	315	536	3.0	<	Y	1.5	0.1	0.1
WBSB-02 1'-1.5'	1.5	5/17/2023	820	Brown silty clay	5/17/2023	2958	1008	204	536	1.5	<	N	-	-	-
WBSB-03 0-6"	0.5	5/17/2023	942	Light brown alluvium, sandy-loam	5/17/2023	3000	2039	408	536	4.3	<	Y	3.2	0.2	0.1
WBSB-03 1'-1.5'	1.5	5/17/2023	948	Brown silty clay	5/17/2023	3000	1136	227	536	1.8	<	N	-	-	-
WBSB-04 0-6"	0.5	5/17/2023	835	Light brown alluvium, sandy-loam	5/17/2023	3000	1521	304	536	2.9	<	Y	1.5	0.1	0.1
WBSB-04 1'-1.5'	1.5	5/17/2023	845	Brown silty clay	5/17/2023	2840	1189	251	536	2.1	<	N	-	-	-
WBSB-05 0-6"	0.5	5/17/2023	920	Light brown alluvium, sandy-loam	5/17/2023	3000	1747	349	536	3.5	<	Y	2.1	0.2	0.1
WBSB-05 1'-1.5'	1.5	5/17/2023	930	Brown silty clay	5/17/2023	2835	1086	230	536	1.8	<	N	-	-	-
WBSB-06 0-6"	0.5	5/17/2023	1054	Light brown alluvium, sandy-loam	5/17/2023	3000	1406	281	536	2.5	<	Y	1.3	0.1	0.1
DSSB-01			WBSB-06 0-6" Field QA/QC Duplicate								<	Y	1.1	0.1	0.1
WBSB-06 1'-1.5'	1.5	5/17/2023	1100	Brown silty clay	5/17/2023	2876	1004	209	536	1.5	<	N	-	-	-
WBSB-07 0-6"	0.5	5/17/2023	1014	Light brown alluvium, sandy-loam	5/17/2023	3000	2272	454	536	5.0	≤	Y	3.7	0.2	0.1
WBSB-07 1'-1.5'	1.5	5/17/2023	930	Brown silty clay	5/17/2023	3000	1082	216	536	1.6	<	N	-	-	-
WBSB-08 0-6"	0.5	5/17/2023	1034	Light brown alluvium, sandy-loam	5/17/2023	3000	4140	828	536	10.2	>	Y	9.7	0.3	0.2
WBSB-08 1'-1.5'	1.5	5/17/2023	1042	Brown silty clay	5/17/2023	3000	1118	224	536	1.7	<	Y	0.9	0.1	0.1
WBSB-09 0-6"	0.5	5/31/2023	825	Light brown alluvium, sandy-loam	5/31/2023	3000	1393	279	536	2.5	<	Y	1.2	0.1	0.1
WBSB-09 6-12"	1	5/31/2023	835	Brown silty clay	5/31/2023	3000	1170	234	536	1.9	<	N	-	-	-
WBSB-10 0-6"	0.5	5/31/2023	910	Light brown alluvium, sandy-loam	5/31/2023	3000	2217	443	536	4.8	<	Y	3.5	0.2	0.1
WBSB-10 6-12"	1	5/31/2023	915	Brown loam/roots	5/31/2023	3000	1380	276	536	2.5	<	N	-	-	-
WBSB-11 0-6"	0.5	5/31/2023	935	Light brown alluvium, sandy-loam	5/31/2023	3000	1959	392	536	4.1	<	Y	2.7	0.2	0.1
WBSB-11 6-12"	1	5/31/2023	940	Sandstone/sand	5/31/2023	2008	1053	315	536	3.0	<	N	-	-	-
WBSB-12 0-1"	0.08	5/31/2023	850	Light brown alluvium, sandy-loam	5/31/2023	3000	1736	347	536	3.5	<	Y	2.0	0.2	0.1
WBSB-12 2-6"	0.5	5/31/2023	900	Brown loam/ sandy	5/31/2023	3000	1117	223	536	1.7	<	Y	1.0	0.1	0.1

(1) Projection: NAD 1983, New Mexico West, Feet.

Table 4
Ore Pad Area Subsurface Soil Sample Field Ex-Situ Gamma Screening and Vendor Laboratory Results Summary

Sampling Data					Field Soil Screening Data							Laboratory Data			
Sample ID	Sample Depth (ft)	Sample Date	Sample Time	Description	Screen Date	Sample Weight grams	609 (559-669) Kev Gross Counts CP5M	CPM	6.6 pCi/g Ra-226 Reference Soil CPM	Soil Gamma Screening Estimated Ra-226 pCi/g	SSL (< or >)	Sample Sent to Lab	Ra-226 pCi/g	Error Estimate pCi/g	MDC pCi/g
OPSB-01 0-13'	0 to 13'	6/1/2023	1005	Light/dark grey waste rock	6/1/2023	3000	26904	5381	529	74	>	N	-	-	-
OPSB-01 13.5'	13.5	6/1/2023	1020	Light/dark grey waste rock	6/1/2023	3000	11560	2312	529	31	>	N	-	-	-
OPSB-02 0-4'	0 to 4'	6/1/2023	1115	Grey/dark ore waste rock	6/1/2023	3000	182551	36510	529	510	>	N	-	-	-
OPSB-02 4.5'	4.5	6/1/2023	1100	Dark/light grey clay & waste rock	6/1/2023	3000	35425	7085	529	98	>	N	-	-	-
OPSB-02 5.5'	5.5	6/1/2023	1120	Light brown silty sand mix	6/1/2023	3000	1189	238	529	1.9	<	Y	0.9	0.1	0.1
DSSB-05			OPSB-02 5.5' Field QA/QC Duplicate								<	Y	0.8	0.1	0.1
OPSB-03 0-4'	0 to 4'	6/1/2023	850	Grey/dark waste rock mix	6/1/2023	3000	56365	11273	529	156	>	N	-	-	-
OPSB-03 4.2'	4.2	6/1/2023	910	Grey/dark brown clay waste rock mix	6/1/2023	1708	2091	735	529	8.9	>	Y	4.4	0.2	0.1
OPSB-03 4.5'	4.5	6/1/2023	925	Dark brown clay	6/1/2023	3000	1193	239	529	1.9	<	Y	0.8	0.1	0.1
OPSB-04 0-4'	0 to 4'	6/1/2023	815	Grey/dark waste rock mix	6/1/2023	3000	8428	1686	529	22	>	N	-	-	-
OPSB-04 4.8'	4.83	6/1/2023	825	Dark clay mixed with brown silty soil	6/1/2023	3000	1124	225	529	1.8	<	N	-	-	-
OPSB-04 4.5'	4.5	6/1/2023	835	Grey/dark brown clay waste rock mix	6/1/2023	3000	4373	875	529	11	>	N	-	-	-
OPSB-05 0-3'	0 to 3'	6/1/2023	1200	Grey/dark waste rock mix	6/1/2023	3000	32147	6429	529	89	>	N	-	-	-
OPSB-05 3'	3	6/1/2023	1140	Grey/dark brown clay waste rock mix	6/1/2023	3000	5526	1105	529	14	>	N	-	-	-
OPSB-05 3.75'	3.75	6/1/2023	1155	Light brown sandy silty soil	6/1/2023	3000	1587	317	529	3.0	<	Y	0.9	0.1	0.1

(1) Projection: NAD 1983, New Mexico West, Feet.

Table 5
Mine Compound Test Pit Subsurface Soil Sample Field Ex-Situ Gamma Screening and Vendor Laboratory Results Summary

Sampling Data					Field Soil Screening Data							Laboratory Data			
Sample ID	Sample Depth (ft)	Sample Date	Sample Time	Description	Screen Date	Sample Weight grams	609 (559-669) Kev Gross Counts CP5M	CPM	6.6 pCi/g Ra-226 Reference Soil CPM	Soil Gamma Screening Estimated Ra-226 pCi/g	SSL (< or >)	Sample Sent to Lab	Ra-226 pCi/g	Error Estimate pCi/g	MDC pCi/g
MCSB-01 1'	1	5/30/2023	1240	3" Roadbase gravel mixed with dark brown silty clay	5/30/2023	3000	2326	465	570	5.1	<	N	-	-	-
MCSB-01 2'	2	5/30/2023	1250	Brown loamy clay w/ gravel	5/30/2023	3000	2965	593	570	6.9	≈	Y	5.9	0.2	0.1
DSSB-04			MCSB-01 2' Field QA/QC Duplicate								≈	Y	5.8	0.2	0.1
MCSB-01 3'	3	5/30/2023	1300	Brown loamy soil	5/30/2023	3000	1240	248	570	2.1	<	Y	0.8	0.1	0.1
MCSB-01 4'	4	5/30/2023	1315	Brown loamy clay	5/30/2023	3000	1120	224	570	1.7	<	N	-	-	-
MCSB-02 1'	1	5/30/2023	1030	Red roadbase gravel	5/30/2023	3000	1243	249	570	2.1	<	N	-	-	-
MCSB-02 2'	2	5/30/2023	1040	silty clay mix w/ 3/4" gravel	5/30/2023	3000	1620	324	570	3.1	<	N	-	-	-
MCSB-02 3'	3	5/30/2023	1050	Grey, greenish black clay/bentonite	5/30/2023	3000	947	189	570	1.2	<	Y	0.8	0.1	0.1
MCSB-02 4'	4	5/30/2023	1100	Loose sandy silt w/ reddish gravel.	5/30/2023	3000	5236	1047	570	13.3	>	Y	12.6	0.4	0.2
MCSB-02 5.2'	5.2	5/30/2023	1115	Loose dark brown silty clay	5/30/2023	3000	1426	285	570	2.6	<	Y	1.4	0.1	0.1
MCSB-03 1'	1	5/30/2023	1340	Light brown loamy soil w/ small amounts gravel	5/30/2023	3000	3386	677	570	8.1	>	Y	5.9	0.2	0.1
MCSB-03 2'	2	5/30/2023	1350	Brown loamy soil	5/30/2023	3000	1201	240	570	2.0	<	Y	0.8	0.1	0.1
MCSB-03 3'	3	5/30/2023	1400	Brown sandy loam	5/30/2023	3000	1279	256	570	2.2	<	N	-	-	-
MCSB-04 1'	1	5/30/2023	935	0-6" Red roadbase gravel, 6"-12" Brown silty soil w/ gravel	5/30/2023	3000	1055	211	570	1.6	<	Y	1.4	0.1	0.1
MCSB-04 2'	2	5/30/2023	945	Gravel roadbase	5/30/2023	3000	1919	384	570	4.0	<	Y	3.4	0.2	0.1
MCSB-04 3.5'	3.5	5/30/2023	955	Mixed dark brown silty sandy and rocks	5/30/2023	3000	1017	203	570	1.4	<	N	-	-	-
MCSB-04 4.5'	4.5	5/30/2023	1005	Dark brown silty clay w/ gravel-cobbles	5/30/2023	3000	1274	255	570	2.2	<	N	-	-	-
MCSB-5 1'	1	5/24/2023	1010	0-6" gravel roadbase, 6"-12" brown silty sand	5/25/2023	3000	1183	237	555	1.9	<	N	-	-	-
MCSB-5 2'	2	5/24/2023	1020	Brown silty sandy soil	5/25/2023	3000	1309	262	555	2.3	<	N	-	-	-
MCSB-5 3'	3	5/24/2023	1030	Rocky w/ silty sand soil	5/25/2023	3000	1162	232	555	1.8	<	N	-	-	-
MCSB-5 4'	4	5/24/2023	1040	Rocky w/ silty sand soil	5/25/2023	3000	1262	252	555	2.1	<	Y	1.5	0.1	0.1
MCSB-5 6'	6	5/24/2023	1100	Gravel, sandy soil	5/25/2023	3000	6564	1313	555	17.0	>	Y	16.1	0.4	0.2
MCSB-5 7.5'	7.5	5/24/2023	1110	Dark brown silty soil	5/25/2023	3000	1150	230	555	1.8	<	Y	1.0	0.1	0.1
MCSB-06 1'	1	5/30/2023	822	0-8" red 1" roadbase gravel, 8"-12" dark brown soil gravel mix	5/30/2023	3000	19543	3909	570	53.3	>	N	-	-	-
MCSB-06 2'	2	5/30/2023	835	Dark brown packed clay with gravel	5/30/2023	3000	4112	822	570	10.1	>	N	-	-	-
MCSB-06 3.25'	3.25	5/30/2023	850	Dark brown packed clay with gravel	5/30/2023	3000	1477	295	570	2.7	<	N	-	-	-
MCSB-06 4.25'	4.25	5/30/2023	900	Dark brown silty clay	5/30/2023	3000	1091	218	570	1.7	<	N	-	-	-
MCSB-06 6'	6	5/30/2023	915	Rocky silty clay	5/30/2023	3000	1311	262	570	2.3	<	Y	1.9	0.2	0.1

Table 5 (Continued)
Mine Compound Test Pit Subsurface Soil Sample Field Ex-Situ Gamma Screening and Vendor Laboratory Results Summary

Sampling Data					Field Soil Screening Data							Laboratory Data			
Sample ID	Sample Depth (ft)	Sample Date	Sample Time	Description	Screen Date	Sample Weight grams	609 (559-669) Kev Gross Counts CP5M	CPM	6.6 pCi/g Ra-226 Reference Soil CPM	Soil Gamma Screening Estimated Ra-226 pCi/g	SSL (< or >)	Sample Sent to Lab	Ra-226 pCi/g	Error Estimate pCi/g	MDC pCi/g
MCSB-7 1'	1	5/24/2023	1220	Gravel/Roadbase w/ sand	5/25/2023	3000	10973	2195	555	29.3	>	N	-	-	-
MCSB-7 2'	2	5/24/2023	1232	Dark brown clay/bentonite silty	5/25/2023	3000	1333	267	555	2.3	<	N	-	-	-
MCSB-7 3'	3	5/24/2023	1246	light brown/greyish sandy silty	5/25/2023	3000	2872	574	555	6.6	≈	Y	6.3	0.2	0.1
DSSB-03				MCSB-7 3' Field QA/QC Duplicate								Y	6.2	0.2	0.1
MCSB-7 4.5'	4.5	5/24/2023	1300	Light brown silty sand mix	5/25/2023	3000	1396	279	555	2.5	<	Y	1.2	0.1	0.1
MCSB-7 5.5'	5.5	5/24/2023	1110	Light brown/grey clay soil	5/25/2023	3000	1150	230	555	1.8	<	N	-	-	-
MCSB-08 1'	1	5/23/2023	1035	Clay mixed w/ grey waste rock	5/23/2023	3000	29705	5941	586	81.8	>	N	-	-	-
MCSB-08 2'	2	5/23/2023	1045	Clay mixed w/ grey waste rock	5/23/2023	3000	34740	6948	586	95.9	>	N	-	-	-
MCSB-08 3'	3	5/23/2023	1058	Clay mixed w/ sandy grey waste rock	5/23/2023	3000	19380	3876	586	52.9	>	N	-	-	-
MCSB-08 5'	5	5/23/2023	1110	Clay mixed w/ sandy grey waste rock	5/23/2023	3000	33460	6692	586	92.3	>	Y	77.1	0.9	0.4
MCSB-08 6.5'	6.5	5/23/2023	1125	Black gravel/soil	5/23/2023	3000	1266	253	586	2.1	<	Y	1.1	0.1	0.1
MCSB-08 12'	12	5/23/2023	1145	Dark rocky clay	5/23/2023	3000	2421	484	586	5.4	≤	N	-	-	-
MCSB-9 1'	1	5/24/2023	825	Gravel/Roadbase w/ sand	5/25/2023	3000	4191	838	555	10.3	>	Y	7.9	0.3	0.1
MCSB-9 2'	2	5/24/2023	840	Brown sandy soil	5/25/2023	3000	980	196	555	1.3	<	Y	0.6	0.1	0.1
MCSB-9 3'	3	5/24/2023	850	Brown sandy soil	5/25/2023	3000	1056	211	555	1.6	<	N	-	-	-
MCSB-9 4'	4	5/24/2023	900	Brown sandy soil	5/25/2023	3000	1082	216	555	1.6	<	N	-	-	-
MCSB-10 1'	1	5/24/2023	915	Gravel/Roadbase w/ sand	5/25/2023	3000	920	184	555	1.2	<	Y	0.8	0.1	0.1
MCSB-10 2'	2	5/24/2023	922	Loose light brown sandy silty soil	5/25/2023	3000	913	183	555	1.2	<	Y			
MCSB-10 3'	3	5/24/2023	930	Dark brown clay mix w/ sandy silt	5/25/2023	3000	930	186	555	1.2	<	N	-	-	-
MCSB-10 4'	4	5/24/2023	943	Dark brown clay mix w/ sandy silt	5/25/2023	3000	1055	211	555	1.6	<	N	-	-	-
MCSB-11 1'	1	5/22/2023	1030	0-4" Roadbase gravel, 4"-12" grey rocky sandy waste rock	5/22/2023	3000	12907	2581	551	34.7	>	N	-	-	-
MCSB-11 2'	2	5/22/2023	1040	Dark grey rocky sandy waste rock	5/22/2023	3000	42761	8552	551	118.3	>	N	-	-	-
MCSB-11 3'	3	5/22/2023	1050	Grey waste rock w/ brown silty mix	5/22/2023	3000	15497	3099	551	42.0	>	N	-	-	-
MCSB-11 4'	4	5/22/2023	1104	Dark brown rocky loose soil	5/22/2023	3000	3871	774	551	9.4	>	Y	11.0	0.4	0.2
MCSB-11 5'	5	5/22/2023	1112	Dark brown clay mix w/ pebbles	5/22/2023	3000	2036	407	551	4.3	<	Y	2.8	0.2	0.1
MCSB-11 6'	6	5/23/2023	835	Dark brown sandy clay mix	5/23/2023	3000	1824	365	586	3.7	<	N	-	-	-

Table 5 (Continued)

Mine Compound Test Pit Subsurface Soil Sample Field Ex-Situ Gamma Screening and Vendor Laboratory Results Summary

Sampling Data					Field Soil Screening Data							Laboratory Data			
Sample ID	Sample Depth (ft)	Sample Date	Sample Time	Description	Screen Date	Sample Weight grams	609 (559-669) Kev Gross Counts CP5M	CPM	6.6 pCi/g Ra-226 Reference Soil CPM	Soil Gamma Screening Estimated Ra-226 pCi/g	SSL (< or >)	Sample Sent to Lab	Ra-226 pCi/g	Error Estimate pCi/g	MDC pCi/g
MCSB-12 1'	1	5/22/2023	928	0-6" Roadbase gravel, 6"-12" 3/4-1" gravel sandy	5/22/2023	3000	1957	391	551	4.1	<	Y	3.3	0.2	0.1
MCSB-12 2'	2	5/22/2023	935	Black gravel/soil	5/22/2023	3000	1793	359	551	3.6	<	N	-	-	-
MCSB-12 3'	3	5/22/2023	948	Hard packed brown silty sand	5/22/2023	3000	915	183	551	1.2	<	N	-	-	-
MCSB-12 4'	4	5/22/2023	956	Hard packed brown silty sand	5/22/2023	3000	923	185	551	1.2	<	N	-	-	-
MCSB-13 1'	1	5/22/2023	825	0-4" Roadbase gravel, 4"-12" dark silty clay	5/22/2023	3000	1197	239	551	1.9	<	Y	1.2	0.1	0.1
MCSB-13 2'	2	5/22/2023	839	Dark silty clay	5/22/2023	3000	1253	251	551	2.1	<	N	-	-	-
MCSB-13 3'	3	5/22/2023	851	Dark silty clay	5/22/2023	3000	1309	262	551	2.3	<	N	-	-	-
MCSB-13 4'	4	5/22/2023	905	Light brown sandstone silty	5/22/2023	3000	1210	242	551	2.0	<	N	-	-	-
MCSB-14 1'	1	5/23/2023	853	Dark brown topsoil, cobbles	5/23/2023	3000	1982	396	586	4.1	<	Y	3.8	0.2	0.1
MCSB-14 2'	2	5/23/2023	905	Grey sandy waste rock	5/23/2023	3000	1942	388	586	4.0	<	N	-	-	-
MCSB-14 3'	3	5/23/2023	915	Grey sandy waste rock	5/23/2023	3000	1856	371	586	3.8	<	N	-	-	-
MCSB-14 4'	4	5/23/2023	920	Grey sandy waste rock	5/23/2023	3000	1795	359	586	3.6	<	N	-	-	-
MCSB-14 5'	5	5/23/2023	932	Dark brown clay	5/23/2023	3000	1274	255	586	2.2	<	N	-	-	-
MCSB-14 6'	6	5/23/2023	950	Dark brown clay	5/23/2023	3000	1059	212	586	1.6	<	N	-	-	-
MCSB-15 1'	1	5/18/2023	1138	Light brown clay/sand mix	5/18/2023	3000	1503	301	539	2.8	<	Y	1.6	0.1	0.1
DSSB-02			MCSB-15 1' Field QA/QC Duplicate								<	Y	1.3	0.1	0.1
MCSB-15 2'	2	5/18/2023	1145	Light brown clay/sand-road base mixed	5/18/2023	3000	1389	278	539	2.5	<	N	-	-	-
MCSB-15 3'	3	5/18/2023	1158	Brown /greyish clay/sand mix	5/18/2023	3000	2206	441	539	4.8	<	N	-	-	-
MCSB-15 4'	4	5/18/2023	1212	Brown clay/sand mix	5/18/2023	3000	1415	283	539	2.6	<	N	-	-	-
MCSB-16 1'	1	5/18/2023	1045	Rocky w/ sand - grey/light green color	5/18/2023	3000	2498	500	539	5.6	≤	Y	4.8	0.2	0.2
MCSB-16 2'	2	5/18/2023	1100	Light brown alluvium, sandy-loam	5/18/2023	3000	1646	329	539	3.2	<	Y	2.4	0.2	0.1
MCSB-16 3'	3	5/18/2023	1110	Shale/sandy, light grey/brown	5/18/2023	3000	1587	317	539	3.0	<	N	-	-	-
MCSB-16 4'	4	5/18/2023	1120	Light borown sandy loam	5/18/2023	3000	1280	256	539	2.2	<	N	-	-	-
MCSB-17 1'	1	5/18/2023	845	Gravel/Roadbase w/ sand	5/18/2023	3000	974	195	539	1.3	<	Y	0.7	0.1	0.1
MCSB-17 2'	2	5/18/2023	857	Dark brown clay/loam	5/18/2023	3000	1070	214	539	1.6	<	N	-	-	-
MCSB-18 1'-1.5'	1-1.5	5/18/2023	948	Light brown sandy clay loam	5/18/2023	3000	1634	327	539	3.2	<	Y	2.6	0.2	0.1
MCSB-18 2'	2	5/18/2023	958	Dark brown/grey clay & bentonite mix w/ sandy loam	5/18/2023	3000	1321	264	539	2.3	<	N	-	-	-
MCSB-18 3'	3	5/18/2023	1010	Light brown sandy mixed w/ charcoal, rust & debris	5/18/2023	3000	1306	261	539	2.3	<	N	-	-	-

Table 6
Subsurface Ra-226 Contamination Depth Summary

Area	Test Pit ID	Test Pit Location Coordinates, NAD83 NM West (Feet)		Date	Depth of Soil Ra-226 Contamination >RCC (Feet bgs)
		Northing	Easting		
Windblown Area	WBSB-01	1581418.18	2782862.43	05/17/23	**0**
	WBSB-02	1581391.39	2782444.66	05/17/23	**0**
	WBSB-03	1581357.28	2783327.71	05/17/23	**0**
	WBSB-04	1581342.67	2782705.31	05/17/23	**0**
	WBSB-05	1581330.49	2783059.75	05/17/23	**0**
	WBSB-06	1581265.93	2782941.60	05/17/23	**0**
	WBSB-07	1581192.86	2783257.06	05/17/23	**0**
	WBSB-08	1581162.41	2782991.54	05/17/23	**0.5**
	WBSB-09	1580833.55	2782884.36	05/31/23	**0**
	WBSB-10	1580832.33	2783163.28	05/31/23	**0**
	WBSB-11	1580598.48	2783012.25	05/31/23	**0**
	WBSB-12	1580328.08	2782874.61	05/31/23	**0**
Ore Pad Area	OPSB-01	1580834.11	2782884.42	05/31/23	**≈15**
	OPSB-02	1580811.55	2783138.10	05/31/23	**4.2**
	OPSB-03	1580599.03	2783012.73	05/31/23	**4.3**
	OPSB-04	1580328.29	2782874.34	05/31/23	**4.5**
	OPSB-05	1580386.28	2783136.44	05/31/23	**3.0**
	OPSB-06	1580827.17	2783031.17	06/07/23	**3.0**
	OPSB-07	1580839.91	2782985.85	06/07/23	**3.0**
	OPSB-08	1580839.92	2782946.79	06/07/23	**≈15**
Mine Compound Area	MCSB-01	1579584.67	2783018.74	05/30/23	**<1.0**
	MCSB-02	1579573.01	2783166.70	05/30/23	**0 to 1.0 and 3.5 to 4.5**
	MCSB-03	1579343.02	2782883.30	05/30/23	**<1.0**
	MCSB-04	1579317.49	2783098.04	05/30/23	**<1.0**
	MCSB-05	1579183.08	2782701.94	05/24/23	**0 to 1.0 and 6.0 to 7.0**
	MCSB-06	1579162.34	2783064.40	05/24/23	**2.0**
	MCSB-07	1579040.09	2783009.78	05/24/23	**1.0**
	MCSB-08	1578849.18	2782249.48	05/23/23	**6.0**
	MCSB-09	1578849.89	2782581.54	05/23/23	**<0.5**
	MCSB-10	1578758.24	2782443.51	05/23/23	**<1.0**
	MCSB-11	1578610.92	2782257.53	05/22/23	**4.5**
	MCSB-12	1578520.57	2782569.17	05/22/23	**<1.0**
	MCSB-13	1578300.74	2782557.01	05/22/23	**0**
	MCSB-14	1578278.15	2782258.40	05/23/23	**0**
	MCSB-15	1578214.43	2782398.32	05/18/23	**<0.5**
	MCSB-16	1578084.02	2782313.13	05/18/23	**<1.0**
	MCSB-17	1578084.66	2782598.61	05/18/23	**0**
	MCSB-18	1578071.36	2782423.53	05/18/23	**0**

Figures

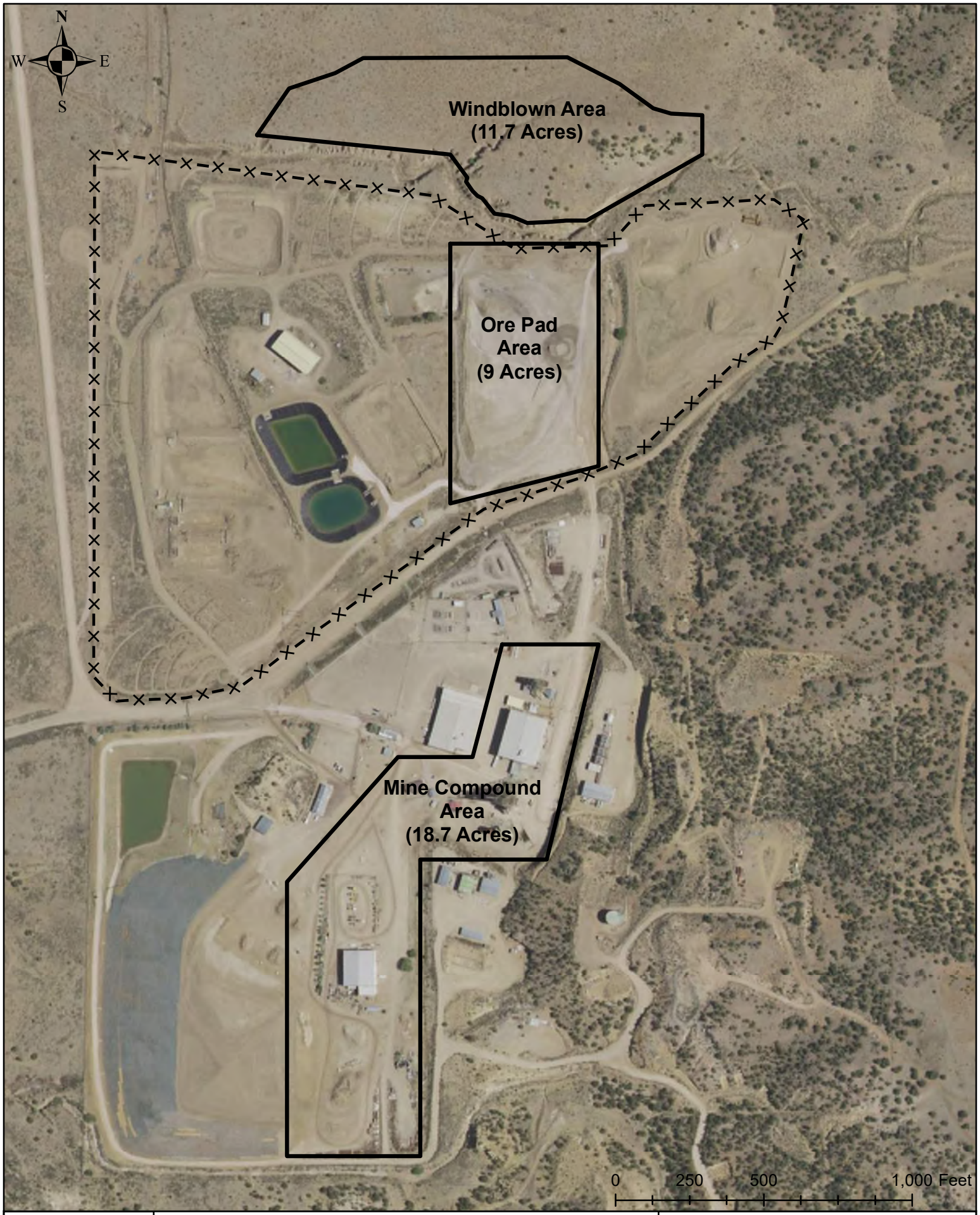

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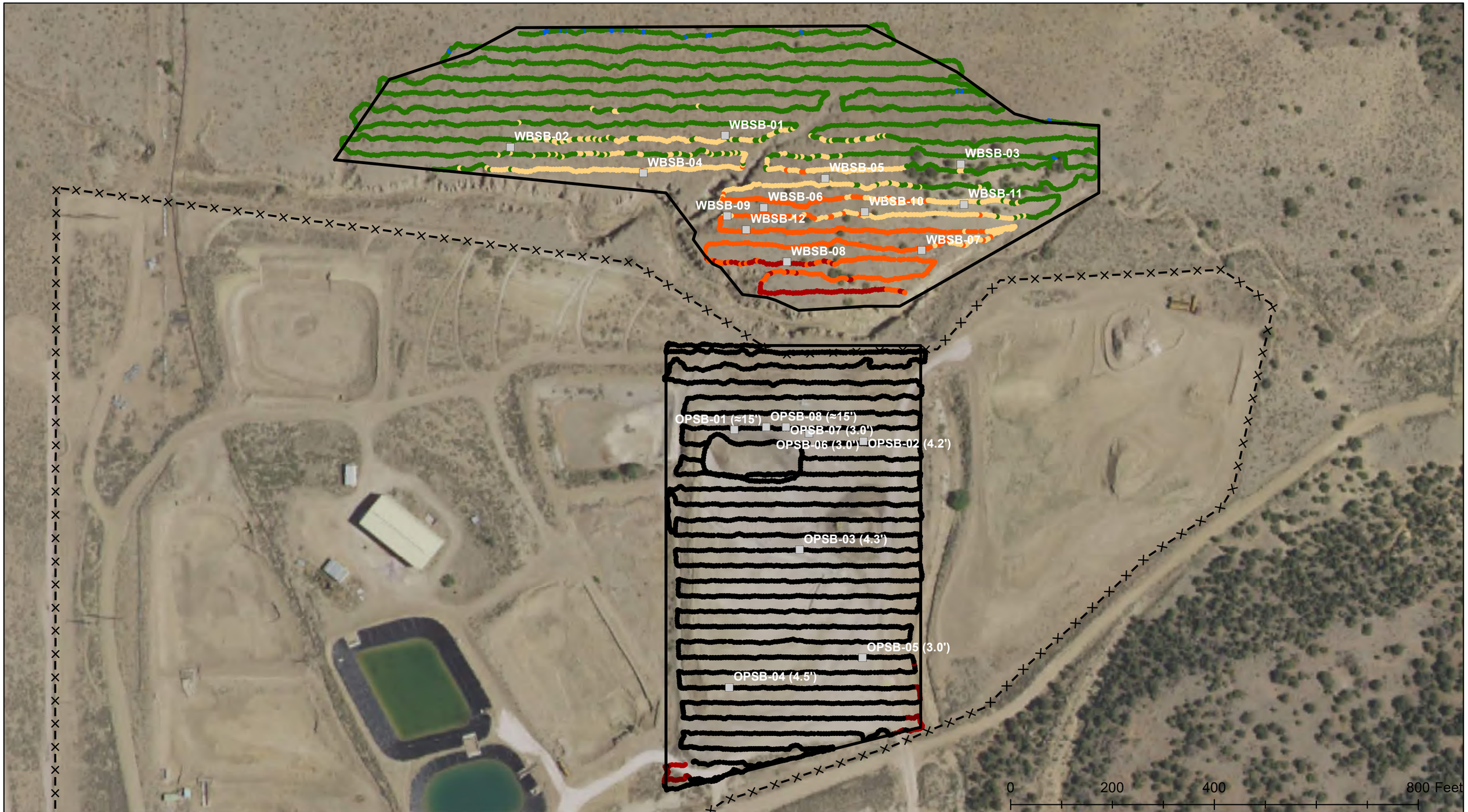
Figure 1
Mt. Taylor Mine Site
Soil Radiologic Characterization Areas

Legend

North Controlled Fence

Soil Radiologic Characterization Area



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AVM Environmental Services, Inc.

Figure 2
Mt. Taylor Mine Site
Windblown and Ore Pad Area Soil Sample/Test Pit Locations
and April 2023 Surface Gamma Scan Survey

Legend

Ra-226 pCi/g

- <1.8 pCi/g
- 1.9 - 6.8 pCi/g
- 6.9 - 10.0 pCi/g
- 10.1 - 20.0 pCi/g
- 20.1 - 30.0 pCi/g
- 30.1 - 40.0 pCi/g
- >40.1 pCi/g
- North Controlled Fence
- Soil Radiologic Characterization Area
- Soil Sample/Test Pit (>6.8 Ra-226 pCi/g RCC Depth) Location

Note: Ra-226 pCi/g is determined from surface soil gamma radiation scan using 2x2 NaI detector and Site specific gamma radiation level (cpm) correlation.

0 100 200 400 Feet

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W E
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Environmental Services, Inc.

Figure 3
Mt. Taylor Mine Site
Mine Compound Area Soil Sample/Test Pit Locations
and April 2023 Surface Gamma Scan Survey

Legend

Ra-226 pCi/g

- <1.8 pCi/g
- 1.9 - 6.8 pCi/g
- 6.9 - 10.0 pCi/g
- 10.1 - 20.0 pCi/g
- 20.1 - 30.0 pCi/g
- 30.1 - 40.0 pCi/g
- >40.1 pCi/g
- Soil Sample/Test Pit Location
- North Controlled Fence
- Soil Radiologic Characterization Area

Note: Ra-226 pCi/g is determined from surface soil gamma radiation scan using 2x2 NaI detector and Site specific gamma radiation level (cpm) correlation.

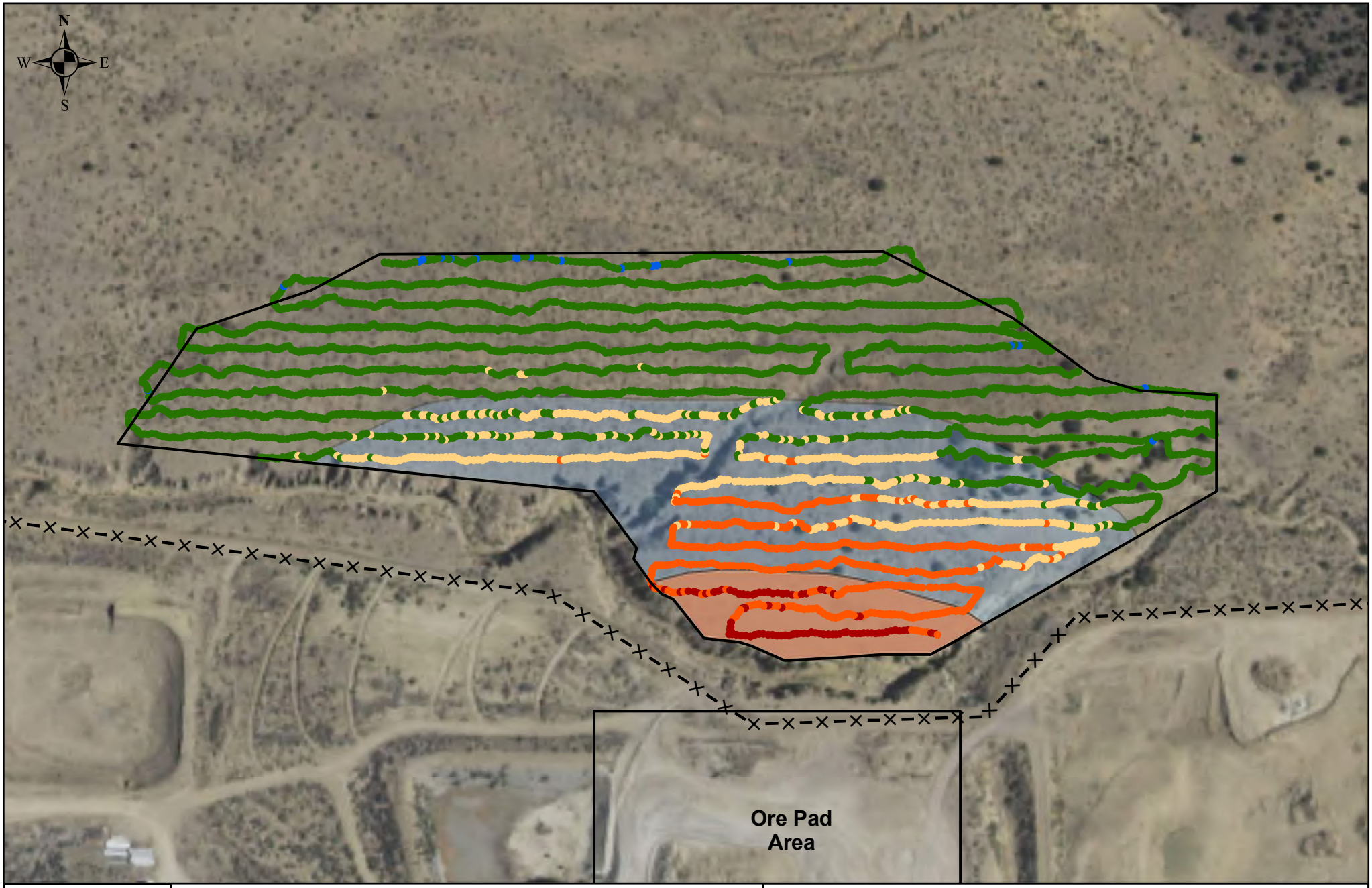


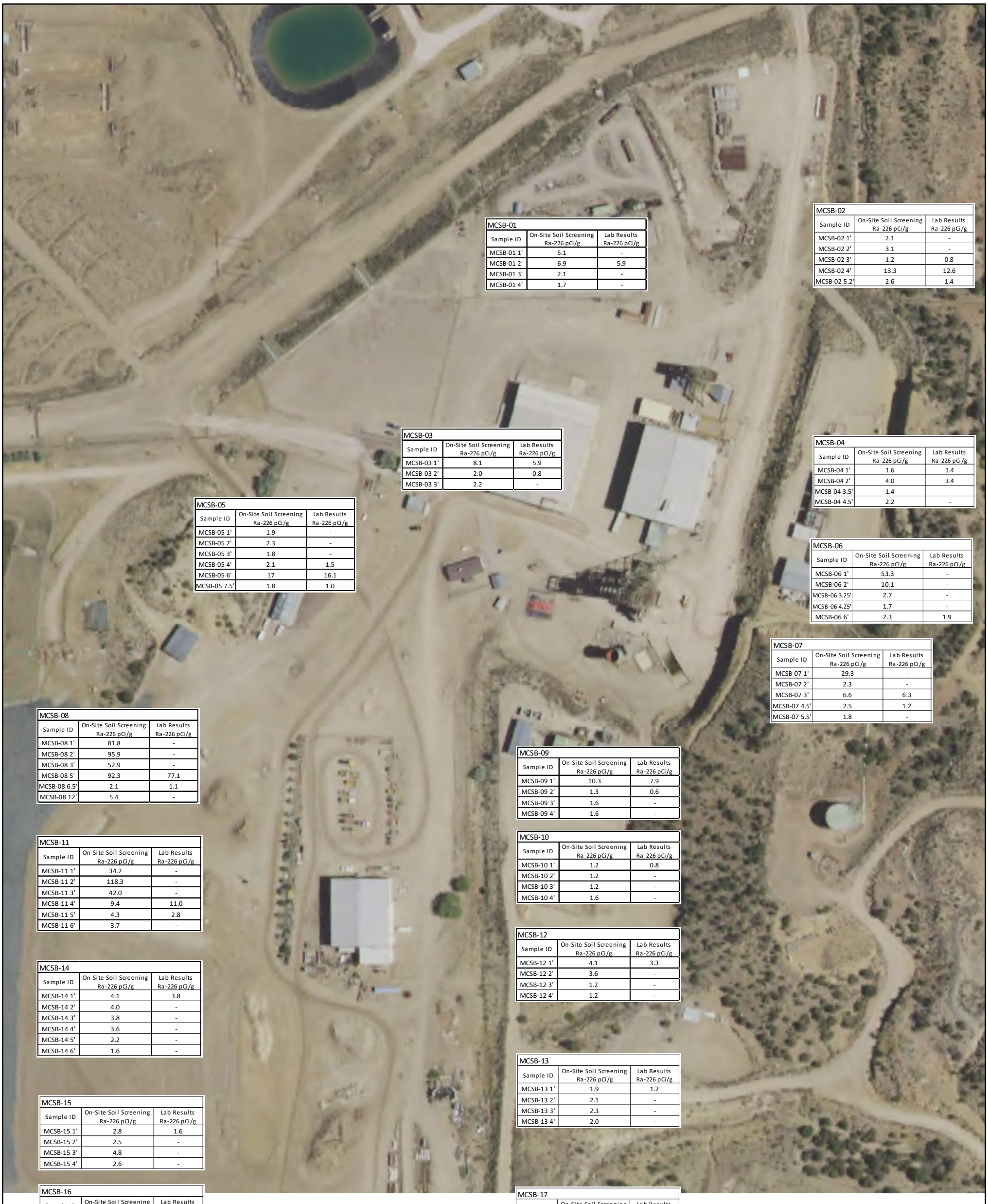
Figure 4
Mt. Taylor Mine Site
Windblown Area Surface Soil Ra-226 6.8 pCi/g
Release Criteria Contamination Boundary

Legend

Ra-226 pCi/g

- <1.8 pCi/g
- 1.9 - 6.8 pCi/g
- 6.9 - 10.0 pCi/g
- 10.1 - 20.0 pCi/g
- 20.1 - 30.0 pCi/g
- 30.1 - 40.0 pCi/g
- >40.1 pCi/g
- North Controlled Fence
- Surface Gamma Scan Survey Based 6.8 Ra-226 Boundary
- Soil Sample Based 6.8 Ra-226 pCi/g Boundary
- Soil Radiologic Characterization Area

Note: Ra-226 pCi/g is determined from surface soil gamma radiation scan using 2x2 NaI detector and Site specific gamma radiation level (cpm) correlation.



MCSB-01		
Sample ID	On-Site Soil Screening Ra-226 pCi/g	Lab Results Ra-226 pCi/g
MCSB-01 1'	5.1	-
MCSB-01 2'	6.9	5.9
MCSB-01 3'	2.1	-
MCSB-01 4'	1.7	-

MCSB-02		
Sample ID	On-Site Soil Screening Ra-226 pCi/g	Lab Results Ra-226 pCi/g
MCSB-02 1'	2.1	-
MCSB-02 2'	3.1	-
MCSB-02 3'	1.2	0.8
MCSB-02 4'	13.3	12.6
MCSB-02 5.2'	2.6	1.4

MCSB-03		
Sample ID	On-Site Soil Screening Ra-226 pCi/g	Lab Results Ra-226 pCi/g
MCSB-03 1'	8.1	5.9
MCSB-03 2'	2.0	0.8
MCSB-03 3'	2.2	-

MCSB-04		
Sample ID	On-Site Soil Screening Ra-226 pCi/g	Lab Results Ra-226 pCi/g
MCSB-04 1'	1.6	1.4
MCSB-04 2'	4.0	3.4
MCSB-04 3.5'	1.4	-
MCSB-04 4.5'	2.2	-

MCSB-05		
Sample ID	On-Site Soil Screening Ra-226 pCi/g	Lab Results Ra-226 pCi/g
MCSB-05 1'	1.9	-
MCSB-05 2'	2.3	-
MCSB-05 3'	1.8	-
MCSB-05 4'	2.1	1.5
MCSB-05 6'	17	16.1
MCSB-05 7.5'	1.8	1.0

MCSB-06		
Sample ID	On-Site Soil Screening Ra-226 pCi/g	Lab Results Ra-226 pCi/g
MCSB-06 1'	53.3	-
MCSB-06 2'	10.1	-
MCSB-06 3.25'	2.7	-
MCSB-06 4.25'	1.7	-
MCSB-06 6'	2.3	1.9

MCSB-07		
Sample ID	On-Site Soil Screening Ra-226 pCi/g	Lab Results Ra-226 pCi/g
MCSB-07 1'	29.3	-
MCSB-07 2'	2.3	-
MCSB-07 3'	6.6	6.3
MCSB-07 4.5'	2.5	1.2
MCSB-07 5.5'	1.8	-

MCSB-08		
Sample ID	On-Site Soil Screening Ra-226 pCi/g	Lab Results Ra-226 pCi/g
MCSB-08 1'	81.8	-
MCSB-08 2'	95.9	-
MCSB-08 3'	52.9	-
MCSB-08 5'	92.3	77.1
MCSB-08 6.5'	2.1	1.1
MCSB-08 12'	5.4	-

MCSB-09		
Sample ID	On-Site Soil Screening Ra-226 pCi/g	Lab Results Ra-226 pCi/g
MCSB-09 1'	10.3	7.9
MCSB-09 2'	1.3	0.6
MCSB-09 3'	1.6	-
MCSB-09 4'	1.6	-

MCSB-10		
Sample ID	On-Site Soil Screening Ra-226 pCi/g	Lab Results Ra-226 pCi/g
MCSB-10 1'	1.2	0.8
MCSB-10 2'	1.2	-
MCSB-10 3'	1.2	-
MCSB-10 4'	1.6	-

MCSB-11		
Sample ID	On-Site Soil Screening Ra-226 pCi/g	Lab Results Ra-226 pCi/g
MCSB-11 1'	34.7	-
MCSB-11 2'	118.3	-
MCSB-11 3'	42.0	-
MCSB-11 4'	9.4	11.0
MCSB-11 5'	4.3	2.8
MCSB-11 6'	3.7	-

MCSB-12		
Sample ID	On-Site Soil Screening Ra-226 pCi/g	Lab Results Ra-226 pCi/g
MCSB-12 1'	4.1	3.3
MCSB-12 2'	3.6	-
MCSB-12 3'	1.2	-
MCSB-12 4'	1.2	-

MCSB-14		
Sample ID	On-Site Soil Screening Ra-226 pCi/g	Lab Results Ra-226 pCi/g
MCSB-14 1'	4.1	3.8
MCSB-14 2'	4.0	-
MCSB-14 3'	3.8	-
MCSB-14 4'	3.6	-
MCSB-14 5'	2.2	-
MCSB-14 6'	1.6	-

MCSB-13		
Sample ID	On-Site Soil Screening Ra-226 pCi/g	Lab Results Ra-226 pCi/g
MCSB-13 1'	1.9	1.2
MCSB-13 2'	2.1	-
MCSB-13 3'	2.3	-
MCSB-13 4'	2.0	-

MCSB-15		
Sample ID	On-Site Soil Screening Ra-226 pCi/g	Lab Results Ra-226 pCi/g
MCSB-15 1'	2.8	1.6
MCSB-15 2'	2.5	-
MCSB-15 3'	4.8	-
MCSB-15 4'	2.6	-

MCSB-16		
Sample ID	On-Site Soil Screening Ra-226 pCi/g	Lab Results Ra-226 pCi/g
MCSB-16 1'	5.6	4.8
MCSB-16 2'	3.2	0.24
MCSB-16 3'	3.0	-
MCSB-16 4'	2.2	-

MCSB-17		
Sample ID	On-Site Soil Screening Ra-226 pCi/g	Lab Results Ra-226 pCi/g
MCSB-17 1'	1.3	0.7
MCSB-17 2'	1.6	-

MCSB-18		
Sample ID	On-Site Soil Screening Ra-226 pCi/g	Lab Results Ra-226 pCi/g
MCSB-18 1'-1.5'	3.2	2.6
MCSB-18 2'	2.3	
MCSB-18 3'	2.3	

0 125 250 500 Feet

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AVM Environmental Services, Inc.

Figure 5
Mt. Taylor Mine Site
Mine Compound Area Subsurface Soil Sample
On-Site Ex-Situ Soil Screening and Lab Results
and April 2023 Surface Gamma Scan Survey

Legend

Ra-226 pCi/g

- <1.8 pCi/g
- 1.9 - 6.8 pCi/g
- 6.9 - 10.0 pCi/g
- 10.1 - 20.0 pCi/g
- 20.1 - 30.0 pCi/g
- 30.1 - 40.0 pCi/g
- >40.1 pCi/g
- Soil Sample/Test Pit Location
- North Controlled Fence
- Soil Radiologic Characterization Area

Note: Ra-226 pCi/g is determined from surface soil gamma radiation scan using 2x2 NaI detector and Site specific gamma radiation level (cpm) correlation.

Appendix A
Surface Gamma Radiation Static Survey Field Forms

AVM Environmental Services, Inc.
Gamma Radiation Survey
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter L2241-2 S#287029 Detector SPA-3 #30

Instrument Calibration Date: 10-7-22, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ✓ No.

Survey Area/Unit Decsription Mt. Taylor Mine Site

Survey Date	Survey Point ID/Description	Survey Point Coordinate		Gamma Radiation Reading - CPM		Exposure Rate µR/hr	Comments/Notes
		Northing	Easting	Bare	Collimated (0.5"Pb)		
5-17-23	WBSB-01	1581412.80	2782866.15	26897	6297	33	
5-17-23	WBSB-02	1581389.51	2782444.25	26749	6350	33	
5-17-23	WBSB-03	1581356.39	2783329.27	24529	6073	31	
5-17-23	WBSB-04	1581338.82	2782705.91	30064	6069	37	
5-17-23	WBSB-05	1581328.80	2783062.43	31828	6945	41	
5-17-23	WBSB-06	1581271.37	2782942.27	35410	7288	47	
5-17-23	WBSB-07	1581187.28	2783252.71	37965	8183	47	
5-17-23	WBSB-08	1581164.47	2782987.54	55849	11042	70	
5-31-23	WBSB-09	1581254.28	2782870.27	36491	6599	44	
5-31-23	WBSB-10	1581262.56	2783140.16	34898	7286	48	
5-31-23	WBSB-11	1581277.45	2783335.44	29002	6602	34	
5-31-23	WBSB-12	1581227.90	2782907.89	40341	7153	55	
5-31-23	OPSB-01	1580834.11	2782884.42	2328550	716621	2100	
5-31-23	OPSB-02	1580811.55	2783138.10	505097	160357	650	
5-31-23	OPSB-03	1580599.03	2783012.73	700063	247434	900	
5-31-23	OPSB-04	1580328.29	2782874.34	408698	133199	450	
5-31-23	OPSB-05	1580386.28	2783136.44	446083	156044	450	
5-30-23	MCSB-01	1579584.67	2783018.74	35807	10538	41	
5-30-23	MCSB-02	1579573.01	2783166.70	34096	9678	39	
5-30 23	MCSB-03	1579343.02	2782883.30	34019	9832	39	
5-30-23	MCSB-04	1579317.49	2783098.04	34656	10811	40	

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Gamma Radiation Survey
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter L2241-2 S#287029 Detector SPA-3 #30

Instrument Calibration Date: 10-7-22, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ✓ No.

Survey Area/Unit Decsription Mt. Taylor Mine Site

Survey Date	Survey Point ID/Description	Survey Point Coordinate		Gamma Radiation Reading - CPM		Exposure Rate µR/hr	Comments/Notes
		Northing	Easting	Bare	Collimated (0.5"Pb)		
5-24-23	MCSB-05	1579183.08	2782701.94	52231	14892	65	
5-24-23	MCSB-06	1579162.34	2783064.40	31976 ~~31967~~	8548	37	
5-24-23	MCSB-07	1579040.09	2783009.78	52974	18511	65	
5-23-23	MCSB-08	1578849.18	2782249.48	107010	39626	125	
5-23-23	MCSB-09	1578849.89	2782581.54	28188	8193	33	
5-23-23	MCSB-10	1578758.24	2782443.51	39814	12984	43	
5-22-23	MCSB-11	1578610.92	2782257.53	53106	18055	60	
5-22-23	MCSB-12	1578520.57	2782569.17	29299	9090	33	
5-22-23	MCSB-13	1578300.74	2782557.01	21952	6254	25	
5-23-23	MCSB-14	1578278.15	2782258.40	21642	6366	25	
5-18-23	MCSB-15	1578214.43	2782398.32	48059	15633	51	
5-18-23	MCSB-16	1578084.02	2782313.13	30445	11069	33	
5-18-23	MCSB-17	1578084.66	2782598.61	18059	5891	19	
5-18-23	MCSB-18	1578071.36	2782423.53	17170	5046	19	

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Gamma Radiation Survey
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter 2241-2 S#287029 , Detector SPA-3 #30

Instrument Calibration Date: 10-7-22 , Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ✓ No.

Survey Area/Unit Decsription Mt. Taylor Mine Site

Survey Date	Survey Point ID/Description	Survey Point Coordinate		Gamma Radiation Reading - CPM		Exposure Rate µR/hr	Comments/Notes
		Northing	Easting	Bare	Collimated (0.5"Pb)		
5-31-23	MCSD-19	1578837	2782317	69850	24522	80	
5-31-23	MCSB-20	1578650	2782298	55167	18497	65	

Technician Signature _____, Reviewed by _____

Appendix B

Surface and Subsurface Contamination Field Investigation Documentation
Soil Sample Log Forms
Field Soil Sample Ex-Situ Gamma Radiation Screening Forms
Soil Sample COCs and Laboratory Analytical Result Reports)

AVM Environmental Services, Inc.
Subsurface Soil Sample Log Form
Mt. Taylor Mine Site

Sample ID	Sample Date/Time	Sample Depth	Sample Description	Comments/Notes
WBSB-02 0-0.5'	0815 5-17-23	0-6"	Light brown Alluvium Loam	Surface Soil dry
WBSB-02 1.0-1.5'	0820 5-17-23	1.0-1.5'	Brown Silty Clay	Moist soil
WBSB-04 0-0.5'	0835 5-17-23	0-6"	Light brown Alluvium - Loam	
WBSB-04 1.0'-1.5'	0845 5-17-23	1.0'-1.5'	Brown Silty Clay	
WBSB-01 0-0.5'	0855 5-17-23	0-6"	Light brown Alluvium Loam	
WBSB-01 1.0-1.5'	0906 5-17-23	1.0'-1.5'	Brown Silty clay	
WBSB-05 0-0.5'	0920 5-17-23	0-6"	Light brown Alluvium - Loam	
WBSB-05 1.0'-1.5'	0930 5-17-23	1.0'-1.5'	brown Silty Clay	
WBSB-03 0-0.5'	0942 5-17-23	0-6"	Light brown Alluvium - Loam	
WBSB-03 1.0'-1.5'	0948 5-17-23	1.0'-1.5'	brown silty clay	
WBSB-07 0-6"	1014 5-17-23	0-6"	Light brown Alluvium Loam	
WBSB-07 1.0'-1.5'	1020 5-17-23	1.0'-1.5'	brown silty clay	
WBSB-08 0-0.5" MS	1034 5-17-23	0-6"	Light brown Alluvium - Loam	
WBSB-08 1.0-1.5	1042 5-17-23	1.0'-1.5'	brown Silty Clay	

AVM Environmental Services, Inc.
Subsurface Soil Sample Log Form
Mt. Taylor Mine Site

Sample ID	Sample Date/Time	Sample Depth	Sample Description	Comments/Notes
WBSB-06 0-0.5'	1054 5-17-23	0-6"	Light brown Alluvium - Loam	
WBSB-06 1.0-1.5'	1100 5-17-23	1.0'-1.5'	brown silty clay	
WBSB-09 0-6"	5-31-23 @825	0-6"	light brown Alluvium Sandy	
WBSB-09 6-12"	5-31-23 @835	6-12"	brown Silty Clay	
WBSB-12 0-1"	5-31-23 @850	0-1"	Alluvium brown Sandy	
WBSB-12 2-6"	5-31-23 @900	2-6"	brown loam / Sand	
WBSB-10 0-6"	5-31-23 @910	0-6"	Alluvium light brown Sandy	
WBSB-10 6-12"	5-31-23 @915	6-12"	brown loam / Roots	
WBSB-11 0-6"	5-31-23 @935	0-6'	Alluvium light brown Sandy	
WBSB-11 6-10"	5-31-23 940	6-10"	Sandstone / Sand.	

AVM Environmental Services, Inc.
Subsurface Soil Sample Log Form
Mt. Taylor Mine Site

Sample ID	Sample Date/Time	Sample Depth	Sample Description	Comments/Notes
MCSB-17 1' 5-18-23	5-18-23 845	1'		0-1' gravel/Road base @1' appears native
MCSB-17 2	5-18-23 857	2'		native to Depth of 5.5'
MCSB-18-1-1.5	5-18-23 948	1-1.5'		
MCSB-18 2	5-18-23 958	2'	clay Sand loam Dark Conglomerate multi-Color	Metal Debris @ 2.5'
MCSB-18 3	5-18-23 1010	3'	Charcoal-Rust light Brown	
MCSB-18 4	5-18-23 1018	4'	Clay Dk Brown	native @ ± 5'
MCSB-16 1	5-18-23 1045	1'	Rocky light grey/green	Top 1' ± 5" soil) ± 5" gravel
MCSB-16 2	5-18-23 1100	2'	light brown Alluvium/Sand	
MCSB-16 3	5-18-23 1110	3'	light grayish/Brown mix of Shale	
MCSB-16 4	5-18-23 1120	4'		
MCSB-15 1	5-18-23 1138	1'	Brown clay/Sand	from borrow A or B
MCSB-15 2	5-18-23 1145	2'	" " /gravel Roadbase	
MCSB-15 3	5-18-23 1158	3'	Brown Clay/Sand grey	
MCSB-15 4	5-18-23 1212	4'	Brown Clay/Sand	

AVM Environmental Services, Inc.
Subsurface Soil Sample Log Form
Mt. Taylor Mine Site

Sample ID	Sample Date/Time	Sample Depth	Sample Description	Comments/Notes
MCSB-13 - 1'	5-22-23 825	1'	0-4" Road base 4-12" Dark Silt Clay	
MCSB-13 2'	5-22-23 839	2'	1'-2' Dark Silt Clay	
MCSB-13 3'	5-22-23 851	3'	Light/Dark Silt Clay	
MCSB-13 4'	5-22-23 905	4'	Sandstone light brown Sandy/Silt Soil	some @ 6'
MCSB-12 1'	5-22-23 928	1'	0-6" Road base 6"-12" Large gravel ¾"-1"	
MCSB-12 2'	5-22-23 935	2'	odor/DRO Dark/Black gravel	
MCSB-12 3'	5-22-23 948	3'	Brown Silty/Sandy Hard pack	
MCSB-12 4'	5-22-23 956	4'	" " "	
MCSB-11 1'	5-22-23 1030	1'	0-4" Road base 4-12" Grey Rocky loose Waste Rock	
MCSB-11 2'	5-22-23 1040	2'	White Rock Dark Grey Rocky loose Soil	
MCSB-11 3'	5-22-23 1050	3'	Grey Waste Rock/Brown Silty mix	
MCSB-11 4'	5-22-23 1104	4'	Dark brown/Rocky = Interface	
MCSB-11 5'	5-22-23 1112	5'	Pebbles Dark brown/~~Rocky~~ Clay	appears native @ 6.5'
MCSB-11 6'	5-23-23 835	6'	Dark brown Clay/Sand	

AVM Environmental Services, Inc.
Subsurface Soil Sample Log Form
Mt. Taylor Mine Site

Sample ID	Sample Date/Time	Sample Depth	Sample Description	Comments/Notes
MCSB-14 1'	5-23-23 853	1'	Cobble Dark brown topsoil maybe backfill	
MCSB-14 2'	5-23-23 905	2'	Grey/mine waste	metal Debris @ 1-2'
MCSB-14 3'	5-23-23 915	3'	" " "	metal Debris hoses etc.
MCSB-14 4'	5-23-23 920	4'	" " "	Debris
MCSB-14 5'	5-23-23 932	5'	Dark brown Clay	
MCSB-14 6'	5-23-23 950	6'	" "	Clay & Charcoal Past 6'
MCSB-08 1'	5-23-23 1035	1'	Clay mix w/ Mine Waste Rock	
MCSB-08 2'	5-23-23 1045	2'	" " "	
MCSB-08 3'	5-23-23 1058	3'	" " " Sandy	
MCSB-08 5'	5-23-23 1110	5'	Sandy/clay mine Waste	3'-5' Same material
MCSB-08 6.5'	5-23-23 1125	6.5'	Sandy mix Dark/Black DRO smell	2'-6' Same waste sandy
MCSB-08 ~~11.5'~~ 12'	5-23-23 1145	12'	Dark Rocky Clay	
MCSB-09 1'	5-24-23 825	1'	0-6" Road base 6-12" Road base	0-2' Road base
MCSB-09 2'	5-24-23 840	2'	Brown Sandy Soil	
MCSB-09 3'	5-24-23 850	3'	" " "	

AVM Environmental Services, Inc.
Subsurface Soil Sample Log Form
Mt. Taylor Mine Site

Sample ID	Sample Date/Time	Sample Depth	Sample Description	Comments/Notes
MCSB-09 4'	5-24-23 900	4'	Brown Sandy Soil	
MCSB-10 1'	5-24-23 915	1'	Road Base	
MCSB-10 2'	5-24-23 922	2'	unconsolidated light brown silty Sand	
MCSB-10 3'	5-24-23 930	3'	Clay Dark Brown " "	
MCSB-10 4'	5-24-23 943	4'	clay Dark Brown / Sandy Silty	
MCSB-10 5'	—	5'	Dark Brown / Sandy - Clay	
MCSB-5 1'	5-24-23 @1010	1'	0-6" Road base Brown Silty Soil	
MCSB-5 2'	5-24-23 @1020	2'	Brown silty Soil	
MCSB-5 3'	5-24-23 @1030	3'	" " " Rocky	
MCSB-5 4'	5-24-23 @1040	4'	" " " "	
MCSB-5 ~~5~~ 6'	5-24-23 @1100	6'	gravel / Sandy Rocky	6'-7' gravel Sandy Road base
MCSB-5 7.5'	5-24-23 @1110	7.5'	Dark brown Silty Soil	Starts @ ≈ 7'
MCSB-07 1'	5-24-23 @1220	1'	0 ≈ 8" Gravel	
MCSB-07 2'	5-24-23 @1232	2'	Dark Clay / bentonite Silts	
MCSB-07 3'	5-24-23 @1246	3'		

AVM Environmental Services, Inc.
Subsurface Soil Sample Log Form
Mt. Taylor Mine Site

Sample ID	Sample Date/Time	Sample Depth	Sample Description	Comments/Notes
MCSB-07 4.5'	5-24-23 @1300	4.5'	light brown Sandy Silty	
MCSB-07 5.5'	5.24.23 @1310	5.5'	light brown Clay / grey clay	
MCSB-07 6.6'	5-24-23 @	6.6'	No Sample Same as above	
MCSB-06 1'	5-30-23 @822	1'	0-8" Road Road base 1" Dark brown Soil gravel mix	VP ~~Slight Ore Grade~~
MCSB-06 2'	5-30-23 @835	2'	Dark brown Rock clay w gravel 1"	
MCSB-06 3.25	5-30-23 @850	3.25	" " " "	Metal Debris @ 2.5'
MCSB-06 4.25'	5-30-23 @900	4.25	Dark brown Silty/clay	~4' non-mineralized ore body.
MCSB-06 6'	5-30-23 @915	6'	Silty/Rocky w/ Clay	
MCSB-06 6.5'	5-30-23	6.5	No Sample Clay w/ Silty/loose	
MCSB-04 1'	5-30-23 @935	1'	0-6" Road base Red 6-12" Brown Silty w/ gravel	
MCSB-04 2'	5-30-23 @945	2'	All Road base 0-2' light Brown	
MCSB-04 3.5'	5-30-23 @955	3.5'	Darkish Rocky Silty Sandy Mix Rocky	
MCSB-04 4.5'	5-30-23 @1005	4.5'	Dark brown Silty w/ light gravel/cobble Clay	
MCSB-04 5'-6'	5-30-23	5'-6'	Clay Consolidated Silty Dark brown	bank

AVM Environmental Services, Inc.
Subsurface Soil Sample Log Form
Mt. Taylor Mine Site

Sample ID	Sample Date/Time	Sample Depth	Sample Description	Comments/Notes
MCSB-02 1'	5-30-23 @ 1030	1'	0-6" Red Road base	
MCSB-02 2'	5-30-23 @ 1040	2'	Clay Silt mix w/ 3/4" gravel	
MCSB-02 3'	5-30-23 @ 1050	3'	grey clay / silty bentonite greenish / black	
MCSB-02 4'	5-30-23 @ 1100	4'	loose, sandy silt / gravel light brown (reddish) gravel	DRO odor (slight)
MCSB-02 5.2'	5-30-23 @ 1115	5.2'	dark brown, silty unconsolidated clay	
MCSB-02 6.2'	5-30-23 @	6.2'	" " " no Sample	

AVM Environmental Services, Inc.
Subsurface Soil Sample Log Form
Mt. Taylor Mine Site

Sample ID	Sample Date/Time	Sample Depth	Sample Description	Comments/Notes
MCSB-01 1'	5-30-23 @1240	1'	3" gravel road base ~~dark~~ brown clay mixed w/ gravel	
MCSB-01 - 2'	5-30-23 @1250	2'	brown loomy ~~&~~ clay w/gravel	
MCSB-01 3'	5-30-23 @900	3'	brown loomy no gravel	
MCSB-01 4'	5-30-23 @0115	4'	brown loom/clay no gravel	
MCSB-01 6'	5-30-23 no sample	6'	" " "	
MCSB-03 1'	5-30-23 @0140	1'	light brown loomy w/some gravel	0-8" roadbase gravel 3/4"
MCSB-03 2'	5-30-23 @0150	2'	brown loomy no gravel	
MCSB-03 3'	5-30-23 @0200	3'	brown sandy/loom no gravel	
MCSB-03 4.25'	NO sample		" " "	

AVM Environmental Services, Inc.
Subsurface Soil Sample Log Form
Mt. Taylor Mine Site

Sample ID	Sample Date/Time	Sample Depth	Sample Description	Comments/Notes
OPSB-04 0-4'	6-1-23 @815	0-4'	0-4' Grey Waste Rock	
OPSB-04 4.8', ~~4.83~~ UP	6-1-23 @825	4.8', ~~4.10~~ UP	Dark Clay / brown Silty	
OPSB-04 4.5'	6-1-23 @835	4.5'	Mix Clay & Waste Rock	Interface
OPSB-03 0-4'	6-1-23 @850	0-4'	Waste Rock light/Dark Grey	
OPSB-03 4.2'	6-1-23 @910	4.2'	mix Clay / waste Rock	Interface
OPSB-03 4.5'	6-1-23 @925	4.5'	Dark brown Clay	
OPSB-01 0-13'	6-1-23 @1025	0-13'	Waste Rock - Grey	
OPSB-01 13.5'	6-1-23 @1020	13.5'	Waste Rock - Grey	limit of backhoe
OPSB-02 4.5'	6-1-23 @1100	4.5'	Dark Clay / waste Rock	Interface
OPSB-02 0-4'	6-1-23 @1115	0-4'	Dark Grey - Sandy waste Rock	
OPSB-02 5.5'	6-1-23 @1120	5.5'	light brown Sandy Silty	
OPSB-05 3'	6-1-23 @1140	3'	Dark Clay / Waste Rock	Interface
OPSB-05 3.75'	6-1-23 @1155	3.75'	light brown Sandy Silty	
OPSB-05 0-3'	6-1-23 @1200	0-3'	Waste Rock	

AVM Environmental Services, Inc.
Field Soil Sample Gamma Radiation Screening Form
Mt. Taylor Mine Site

Instrumentation : Scaler/Ratemeter L2221 SN 68782, Detector L44-20 S# 295573
Instrument Calibration Date: 5-10-23, Instrument Function Check Performed: ✓
Survey Area/Unit Decsription Mt. Taylor Mine Site

Area exposure rate: 10-12

Date/Time	Soil Sample ID	Sample Weight Grams	609 (559-669) Kev Gross Counts, CP5M	Weight Corrected CP5M	CPM	Reference Soil Compare (< or >)	Comments
5-17-23	Blank	–	349		70		
5-17-23	6.6 pCi/g Ra-226	3000	2682		536		
5-17-23	WBSB 01 0-6" @855	3000	1406		282		
5-17-23	WBSB 01 1'-1.5' @906	3000	1244		249		
5-17-23	WBSB 02 0-6" @815 ~~820~~	3000	1577		315		
5-17-23	WBSB 02 1'-1.5' @920	2958	1008	1022	204		
5-17-23	WBSB 03 0-6" 5-17-23 @942	3000	2039		408		
5-17-23	WBSB 03 1'-1.5' 5-17-23 @948	3000	1136		227		
5-17-23	WBSB 04 0-6" 5-17-23 @835	3000	1521		304		
5-17-23	WBSB 04 1'-1.5' 5-17-23 @845	2840	1189	1256	251		
5-17-23	WBSB 05 0-6" 5-17-23 @920	3000	1747		349		
5-17-23	WBSB 05 1'-1.5' 5-17-23 @930	2835	1086	1149	230		QA/QC CPSM: 1093
5-17-23	WBSB 06 0-6" 5-17-23 @1054	3000	1406		281		
5-17-23	WBSB-06 1-1.5' 5-17-23 @1100	2876	1004	1047	209		
5-17-23	WBSB-07 0-6" 5-17-23 @1014	3000	2272		454		

Technician Signature _____, Reviewed by MO

AVM Environmental Services, Inc.
Field Soil Sample Gamma Radiation Screening Form
Mt. Taylor Mine Site

Instrumentation : Scaler/Ratemeter L2221 S# 68782 , Detector L44-20 S# 295573
Instrument Calibration Date: 5-10-23 , Instrument Function Check Performed: ✓
Survey Area/Unit Decsription Mt. Taylor Mine Site

Area exposure rate: 10-12

Date/Time	Soil Sample ID	Sample Weight Grams	609 (559-669) Kev Gross Counts, CP5M	Weight Corrected CP5M	CPM	Reference Soil Compare (< or >)	Comments
5-17-23	WBSB-07 1'-1.5' 5-17-23 @ 930	3000	1082		216		
5-17-23	WBSB-08 0-6" 5-17-23 @ 1034	3000	4140		828		QA/QC CPSM: 4183
5-17-23	WBSB-08 1'-1.5' 5-17-23 @ 1042	3000	1118		224		
5-18-23	Blank		330		66		
5-18-23	6.6pCi/g R_a-226	3000	2695		539		
5-18-23	MCSB-15 4 5-18-23 @ 1212	3000	1415		283		
5-18-23	MCSB-16 4 5-18-23 @ 1120	3000	1280		256		
5-18-23	MCSB-17 2' 5-18-23 @ 857	3000	1070		214		
5-18-23	MCSB 18 3' 5-18-23 @ 1010	3000	1306		261		
5-18-23	MCSB 15 3' 5-18-23 @ 1158	3000	2206		441		
5-18-23	MCSB 16 3' 5-18-23 @ 1110	3000	1587		317		
5-18-23	MCSB 17 1' 5-18-23 @ 845	3000	974		195		
5-18-23	MCSB 18 2' 5-18-23 @ 958	3000	1321		264		
5-18-23	MCSB 15 2' 5-18-23 @ 1145	3000	1389		278		
5-18-23	MCSB 16 2' 5-18-23 @ 1100	3000	1646		329		QA/QC CPSM: 1621

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Field Soil Sample Gamma Radiation Screening Form
Mt. Taylor Mine Site

Instrumentation : Scaler/Ratemeter L2221 S# 68782, Detector L44-20 S# 295573
Instrument Calibration Date: 5-10-23, Instrument Function Check Performed: ✓
Survey Area/Unit Decsription Mt. Taylor Mine Site

Area exposure rate: 10-12

Date/Time	Soil Sample ID	Sample Weight Grams	609 (559-669) Kev Gross Counts, CP5M	Weight Corrected CP5M	CPM	Reference Soil Compare (< or >)	Comments
5-18-23	MCSB-18 1-1.5' 5-18-23 @ 943	3000	1634		327		
5-18-23	MCSB-15 1' 5-18-23 1138	3000	1503		301		
5-18-23	MCSB-16 1' 5-18-23 @ 1045	3000	2498		500		
5-22-23	Blank	—	342		68		
5-22-23	6.6 pCi/g Ra-226	3000	2755		551		
5-22-23	MCSB-11 5' 5-22-23 @ 1112	3000	2036		407		
5-22-23	MCSB-12 4' 5-22-23 @ 956	3000	923		185		
5-22-23	MCSB-13 4' 5-22-23 @ 905	3000	1210		242		
5-22-23	MCSB-12 3' 5-22-23 @ 948	3000	915		183		
5-22-23	MCSB-12 2' 5-22-23 @ 935	3000	1793		359		
5-22-23	MCSB-12 1' 5-22-23 @ 928	3000	1957		391		
5-22-23	MCSB-13 3' 5-22-23 @ 851	3000	1309		262		
5-22-23	MCSB-13 2' 5-22-23 @ 839	3000	1253		251		
5-22-23	MCSB-13 1' 5-22-23 @ 825	3000	1197		239		
5-22-23	MCSB-11 4' 5-22-23 @ 1104	3000	3871		774		QA/QC CP5M: 3855

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Field Soil Sample Gamma Radiation Screening Form
Mt. Taylor Mine Site

Instrumentation : Scaler/Ratemeter L2221 S#68782 , Detector L44-20 S# 295573
Instrument Calibration Date: 5-10-23 , Instrument Function Check Performed: ✓
Survey Area/Unit Decsription Mt. Taylor Mine Site

Area exposure rate: 10-12

Date/Time	Soil Sample ID	Sample Weight Grams	609 (559-669) Kev Gross Counts, CP5M	Weight Corrected CP5M	CPM	Reference Soil Compare (< or >)	Comments
5-22-23	MCSB-11 3' 5-22-23 @ 1050	3000	15497		3099		
5-22-23	MCSB-11 2' 5-22-23 @ 1040	3000	42761		8552		
5-22-23	MCSB-11 1' 5-22-23 @ 1030	3000	12907		2581		
5-23-23	Blank		357		71		
5-23-23	6.6 pCi/g Ra-226	3000	2930		586		
5-23-23	MCSB-11 6' 5-23-23 @ 835	3000	1824		365		
5-23-23	MCSB-08 12' 5-23-23 @ 1145	3000	2421		484		
5-23-23	MCSB-14 6' 5-23-23 @ 950	3000	1059		212		
5-23-23	MCSB-14 5' 5-23-23 @ 932	3000	1274		255		
5-23-23	MCSB-08 6.5' 5-23-23 @ 1125	3000	1266		253		
5-23-23	MCSB-08 1' 5-23-23 @ 1035	3000	29705		5941		
5-23-23	MCSB-14 1' 5-22-23 @ 853	3000	1982		396		
5-23-23	MCSB-14 4' 5-23-23 @ 920	3000	1795		359		
5-23-23	MCSB-14 3' 5-23-23 @ 915	3000	1856		371		
5-23-23	MCSB-14 2' 5-23-23 @ 905	3000	1942		388		QA/QC CPGM: 1942

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Field Soil Sample Gamma Radiation Screening Form
Mt. Taylor Mine Site

Instrumentation : Scaler/Ratemeter L2221 S# 68782, Detector L44-20 S# 295573
Instrument Calibration Date: 5-10-23, Instrument Function Check Performed: ✓
Survey Area/Unit Decsription Mt Taylor Mine Site

Area exposure rate: 10-12

Date/Time	Soil Sample ID	Sample Weight Grams	609 (559-669) Kev Gross Counts, CP5M	Weight Corrected CP5M	CPM	Reference Soil Compare (< or >)	Comments
5-23-23	MCSB-8 5' 5-23-23 @1110	3000	33460		6692		
5-23-23	MCSB-8 3' 5-23-23 @1058	3000	19380		3876		
5-23-23	MCSB-8 2' 5-23-23 @1045	3000	34740		6948		
5-25-23	Blank	—	363		73		
5-25-23	6.6 pCi/g R_a-226	3000	2776		555		
5-25-23	MCSB-10 4' 5-24-23 @943	3000	1055		211		
5-25-23	MCSB-9 4' 5-24-23 @900	3000	1082		216		
5-25-23	MCSB-7 5.5' 5-24-23 @1310	3000	1607		321		
5-25-23	MCSB-5 7.5' 5-24-23 @1110	3000	1150		230		
5-25-23	MCSB-9 3' 5-24-23 @850	3000	1056		211		
5-25-23	MCSB-9 2' 5-24-23 @840	3000	980		196		
5-25-23	MCSB-9 1' 5-24-23 @825	3000	4191		838		
5-25-23	MCSB-10 3' 5-24-23 @930	3000	930		186		
5-25-23	MCSB-10 2' 5-24-23 @922	3000	913		183		
5-25-23	MCSB-10 1' 5-24-23 @915	3000	920		184		QA/QC CP5M: 935

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Field Soil Sample Gamma Radiation Screening Form
Mt. Taylor Mine Site

Instrumentation : Scaler/Ratemeter L 2221 S#68782, Detector L 44-20 S# 295573
Instrument Calibration Date: 5-10-23, Instrument Function Check Performed: ✓
Survey Area/Unit Decsription Mt. Taylor Mine Site

Area exposure rate: 10-12

Date/Time	Soil Sample ID	Sample Weight Grams	609 (559-669) Kev Gross Counts, CP5M	Weight Corrected CP5M	CPM	Reference Soil Compare (< or >)	Comments
5-25-23	MCSB-05 6' 5-24-23 @1100	3000	6564		1313		
5-25-23	MCSB-05 4' 5-24-23 @1040	3000	1262		252		
5-25-23	MCSB-05 3' 5-24-23 @1030	3000	1162		232		
5-25-23	MCSB-05 2' 5-24-23 @1020	3000	1309		262		
5-25-23	MCSB-05 1' 5-24-23 @1010	3000	1183		237		
5-25-23	MCSB-07 4.5' 5-24-23 @1300	3000	1396		279		
5-25-23	MCSB-07 3' 5-24-23 @1246	3000	2872		574		
5-25-23	MCSB-07 2' 5-24-23 @1232	3000	1333		267		
5-25-23	MCSB-07 1' 5-24-23 @1220	3000	10973		2195		
5-30-23	Blank	—	360		72		
5-30-23	6.6 pCi/g Ra_{-226}	3000	2848		570		
5-30-23	MCSB-06 6' 5-30-23 @915	3000	1311		262		
5-30-23	MCSB-04 4.5' 5-30-23 @1005	3000	1274		255		
5-30-23	MCSB-02 5.2' 5-30-23 @1115	3000	1426		285		
5-30-23	MCSB-02 4' 5-30-23 @1100	3000	5236		1047		

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Field Soil Sample Gamma Radiation Screening Form
Mt. Taylor Mine Site

Instrumentation : Scaler/Ratemeter L2221 S/N 68782, Detector L44-20 S/N 295573
Instrument Calibration Date: 5-10-23, Instrument Function Check Performed: ✓
Survey Area/Unit Decsription Mt. Taylor Mine Site

Area exposure rate: 10-12

Date	Soil Sample ID	Sample Weight Grams	609 (559-669) Kev Gross Counts, CP5M	Weight Corrected CP5M	CPM	Reference Soil Compare (< or >)	Comments
5-30-23	MCSB-02 3' 5-30-23 @1050	3000	947		189		
5-30-23	MCSB-02 2' 5-30-23 @1040	3000	1620 VP 3000		324		
5-30-23	MCSB-02 1' 5-30-23 @1030	3000	1243 VP 30		249		
5-30-23	MCSB-06 4.25 5-30-23 @900	3000	1091		218		
5-30-23	MCSB-06 3.25 5-30-23 850	3000	1477		295		
5-30-23	MCSB-06 2' 5-30-23 @835	3000	4112		822		QA/QC CP5M: 4168
5-30-23	MCSB-06 1' 5-30-23 @822	3000	19543		3909		
5-30-23	MCSB-01 4' 5-30-23 @1315	3000	1120		224		
5-30-23	MCSB-04 3.5' 5-30-23 @955	3000	1017		203		
5-30-23	MCSB-04 2' 5-30-23 @945	3000	1919		384		
5-30-23	MCSB-04 1' 5-30-23 @935	3000	1055		211		
5-30-23	MCSB-01 3' 5-30-23 @1300	3000	1240		248		
5-30-23	MCSB-01 2' 5-30-23 @1250	3000	2965		593		
5-30-23	MCSB-01 1' 5-30-23 @1240	3000	2326		465		
5-30-23	MCSB-03 3' 5-3-23 @1400	3000	1279		256		

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Field Soil Sample Gamma Radiation Screening Form
Mt. Taylor Mine Site

Instrumentation : Scaler/Ratemeter L2221 S#68782, Detector L44-20 S# 295573
Instrument Calibration Date: 5-10-23, Instrument Function Check Performed: ✓
Survey Area/Unit Decsription Mt taylor Mine Site

Area exposure rate: 10-12

Date	Soil Sample ID	Sample Weight Grams	609 (559-669) Kev Gross Counts, CP5M	Weight Corrected CP5M	CPM	Reference Soil Compare (< or >)	Comments
5-30-23	MCSB-03 2' 5-30-23 @1350	3000	1201		240		QA/QC CP5M: 1194
5-30-23	MCSB-03 1' 5-30-23 @1340	3000	3386		677		
5-31-23	Blank	—	320		64		
5-31-23	6.6 pCi/g Ra-226	3000	2679		.536		
5-31-23	WBSB-09 0-6" 5-31-23 @825	3000	1393		279		
5-31-23	WBSB-09 6-12" 5-31-23 @835	3000	1170		234		
5-31-23	WDSB-10 0-6" 5-31-23 @910	3000	2217		443		
5-31-23	WBSB-10 6-12" @ 5-31-23 915	3000	1380		276		
5-31-23	WBSB-11 0-6" 5-31-23 @935	3000	1959		392		
5-31-23	WBSB-11 6-12" 5-31-23 @940	2008 JP	1053	1573	315		
5-31-23	WBSB-12 0-1" 5-31-23 @850	3000	1736		347		
5-31-23	WBSB-12 2-6" 5-31-23 @900	3000	1117		223		
6-1-23	Blank	—	355		71		
6-1-23	6.6 pCi/g	3000	2644		529		
6-1-23	OPSB-05 3.75' 6-1-23 @1155	3000	1587		317		

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Field Soil Sample Gamma Radiation Screening Form
Mt. Taylor Mine Site

Instrumentation : Scaler/Ratemeter L 2221 S#68782, Detector L44-20 S# 245573
Instrument Calibration Date: 5-10-23, Instrument Function Check Performed: ✓
Survey Area/Unit Decsription Mt. Taylor Mine Site

Area exposure rate: 10-12

Date	Soil Sample ID	Sample Weight Grams	609 (559-669) Kev Gross Counts, CP5M	Weight Corrected CP5M	CPM	Reference Soil Compare (< or >)	Comments
6-1-23	OPSB-03 4.5' 6-1-23 @ 925	3000	1193		239		
6-1-23	OPSB-02 5.5' 6-1-23 @ 1120	3000	1189		238		
6-1-23	OPSB-04 ~~4'~~ 4.10" 6-1-23 @ 825	3000	1124		225		4.8'
6-1-23	OPSB-05 3' 6-1-23 @ 1140	3000	5526		1105		
6-1-23	OPSB-03 4.2' 6-1-23 @ 910	1708	2091	3673	735		
6-1-23	OPSB-02 4.5' 6-1-23 @ 1100	3000	35425		7085		
6-1-23	OPSB-04 4.5' 6-1-23 @ 835	3000	4373		875		
6-1-23	OPSB-01 13.5' 6-1-23 @ 1020	3000	11560		2312		QA/QC CP5M: 11423
6-1-23	OPSB-01 0-13' 6-1-23 @ 1025	3000	26904		5381		
6-1-23	OPSB-02 0-4' 6-1-23 @ 1115	3000	182551		36510		
6-1-23	OPSB-03 0-4' 6-1-23 @ 850	3000	56365		11273		
6-1-23	OPSB-04 0-4' 6-1-23 @ 815	3000	8428		1686		
6-1-23	OPSB-05 0-3' 6-1-23 @ 1200	3000	32147		6429		

Technician Signature _____, Reviewed by _____

ANALYTICAL SUMMARY REPORT

August 07, 2023

Rio Grande Resources Corporation
PO Box 1150
Grants, NM 87020-1150

Work Order: C23060688 Quote ID: C16056

Project Name: MTM Subsurface soil investigation

Energy Laboratories, Inc. Casper WY received the following 53 samples for Rio Grande Resources Corporation on 6/19/2023 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C23060688-001	WBSB-02 0-6"	05/17/23 8:15	06/19/23	Soil	Gamma Sample Preparation Drying/Grinding, Radiochemistry Gross Gamma
C23060688-002	WBSB-04 0-6	05/17/23 8:35	06/19/23	Soil	Same As Above
C23060688-003	WBSB-01 0-6'	05/17/23 8:55	06/19/23	Soil	Same As Above
C23060688-004	WBSB-05 0-6"	05/17/23 9:20	06/19/23	Soil	Same As Above
C23060688-005	WBSB-03 0-6"	05/17/23 9:42	06/19/23	Soil	Same As Above
C23060688-006	WBSB-07 0-6"	05/17/23 10:14	06/19/23	Soil	Same As Above
C23060688-007	WBSB-08 0-6"	05/17/23 10:34	06/19/23	Soil	Same As Above
C23060688-008	WBSB-08 1'-1.5'	05/17/23 10:42	06/19/23	Soil	Same As Above
C23060688-009	WBSB-06- 0-6"	05/17/23 10:54	06/19/23	Soil	Same As Above
C23060688-010	DSSB-01	05/17/23 12:00	06/19/23	Soil	Same As Above
C23060688-011	MCSB-16 1'	05/18/23 10:45	06/19/23	Soil	Same As Above
C23060688-012	MCSB-16 2'	05/18/23 11:00	06/19/23	Soil	Same As Above
C23060688-013	MCSB-15 1'	05/18/23 11:38	06/19/23	Soil	Same As Above
C23060688-014	MCSB-17 1'	05/18/23 8:45	06/19/23	Soil	Same As Above
C23060688-015	MCSB-18 1'-1.5'	05/18/23 9:48	06/19/23	Soil	Same As Above
C23060688-016	DSSB-02	05/18/23 13:00	06/19/23	Soil	Same As Above
C23060688-017	MCSB-11 4'	05/22/23 11:04	06/19/23	Soil	Same As Above
C23060688-018	MCSB-13 1'	05/22/23 8:25	06/19/23	Soil	Same As Above
C23060688-019	MCSB-12 1'	05/22/23 9:28	06/19/23	Soil	Same As Above
C23060688-020	MCSB-11 5'	05/22/23 11:12	06/19/23	Soil	Same As Above
C23060688-021	MCSB-14 1'	05/23/23 8:53	06/19/23	Soil	Same As Above
C23060688-022	MCSB-08 5'	05/23/23 11:10	06/19/23	Soil	Same As Above
C23060688-023	MCSB-08 6.5'	05/23/23 11:25	06/19/23	Soil	Same As Above
C23060688-024	MCSB-9 1'	05/24/23 8:25	06/19/23	Soil	Same As Above
C23060688-025	MCSB-9 2'	05/24/23 8:40	06/19/23	Soil	Same As Above
C23060688-026	MCSB-10 1'	05/24/23 9:15	06/19/23	Soil	Same As Above

ANALYTICAL SUMMARY REPORT

C23060688-027	MCSB-5 4'	05/24/23 10:40	06/19/23	Soil	Same As Above
C23060688-028	MCSB-5 6'	05/24/23 11:00	06/19/23	Soil	Same As Above
C23060688-029	MCSB-5 7.5'	05/24/23 11:10	06/19/23	Soil	Same As Above
C23060688-030	MCSB-7 3'	05/24/23 12:46	06/19/23	Soil	Same As Above
C23060688-031	MCSB-7 4.5'	05/24/23 13:00	06/19/23	Soil	Same As Above
C23060688-032	DSSB-03	05/24/23 13:30	06/19/23	Soil	Same As Above
C23060688-033	MCSB-06 6'	05/30/23 9:15	06/19/23	Soil	Same As Above
C23060688-034	MCSB-04 1'	05/30/23 9:35	06/19/23	Soil	Same As Above
C23060688-035	MCSB-04 2'	05/30/23 9:45	06/19/23	Soil	Same As Above
C23060688-036	MCSB-02 3'	05/30/23 10:50	06/19/23	Soil	Same As Above
C23060688-037	MCSB-02 4'	05/30/23 11:00	06/19/23	Soil	Same As Above
C23060688-038	MCSB-02 5.2'	05/30/23 11:15	06/19/23	Soil	Same As Above
C23060688-039	MCSB-01 2'	05/30/23 12:50	06/19/23	Soil	Same As Above
C23060688-040	MCSB-01 3'	05/30/23 13:00	06/19/23	Soil	Same As Above
C23060688-041	MCSB-03 1'	05/30/23 13:40	06/19/23	Soil	Same As Above
C23060688-042	MCSB-03 2'	05/30/23 13:50	06/19/23	Soil	Same As Above
C23060688-043	DSSB-04	05/30/23 14:15	06/19/23	Soil	Same As Above
C23060688-044	WBSB-09 0-6"	05/31/23 8:25	06/19/23	Soil	Same As Above
C23060688-045	WBSB-12 0-1"	05/31/23 8:50	06/19/23	Soil	Same As Above
C23060688-046	WBSB-12 2-6"	05/31/23 9:00	06/19/23	Soil	Same As Above
C23060688-047	WBSB-10 0-6"	05/31/23 9:10	06/19/23	Soil	Same As Above
C23060688-048	WBSB-11 0-6"	05/31/23 9:35	06/19/23	Soil	Same As Above
C23060688-049	OPSB-03 4.2'	06/01/23 9:10	06/19/23	Soil	Same As Above
C23060688-050	OPSB-03 4.5'	06/01/23 9:25	06/19/23	Soil	Same As Above
C23060688-051	OPSB-02 5.5'	06/01/23 11:20	06/19/23	Soil	Same As Above
C23060688-052	OPSB-05 3.75'	06/01/23 11:55	06/19/23	Soil	Same As Above
C23060688-053	DSSB-05	06/01/23 12:30	06/19/23	Soil	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager .

Report Approved By:

CLIENT: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Work Order: C23060688

Report Date: 08/07/23

CASE NARRATIVE

ORIGINAL SAMPLE SUBMITTAL(S)
All original sample submittals have been returned with the data package.

SAMPLE TEMPERATURE COMPLIANCE: 4°C (±2°C)
Temperature of samples received may not be considered properly preserved by accepted standards. Samples that are hand delivered immediately after collection shall be considered acceptable if there is evidence that the chilling process has begun.

GROSS ALPHA ANALYSIS
Method 900.0 for gross alpha and gross beta is intended as a drinking water method for low TDS waters. Data provided by this method for non potable waters should be viewed as inconsistent.

RADON IN AIR ANALYSIS
The desired exposure time is 48 hours (2 days). The time delay in returning the canister to the laboratory for processing should be as short as possible to avoid excessive decay. Maximum recommended delay between end of exposure to beginning of counting should not exceed 8 days.

SOIL/SOLID SAMPLES
All samples reported on an as received basis unless otherwise indicated.

ATRAZINE, SIMAZINE AND PCB ANALYSIS
Data for PCBs, Atrazine and Simazine are reported from EPA 525.2. PCB data reported by ELI reflects the results for seven individual Aroclors. When the results for all seven are ND (not detected), the sample meets EPA compliance criteria for PCB monitoring.

SUBCONTRACTING ANALYSIS
Subcontracting of sample analyses to an outside laboratory may be required. If so, ENERGY LABORATORIES will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

BRANCH LABORATORY LOCATIONS
eli-b - Energy Laboratories, Inc. - Billings, MT
eli-g - Energy Laboratories, Inc. - Gillette, WY
eli-h - Energy Laboratories, Inc. - Helena, MT

ISO 17025 DISCLAIMER:
The results of this Analytical Report relate only to the items submitted for analysis.

ENERGY LABORATORIES, INC. - CASPER,WY certifies that certain method selections contained in this report meet requirements as set forth by the above accrediting authorities. Some results requested by the client may not be covered under these certifications. All analysis data to be submitted for regulatory enforcement should be certified in the sample state of origin. Please verify ELI's certification coverage by visiting www.energylab.com

ELI appreciates the opportunity to provide you with this analytical service. For additional information and services visit our web page www.energylab.com.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-001
Client Sample ID: WBSB-02 0-6"

Report Date: 08/07/23
Collection Date: 05/17/23 08:15
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1.4	pCi/g-dry				E901.1	07/25/23 11:24 / haw
Radium 224 precision (±)	0.8	pCi/g-dry				E901.1	07/25/23 11:24 / haw
Radium 224 MDC	1.2	pCi/g-dry				E901.1	07/25/23 11:24 / haw
Radium 226	1.5	pCi/g-dry				E901.1	07/25/23 11:24 / haw
Radium 226 precision (±)	0.1	pCi/g-dry				E901.1	07/25/23 11:24 / haw
Radium 226 MDC	0.1	pCi/g-dry				E901.1	07/25/23 11:24 / haw
Radium 228	1.4	pCi/g-dry				E901.1	07/25/23 11:24 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1	07/25/23 11:24 / haw
Radium 228 MDC	0.2	pCi/g-dry				E901.1	07/25/23 11:24 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-002
Client Sample ID: WBSB-04 0-6

Report Date: 08/07/23
Collection Date: 05/17/23 08:35
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1.5	pCi/g-dry				E901.1	07/25/23 13:51 / haw
Radium 224 precision (±)	0.8	pCi/g-dry				E901.1	07/25/23 13:51 / haw
Radium 224 MDC	1.2	pCi/g-dry				E901.1	07/25/23 13:51 / haw
Radium 226	1.5	pCi/g-dry				E901.1	07/25/23 13:51 / haw
Radium 226 precision (±)	0.1	pCi/g-dry				E901.1	07/25/23 13:51 / haw
Radium 226 MDC	0.1	pCi/g-dry				E901.1	07/25/23 13:51 / haw
Radium 228	1.5	pCi/g-dry				E901.1	07/25/23 13:51 / haw
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	07/25/23 13:51 / haw
Radium 228 MDC	0.2	pCi/g-dry				E901.1	07/25/23 13:51 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-003
Client Sample ID: WBSB-01 0-6'

Report Date: 08/07/23
Collection Date: 05/17/23 08:55
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1.7	pCi/g-dry				E901.1	07/25/23 15:01 / haw
Radium 224 precision (±)	0.7	pCi/g-dry				E901.1	07/25/23 15:01 / haw
Radium 224 MDC	1.0	pCi/g-dry				E901.1	07/25/23 15:01 / haw
Radium 226	0.9	pCi/g-dry				E901.1	07/25/23 15:01 / haw
Radium 226 precision (±)	0.1	pCi/g-dry				E901.1	07/25/23 15:01 / haw
Radium 226 MDC	0.1	pCi/g-dry				E901.1	07/25/23 15:01 / haw
Radium 228	1.4	pCi/g-dry				E901.1	07/25/23 15:01 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1	07/25/23 15:01 / haw
Radium 228 MDC	0.2	pCi/g-dry				E901.1	07/25/23 15:01 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-004
Client Sample ID: WBSB-05 0-6"

Report Date: 08/07/23
Collection Date: 05/17/23 09:20
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	-0.4	pCi/g-dry	U			E901.1	07/25/23 16:03 / haw
Radium 224 precision (±)	1.5	pCi/g-dry				E901.1	07/25/23 16:03 / haw
Radium 224 MDC	2.5	pCi/g-dry				E901.1	07/25/23 16:03 / haw
Radium 226	2.1	pCi/g-dry				E901.1	07/25/23 16:03 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1	07/25/23 16:03 / haw
Radium 226 MDC	0.1	pCi/g-dry				E901.1	07/25/23 16:03 / haw
Radium 228	1.2	pCi/g-dry				E901.1	07/25/23 16:03 / haw
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	07/25/23 16:03 / haw
Radium 228 MDC	0.2	pCi/g-dry				E901.1	07/25/23 16:03 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-005
Client Sample ID: WBSB-03 0-6"

Report Date: 08/07/23
Collection Date: 05/17/23 09:42
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.4	pCi/g-dry	U			E901.1	07/25/23 17:08 / haw
Radium 224 precision (±)	1.6	pCi/g-dry				E901.1	07/25/23 17:08 / haw
Radium 224 MDC	2.6	pCi/g-dry				E901.1	07/25/23 17:08 / haw
Radium 226	3.2	pCi/g-dry				E901.1	07/25/23 17:08 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1	07/25/23 17:08 / haw
Radium 226 MDC	0.1	pCi/g-dry				E901.1	07/25/23 17:08 / haw
Radium 228	1.2	pCi/g-dry				E901.1	07/25/23 17:08 / haw
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	07/25/23 17:08 / haw
Radium 228 MDC	0.2	pCi/g-dry				E901.1	07/25/23 17:08 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-006
Client Sample ID: WBSB-07 0-6"

Report Date: 08/07/23
Collection Date: 05/17/23 10:14
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.04	pCi/g-dry	U			E901.1	07/26/23 08:25 / haw
Radium 224 precision (±)	1.8	pCi/g-dry				E901.1	07/26/23 08:25 / haw
Radium 224 MDC	2.9	pCi/g-dry				E901.1	07/26/23 08:25 / haw
Radium 226	3.7	pCi/g-dry				E901.1	07/26/23 08:25 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1	07/26/23 08:25 / haw
Radium 226 MDC	0.1	pCi/g-dry				E901.1	07/26/23 08:25 / haw
Radium 228	1.1	pCi/g-dry				E901.1	07/26/23 08:25 / haw
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	07/26/23 08:25 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1	07/26/23 08:25 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-007
Client Sample ID: WBSB-08 0-6"

Report Date: 08/07/23
Collection Date: 05/17/23 10:34
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.06	pCi/g-dry	U			E901.1	07/26/23 09:29 / haw
Radium 224 precision (±)	2.5	pCi/g-dry				E901.1	07/26/23 09:29 / haw
Radium 224 MDC	4.2	pCi/g-dry				E901.1	07/26/23 09:29 / haw
Radium 226	9.7	pCi/g-dry				E901.1	07/26/23 09:29 / haw
Radium 226 precision (±)	0.3	pCi/g-dry				E901.1	07/26/23 09:29 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1	07/26/23 09:29 / haw
Radium 228	1.4	pCi/g-dry				E901.1	07/26/23 09:29 / haw
Radium 228 precision (±)	0.4	pCi/g-dry				E901.1	07/26/23 09:29 / haw
Radium 228 MDC	0.5	pCi/g-dry				E901.1	07/26/23 09:29 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-008
Client Sample ID: WBSB-08 1'-1.5'

Report Date: 08/07/23
Collection Date: 05/17/23 10:42
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	-0.3	pCi/g-dry	U			E901.1	07/26/23 10:45 / haw
Radium 224 precision (±)	1.5	pCi/g-dry				E901.1	07/26/23 10:45 / haw
Radium 224 MDC	2.4	pCi/g-dry				E901.1	07/26/23 10:45 / haw
Radium 226	0.9	pCi/g-dry				E901.1	07/26/23 10:45 / haw
Radium 226 precision (±)	0.1	pCi/g-dry				E901.1	07/26/23 10:45 / haw
Radium 226 MDC	0.1	pCi/g-dry				E901.1	07/26/23 10:45 / haw
Radium 228	1.1	pCi/g-dry				E901.1	07/26/23 10:45 / haw
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	07/26/23 10:45 / haw
Radium 228 MDC	0.2	pCi/g-dry				E901.1	07/26/23 10:45 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-009
Client Sample ID: WBSB-06- 0-6"

Report Date: 08/07/23
Collection Date: 05/17/23 10:54
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1.2	pCi/g-dry				E901.1	07/26/23 12:41 / haw
Radium 224 precision (±)	0.7	pCi/g-dry				E901.1	07/26/23 12:41 / haw
Radium 224 MDC	1.1	pCi/g-dry				E901.1	07/26/23 12:41 / haw
Radium 226	1.3	pCi/g-dry				E901.1	07/26/23 12:41 / haw
Radium 226 precision (±)	0.1	pCi/g-dry				E901.1	07/26/23 12:41 / haw
Radium 226 MDC	0.1	pCi/g-dry				E901.1	07/26/23 12:41 / haw
Radium 228	1.2	pCi/g-dry				E901.1	07/26/23 12:41 / haw
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	07/26/23 12:41 / haw
Radium 228 MDC	0.2	pCi/g-dry				E901.1	07/26/23 12:41 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-010
Client Sample ID: DSSB-01

Report Date: 08/07/23
Collection Date: 05/17/23 12:00
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.02	pCi/g-dry	U			E901.1	07/26/23 14:29 / haw
Radium 224 precision (±)	1.4	pCi/g-dry				E901.1	07/26/23 14:29 / haw
Radium 224 MDC	2.4	pCi/g-dry				E901.1	07/26/23 14:29 / haw
Radium 226	1.1	pCi/g-dry				E901.1	07/26/23 14:29 / haw
Radium 226 precision (±)	0.1	pCi/g-dry				E901.1	07/26/23 14:29 / haw
Radium 226 MDC	0.09	pCi/g-dry				E901.1	07/26/23 14:29 / haw
Radium 228	1.3	pCi/g-dry				E901.1	07/26/23 14:29 / haw
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	07/26/23 14:29 / haw
Radium 228 MDC	0.2	pCi/g-dry				E901.1	07/26/23 14:29 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-011
Client Sample ID: MCSB-16 1'

Report Date: 08/07/23
Collection Date: 05/18/23 10:45
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	-0.5	pCi/g-dry	U			E901.1	07/26/23 16:45 / haw
Radium 224 precision (±)	1.8	pCi/g-dry				E901.1	07/26/23 16:45 / haw
Radium 224 MDC	2.9	pCi/g-dry				E901.1	07/26/23 16:45 / haw
Radium 226	4.8	pCi/g-dry				E901.1	07/26/23 16:45 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1	07/26/23 16:45 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1	07/26/23 16:45 / haw
Radium 228	0.6	pCi/g-dry				E901.1	07/26/23 16:45 / haw
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	07/26/23 16:45 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1	07/26/23 16:45 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-012
Client Sample ID: MCSB-16 2'

Report Date: 08/07/23
Collection Date: 05/18/23 11:00
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	-0.3	pCi/g-dry	U			E901.1	07/27/23 09:38 / haw
Radium 224 precision (±)	1.5	pCi/g-dry				E901.1	07/27/23 09:38 / haw
Radium 224 MDC	2.5	pCi/g-dry				E901.1	07/27/23 09:38 / haw
Radium 226	2.4	pCi/g-dry				E901.1	07/27/23 09:38 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1	07/27/23 09:38 / haw
Radium 226 MDC	0.1	pCi/g-dry				E901.1	07/27/23 09:38 / haw
Radium 228	1	pCi/g-dry				E901.1	07/27/23 09:38 / haw
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	07/27/23 09:38 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1	07/27/23 09:38 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-013
Client Sample ID: MCSB-15 1'

Report Date: 08/07/23
Collection Date: 05/18/23 11:38
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.3	pCi/g-dry	U			E901.1	07/27/23 11:22 / haw
Radium 224 precision (±)	1.5	pCi/g-dry				E901.1	07/27/23 11:22 / haw
Radium 224 MDC	2.5	pCi/g-dry				E901.1	07/27/23 11:22 / haw
Radium 226	1.6	pCi/g-dry				E901.1	07/27/23 11:22 / haw
Radium 226 precision (±)	0.1	pCi/g-dry				E901.1	07/27/23 11:22 / haw
Radium 226 MDC	0.1	pCi/g-dry				E901.1	07/27/23 11:22 / haw
Radium 228	1.2	pCi/g-dry				E901.1	07/27/23 11:22 / haw
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	07/27/23 11:22 / haw
Radium 228 MDC	0.2	pCi/g-dry				E901.1	07/27/23 11:22 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-014
Client Sample ID: MCSB-17 1'

Report Date: 08/07/23
Collection Date: 05/18/23 08:45
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1.1	pCi/g-dry				E901.1	07/27/23 12:55 / haw
Radium 224 precision (±)	0.6	pCi/g-dry				E901.1	07/27/23 12:55 / haw
Radium 224 MDC	0.9	pCi/g-dry				E901.1	07/27/23 12:55 / haw
Radium 226	0.7	pCi/g-dry				E901.1	07/27/23 12:55 / haw
Radium 226 precision (±)	0.1	pCi/g-dry				E901.1	07/27/23 12:55 / haw
Radium 226 MDC	0.1	pCi/g-dry				E901.1	07/27/23 12:55 / haw
Radium 228	1.1	pCi/g-dry				E901.1	07/27/23 12:55 / haw
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	07/27/23 12:55 / haw
Radium 228 MDC	0.2	pCi/g-dry				E901.1	07/27/23 12:55 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-015
Client Sample ID: MCSB-18 1'-1.5'

Report Date: 08/07/23
Collection Date: 05/18/23 09:48
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	-0.4	pCi/g-dry	U			E901.1	07/27/23 13:56 / haw
Radium 224 precision (±)	1.4	pCi/g-dry				E901.1	07/27/23 13:56 / haw
Radium 224 MDC	2.4	pCi/g-dry				E901.1	07/27/23 13:56 / haw
Radium 226	2.6	pCi/g-dry				E901.1	07/27/23 13:56 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1	07/27/23 13:56 / haw
Radium 226 MDC	0.1	pCi/g-dry				E901.1	07/27/23 13:56 / haw
Radium 228	0.9	pCi/g-dry				E901.1	07/27/23 13:56 / haw
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	07/27/23 13:56 / haw
Radium 228 MDC	0.2	pCi/g-dry				E901.1	07/27/23 13:56 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-016
Client Sample ID: DSSB-02

Report Date: 08/07/23
Collection Date: 05/18/23 13:00
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1.4	pCi/g-dry				E901.1	07/27/23 15:17 / haw
Radium 224 precision (±)	0.7	pCi/g-dry				E901.1	07/27/23 15:17 / haw
Radium 224 MDC	1.2	pCi/g-dry				E901.1	07/27/23 15:17 / haw
Radium 226	1.3	pCi/g-dry				E901.1	07/27/23 15:17 / haw
Radium 226 precision (±)	0.1	pCi/g-dry				E901.1	07/27/23 15:17 / haw
Radium 226 MDC	0.1	pCi/g-dry				E901.1	07/27/23 15:17 / haw
Radium 228	1.2	pCi/g-dry				E901.1	07/27/23 15:17 / haw
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	07/27/23 15:17 / haw
Radium 228 MDC	0.2	pCi/g-dry				E901.1	07/27/23 15:17 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-017
Client Sample ID: MCSB-11 4'

Report Date: 08/07/23
Collection Date: 05/22/23 11:04
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.6	pCi/g-dry	U			E901.1	07/27/23 16:21 / haw
Radium 224 precision (±)	2.4	pCi/g-dry				E901.1	07/27/23 16:21 / haw
Radium 224 MDC	4.0	pCi/g-dry				E901.1	07/27/23 16:21 / haw
Radium 226	11.0	pCi/g-dry				E901.1	07/27/23 16:21 / haw
Radium 226 precision (±)	0.4	pCi/g-dry				E901.1	07/27/23 16:21 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1	07/27/23 16:21 / haw
Radium 228	1.1	pCi/g-dry				E901.1	07/27/23 16:21 / haw
Radium 228 precision (±)	0.4	pCi/g-dry				E901.1	07/27/23 16:21 / haw
Radium 228 MDC	0.5	pCi/g-dry				E901.1	07/27/23 16:21 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-018
Client Sample ID: MCSB-13 1'

Report Date: 08/07/23
Collection Date: 05/22/23 08:25
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	2.1	pCi/g-dry				E901.1	07/27/23 17:27 / haw
Radium 224 precision (±)	0.7	pCi/g-dry				E901.1	07/27/23 17:27 / haw
Radium 224 MDC	1.1	pCi/g-dry				E901.1	07/27/23 17:27 / haw
Radium 226	1.2	pCi/g-dry				E901.1	07/27/23 17:27 / haw
Radium 226 precision (±)	0.1	pCi/g-dry				E901.1	07/27/23 17:27 / haw
Radium 226 MDC	0.1	pCi/g-dry				E901.1	07/27/23 17:27 / haw
Radium 228	1.7	pCi/g-dry				E901.1	07/27/23 17:27 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1	07/27/23 17:27 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1	07/27/23 17:27 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-019
Client Sample ID: MCSB-12 1'

Report Date: 08/07/23
Collection Date: 05/22/23 09:28
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	-0.4	pCi/g-dry	U			E901.1	07/28/23 09:11 / haw
Radium 224 precision (±)	1.2	pCi/g-dry				E901.1	07/28/23 09:11 / haw
Radium 224 MDC	2.0	pCi/g-dry				E901.1	07/28/23 09:11 / haw
Radium 226	3.3	pCi/g-dry				E901.1	07/28/23 09:11 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1	07/28/23 09:11 / haw
Radium 226 MDC	0.1	pCi/g-dry				E901.1	07/28/23 09:11 / haw
Radium 228	0.4	pCi/g-dry				E901.1	07/28/23 09:11 / haw
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	07/28/23 09:11 / haw
Radium 228 MDC	0.2	pCi/g-dry				E901.1	07/28/23 09:11 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-020
Client Sample ID: MCSB-11 5'

Report Date: 08/07/23
Collection Date: 05/22/23 11:12
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.4	pCi/g-dry	U			E901.1	07/28/23 10:12 / haw
Radium 224 precision (±)	1.7	pCi/g-dry				E901.1	07/28/23 10:12 / haw
Radium 224 MDC	2.9	pCi/g-dry				E901.1	07/28/23 10:12 / haw
Radium 226	2.8	pCi/g-dry				E901.1	07/28/23 10:12 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1	07/28/23 10:12 / haw
Radium 226 MDC	0.1	pCi/g-dry				E901.1	07/28/23 10:12 / haw
Radium 228	1.4	pCi/g-dry				E901.1	07/28/23 10:12 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1	07/28/23 10:12 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1	07/28/23 10:12 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-021
Client Sample ID: MCSB-14 1'

Report Date: 08/07/23
Collection Date: 05/23/23 08:53
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.2	pCi/g-dry	U			E901.1	07/28/23 13:29 / haw
Radium 224 precision (±)	1.7	pCi/g-dry				E901.1	07/28/23 13:29 / haw
Radium 224 MDC	2.9	pCi/g-dry				E901.1	07/28/23 13:29 / haw
Radium 226	3.8	pCi/g-dry				E901.1	07/28/23 13:29 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1	07/28/23 13:29 / haw
Radium 226 MDC	0.1	pCi/g-dry				E901.1	07/28/23 13:29 / haw
Radium 228	1.1	pCi/g-dry				E901.1	07/28/23 13:29 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1	07/28/23 13:29 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1	07/28/23 13:29 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-022
Client Sample ID: MCSB-08 5'

Report Date: 08/07/23
Collection Date: 05/23/23 11:10
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	-1	pCi/g-dry	U			E901.1	07/28/23 14:36 / haw
Radium 224 precision (±)	5.4	pCi/g-dry				E901.1	07/28/23 14:36 / haw
Radium 224 MDC	8.9	pCi/g-dry				E901.1	07/28/23 14:36 / haw
Radium 226	77.1	pCi/g-dry				E901.1	07/28/23 14:36 / haw
Radium 226 precision (±)	0.9	pCi/g-dry				E901.1	07/28/23 14:36 / haw
Radium 226 MDC	0.4	pCi/g-dry				E901.1	07/28/23 14:36 / haw
Radium 228	-0.3	pCi/g-dry	U			E901.1	07/28/23 14:36 / haw
Radium 228 precision (±)	0.7	pCi/g-dry				E901.1	07/28/23 14:36 / haw
Radium 228 MDC	1.1	pCi/g-dry				E901.1	07/28/23 14:36 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-023
Client Sample ID: MCSB-08 6.5'

Report Date: 08/07/23
Collection Date: 05/23/23 11:25
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1.3	pCi/g-dry				E901.1	07/28/23 15:46 / haw
Radium 224 precision (±)	0.7	pCi/g-dry				E901.1	07/28/23 15:46 / haw
Radium 224 MDC	1.0	pCi/g-dry				E901.1	07/28/23 15:46 / haw
Radium 226	1.1	pCi/g-dry				E901.1	07/28/23 15:46 / haw
Radium 226 precision (±)	0.1	pCi/g-dry				E901.1	07/28/23 15:46 / haw
Radium 226 MDC	0.1	pCi/g-dry				E901.1	07/28/23 15:46 / haw
Radium 228	1.4	pCi/g-dry				E901.1	07/28/23 15:46 / haw
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	07/28/23 15:46 / haw
Radium 228 MDC	0.2	pCi/g-dry				E901.1	07/28/23 15:46 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-024
Client Sample ID: MCSB-9 1'

Report Date: 08/07/23
Collection Date: 05/24/23 08:25
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	-0.3	pCi/g-dry	U			E901.1	07/31/23 10:02 / haw
Radium 224 precision (±)	1.8	pCi/g-dry				E901.1	07/31/23 10:02 / haw
Radium 224 MDC	3.0	pCi/g-dry				E901.1	07/31/23 10:02 / haw
Radium 226	7.9	pCi/g-dry				E901.1	07/31/23 10:02 / haw
Radium 226 precision (±)	0.3	pCi/g-dry				E901.1	07/31/23 10:02 / haw
Radium 226 MDC	0.1	pCi/g-dry				E901.1	07/31/23 10:02 / haw
Radium 228	0.3	pCi/g-dry	U			E901.1	07/31/23 10:02 / haw
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	07/31/23 10:02 / haw
Radium 228 MDC	0.4	pCi/g-dry				E901.1	07/31/23 10:02 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-025
Client Sample ID: MCSB-9 2'

Report Date: 08/07/23
Collection Date: 05/24/23 08:40
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.3	pCi/g-dry	U			E901.1	07/31/23 11:08 / haw
Radium 224 precision (±)	1.1	pCi/g-dry				E901.1	07/31/23 11:08 / haw
Radium 224 MDC	1.8	pCi/g-dry				E901.1	07/31/23 11:08 / haw
Radium 226	0.6	pCi/g-dry				E901.1	07/31/23 11:08 / haw
Radium 226 precision (±)	0.1	pCi/g-dry				E901.1	07/31/23 11:08 / haw
Radium 226 MDC	0.1	pCi/g-dry				E901.1	07/31/23 11:08 / haw
Radium 228	0.8	pCi/g-dry				E901.1	07/31/23 11:08 / haw
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	07/31/23 11:08 / haw
Radium 228 MDC	0.2	pCi/g-dry				E901.1	07/31/23 11:08 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-026
Client Sample ID: MCSB-10 1'

Report Date: 08/07/23
Collection Date: 05/24/23 09:15
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1	pCi/g-dry				E901.1	07/31/23 12:18 / haw
Radium 224 precision (±)	0.5	pCi/g-dry				E901.1	07/31/23 12:18 / haw
Radium 224 MDC	0.8	pCi/g-dry				E901.1	07/31/23 12:18 / haw
Radium 226	0.8	pCi/g-dry				E901.1	07/31/23 12:18 / haw
Radium 226 precision (±)	0.1	pCi/g-dry				E901.1	07/31/23 12:18 / haw
Radium 226 MDC	0.09	pCi/g-dry				E901.1	07/31/23 12:18 / haw
Radium 228	0.9	pCi/g-dry				E901.1	07/31/23 12:18 / haw
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	07/31/23 12:18 / haw
Radium 228 MDC	0.2	pCi/g-dry				E901.1	07/31/23 12:18 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-027
Client Sample ID: MCSB-5 4'

Report Date: 08/07/23
Collection Date: 05/24/23 10:40
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1.4	pCi/g-dry				E901.1	07/31/23 13:22 / haw
Radium 224 precision (±)	0.7	pCi/g-dry				E901.1	07/31/23 13:22 / haw
Radium 224 MDC	1.2	pCi/g-dry				E901.1	07/31/23 13:22 / haw
Radium 226	1.5	pCi/g-dry				E901.1	07/31/23 13:22 / haw
Radium 226 precision (±)	0.1	pCi/g-dry				E901.1	07/31/23 13:22 / haw
Radium 226 MDC	0.1	pCi/g-dry				E901.1	07/31/23 13:22 / haw
Radium 228	1.3	pCi/g-dry				E901.1	07/31/23 13:22 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1	07/31/23 13:22 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1	07/31/23 13:22 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-028
Client Sample ID: MCSB-5 6'

Report Date: 08/07/23
Collection Date: 05/24/23 11:00
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	-0.6	pCi/g-dry	U			E901.1	07/31/23 14:40 / haw
Radium 224 precision (±)	2.4	pCi/g-dry				E901.1	07/31/23 14:40 / haw
Radium 224 MDC	3.9	pCi/g-dry				E901.1	07/31/23 14:40 / haw
Radium 226	16.1	pCi/g-dry				E901.1	07/31/23 14:40 / haw
Radium 226 precision (±)	0.4	pCi/g-dry				E901.1	07/31/23 14:40 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1	07/31/23 14:40 / haw
Radium 228	0.3	pCi/g-dry	U			E901.1	07/31/23 14:40 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1	07/31/23 14:40 / haw
Radium 228 MDC	0.5	pCi/g-dry				E901.1	07/31/23 14:40 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-029
Client Sample ID: MCSB-5 7.5'

Report Date: 08/07/23
Collection Date: 05/24/23 11:10
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1.3	pCi/g-dry				E901.1	07/31/23 15:55 / haw
Radium 224 precision (±)	0.6	pCi/g-dry				E901.1	07/31/23 15:55 / haw
Radium 224 MDC	1	pCi/g-dry				E901.1	07/31/23 15:55 / haw
Radium 226	1.0	pCi/g-dry				E901.1	07/31/23 15:55 / haw
Radium 226 precision (±)	0.1	pCi/g-dry				E901.1	07/31/23 15:55 / haw
Radium 226 MDC	0.1	pCi/g-dry				E901.1	07/31/23 15:55 / haw
Radium 228	1.1	pCi/g-dry				E901.1	07/31/23 15:55 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1	07/31/23 15:55 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1	07/31/23 15:55 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-030
Client Sample ID: MCSB-7 3'

Report Date: 08/07/23
Collection Date: 05/24/23 12:46
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.4	pCi/g-dry	U			E901.1	07/31/23 17:08 / haw
Radium 224 precision (±)	1.6	pCi/g-dry				E901.1	07/31/23 17:08 / haw
Radium 224 MDC	2.6	pCi/g-dry				E901.1	07/31/23 17:08 / haw
Radium 226	6.3	pCi/g-dry				E901.1	07/31/23 17:08 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1	07/31/23 17:08 / haw
Radium 226 MDC	0.1	pCi/g-dry				E901.1	07/31/23 17:08 / haw
Radium 228	0.2	pCi/g-dry	U			E901.1	07/31/23 17:08 / haw
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	07/31/23 17:08 / haw
Radium 228 MDC	0.4	pCi/g-dry				E901.1	07/31/23 17:08 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-031
Client Sample ID: MCSB-7 4.5'

Report Date: 08/07/23
Collection Date: 05/24/23 13:00
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	2.1	pCi/g-dry				E901.1	08/01/23 08:48 / haw
Radium 224 precision (±)	0.7	pCi/g-dry				E901.1	08/01/23 08:48 / haw
Radium 224 MDC	1.1	pCi/g-dry				E901.1	08/01/23 08:48 / haw
Radium 226	1.2	pCi/g-dry				E901.1	08/01/23 08:48 / haw
Radium 226 precision (±)	0.1	pCi/g-dry				E901.1	08/01/23 08:48 / haw
Radium 226 MDC	0.1	pCi/g-dry				E901.1	08/01/23 08:48 / haw
Radium 228	1.6	pCi/g-dry				E901.1	08/01/23 08:48 / haw
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	08/01/23 08:48 / haw
Radium 228 MDC	0.2	pCi/g-dry				E901.1	08/01/23 08:48 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-032
Client Sample ID: DSSB-03

Report Date: 08/07/23
Collection Date: 05/24/23 13:30
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.4	pCi/g-dry	U			E901.1	08/01/23 09:52 / haw
Radium 224 precision (±)	1.6	pCi/g-dry				E901.1	08/01/23 09:52 / haw
Radium 224 MDC	2.6	pCi/g-dry				E901.1	08/01/23 09:52 / haw
Radium 226	6.2	pCi/g-dry				E901.1	08/01/23 09:52 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1	08/01/23 09:52 / haw
Radium 226 MDC	0.1	pCi/g-dry				E901.1	08/01/23 09:52 / haw
Radium 228	0.3	pCi/g-dry	U			E901.1	08/01/23 09:52 / haw
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	08/01/23 09:52 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1	08/01/23 09:52 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-033
Client Sample ID: MCSB-06 6'

Report Date: 08/07/23
Collection Date: 05/30/23 09:15
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	-0.4	pCi/g-dry	U			E901.1	08/01/23 11:07 / haw
Radium 224 precision (±)	1.6	pCi/g-dry				E901.1	08/01/23 11:07 / haw
Radium 224 MDC	2.6	pCi/g-dry				E901.1	08/01/23 11:07 / haw
Radium 226	1.9	pCi/g-dry				E901.1	08/01/23 11:07 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1	08/01/23 11:07 / haw
Radium 226 MDC	0.1	pCi/g-dry				E901.1	08/01/23 11:07 / haw
Radium 228	1.3	pCi/g-dry				E901.1	08/01/23 11:07 / haw
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	08/01/23 11:07 / haw
Radium 228 MDC	0.2	pCi/g-dry				E901.1	08/01/23 11:07 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-034
Client Sample ID: MCSB-04 1'

Report Date: 08/07/23
Collection Date: 05/30/23 09:35
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	-0.3	pCi/g-dry	U			E901.1	08/01/23 13:40 / haw
Radium 224 precision (±)	0.9	pCi/g-dry				E901.1	08/01/23 13:40 / haw
Radium 224 MDC	1.5	pCi/g-dry				E901.1	08/01/23 13:40 / haw
Radium 226	1.4	pCi/g-dry				E901.1	08/01/23 13:40 / haw
Radium 226 precision (±)	0.1	pCi/g-dry				E901.1	08/01/23 13:40 / haw
Radium 226 MDC	0.08	pCi/g-dry				E901.1	08/01/23 13:40 / haw
Radium 228	0.2	pCi/g-dry				E901.1	08/01/23 13:40 / haw
Radium 228 precision (±)	0.1	pCi/g-dry				E901.1	08/01/23 13:40 / haw
Radium 228 MDC	0.2	pCi/g-dry				E901.1	08/01/23 13:40 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-035
Client Sample ID: MCSB-04 2'

Report Date: 08/07/23
Collection Date: 05/30/23 09:45
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.3	pCi/g-dry	U			E901.1	08/01/23 14:42 / haw
Radium 224 precision (±)	1.4	pCi/g-dry				E901.1	08/01/23 14:42 / haw
Radium 224 MDC	2.3	pCi/g-dry				E901.1	08/01/23 14:42 / haw
Radium 226	3.4	pCi/g-dry				E901.1	08/01/23 14:42 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1	08/01/23 14:42 / haw
Radium 226 MDC	0.1	pCi/g-dry				E901.1	08/01/23 14:42 / haw
Radium 228	0.4	pCi/g-dry				E901.1	08/01/23 14:42 / haw
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	08/01/23 14:42 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1	08/01/23 14:42 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-036
Client Sample ID: MCSB-02 3'

Report Date: 08/07/23
Collection Date: 05/30/23 10:50
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.3	pCi/g-dry	U			E901.1	08/01/23 15:59 / haw
Radium 224 precision (±)	1.0	pCi/g-dry				E901.1	08/01/23 15:59 / haw
Radium 224 MDC	1.7	pCi/g-dry				E901.1	08/01/23 15:59 / haw
Radium 226	0.8	pCi/g-dry				E901.1	08/01/23 15:59 / haw
Radium 226 precision (±)	0.1	pCi/g-dry				E901.1	08/01/23 15:59 / haw
Radium 226 MDC	0.1	pCi/g-dry				E901.1	08/01/23 15:59 / haw
Radium 228	0.7	pCi/g-dry				E901.1	08/01/23 15:59 / haw
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	08/01/23 15:59 / haw
Radium 228 MDC	0.2	pCi/g-dry				E901.1	08/01/23 15:59 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-037
Client Sample ID: MCSB-02 4'

Report Date: 08/07/23
Collection Date: 05/30/23 11:00
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.4	pCi/g-dry	U			E901.1	08/01/23 17:13 / haw
Radium 224 precision (±)	2.1	pCi/g-dry				E901.1	08/01/23 17:13 / haw
Radium 224 MDC	3.5	pCi/g-dry				E901.1	08/01/23 17:13 / haw
Radium 226	12.6	pCi/g-dry				E901.1	08/01/23 17:13 / haw
Radium 226 precision (±)	0.4	pCi/g-dry				E901.1	08/01/23 17:13 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1	08/01/23 17:13 / haw
Radium 228	0.3	pCi/g-dry	U			E901.1	08/01/23 17:13 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1	08/01/23 17:13 / haw
Radium 228 MDC	0.4	pCi/g-dry				E901.1	08/01/23 17:13 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-038
Client Sample ID: MCSB-02 5.2'

Report Date: 08/07/23
Collection Date: 05/30/23 11:15
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	2.0	pCi/g-dry				E901.1	08/02/23 08:25 / haw
Radium 224 precision (±)	0.7	pCi/g-dry				E901.1	08/02/23 08:25 / haw
Radium 224 MDC	1.1	pCi/g-dry				E901.1	08/02/23 08:25 / haw
Radium 226	1.4	pCi/g-dry				E901.1	08/02/23 08:25 / haw
Radium 226 precision (±)	0.1	pCi/g-dry				E901.1	08/02/23 08:25 / haw
Radium 226 MDC	0.1	pCi/g-dry				E901.1	08/02/23 08:25 / haw
Radium 228	1.7	pCi/g-dry				E901.1	08/02/23 08:25 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1	08/02/23 08:25 / haw
Radium 228 MDC	0.2	pCi/g-dry				E901.1	08/02/23 08:25 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-039
Client Sample ID: MCSB-01 2'

Report Date: 08/07/23
Collection Date: 05/30/23 12:50
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	-0.5	pCi/g-dry	U			E901.1	08/02/23 12:03 / sec
Radium 224 precision (±)	1.6	pCi/g-dry				E901.1	08/02/23 12:03 / sec
Radium 224 MDC	2.6	pCi/g-dry				E901.1	08/02/23 12:03 / sec
Radium 226	5.9	pCi/g-dry				E901.1	08/02/23 12:03 / sec
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1	08/02/23 12:03 / sec
Radium 226 MDC	0.1	pCi/g-dry				E901.1	08/02/23 12:03 / sec
Radium 228	0.5	pCi/g-dry				E901.1	08/02/23 12:03 / sec
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	08/02/23 12:03 / sec
Radium 228 MDC	0.3	pCi/g-dry				E901.1	08/02/23 12:03 / sec

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-040
Client Sample ID: MCSB-01 3'

Report Date: 08/07/23
Collection Date: 05/30/23 13:00
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1.4	pCi/g-dry				E901.1	08/02/23 13:56 / sec
Radium 224 precision (±)	0.6	pCi/g-dry				E901.1	08/02/23 13:56 / sec
Radium 224 MDC	1	pCi/g-dry				E901.1	08/02/23 13:56 / sec
Radium 226	0.8	pCi/g-dry				E901.1	08/02/23 13:56 / sec
Radium 226 precision (±)	0.1	pCi/g-dry				E901.1	08/02/23 13:56 / sec
Radium 226 MDC	0.1	pCi/g-dry				E901.1	08/02/23 13:56 / sec
Radium 228	1.2	pCi/g-dry				E901.1	08/02/23 13:56 / sec
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	08/02/23 13:56 / sec
Radium 228 MDC	0.2	pCi/g-dry				E901.1	08/02/23 13:56 / sec

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-041
Client Sample ID: MCSB-03 1'

Report Date: 08/07/23
Collection Date: 05/30/23 13:40
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	-0.4	pCi/g-dry	U			E901.1	08/02/23 15:03 / sec
Radium 224 precision (±)	1.6	pCi/g-dry				E901.1	08/02/23 15:03 / sec
Radium 224 MDC	2.7	pCi/g-dry				E901.1	08/02/23 15:03 / sec
Radium 226	5.9	pCi/g-dry				E901.1	08/02/23 15:03 / sec
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1	08/02/23 15:03 / sec
Radium 226 MDC	0.1	pCi/g-dry				E901.1	08/02/23 15:03 / sec
Radium 228	0.4	pCi/g-dry				E901.1	08/02/23 15:03 / sec
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	08/02/23 15:03 / sec
Radium 228 MDC	0.3	pCi/g-dry				E901.1	08/02/23 15:03 / sec

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-042
Client Sample ID: MCSB-03 2'

Report Date: 08/07/23
Collection Date: 05/30/23 13:50
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1.2	pCi/g-dry				E901.1	08/02/23 16:13 / sec
Radium 224 precision (±)	0.6	pCi/g-dry				E901.1	08/02/23 16:13 / sec
Radium 224 MDC	1	pCi/g-dry				E901.1	08/02/23 16:13 / sec
Radium 226	0.8	pCi/g-dry				E901.1	08/02/23 16:13 / sec
Radium 226 precision (±)	0.1	pCi/g-dry				E901.1	08/02/23 16:13 / sec
Radium 226 MDC	0.1	pCi/g-dry				E901.1	08/02/23 16:13 / sec
Radium 228	1.3	pCi/g-dry				E901.1	08/02/23 16:13 / sec
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	08/02/23 16:13 / sec
Radium 228 MDC	0.2	pCi/g-dry				E901.1	08/02/23 16:13 / sec

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-043
Client Sample ID: DSSB-04

Report Date: 08/07/23
Collection Date: 05/30/23 14:15
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.2	pCi/g-dry	U			E901.1	08/02/23 17:18 / sec
Radium 224 precision (±)	1.7	pCi/g-dry				E901.1	08/02/23 17:18 / sec
Radium 224 MDC	2.8	pCi/g-dry				E901.1	08/02/23 17:18 / sec
Radium 226	5.8	pCi/g-dry				E901.1	08/02/23 17:18 / sec
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1	08/02/23 17:18 / sec
Radium 226 MDC	0.1	pCi/g-dry				E901.1	08/02/23 17:18 / sec
Radium 228	0.6	pCi/g-dry				E901.1	08/02/23 17:18 / sec
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	08/02/23 17:18 / sec
Radium 228 MDC	0.2	pCi/g-dry				E901.1	08/02/23 17:18 / sec

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-044
Client Sample ID: WBSB-09 0-6"

Report Date: 08/07/23
Collection Date: 05/31/23 08:25
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1.4	pCi/g-dry				E901.1	08/03/23 08:51 / sec
Radium 224 precision (±)	0.7	pCi/g-dry				E901.1	08/03/23 08:51 / sec
Radium 224 MDC	1.2	pCi/g-dry				E901.1	08/03/23 08:51 / sec
Radium 226	1.2	pCi/g-dry				E901.1	08/03/23 08:51 / sec
Radium 226 precision (±)	0.1	pCi/g-dry				E901.1	08/03/23 08:51 / sec
Radium 226 MDC	0.1	pCi/g-dry				E901.1	08/03/23 08:51 / sec
Radium 228	1.4	pCi/g-dry				E901.1	08/03/23 08:51 / sec
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	08/03/23 08:51 / sec
Radium 228 MDC	0.3	pCi/g-dry				E901.1	08/03/23 08:51 / sec

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-045
Client Sample ID: WBSB-12 0-1"

Report Date: 08/07/23
Collection Date: 05/31/23 08:50
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1.4	pCi/g-dry				E901.1	08/03/23 09:57 / sec
Radium 224 precision (±)	0.8	pCi/g-dry				E901.1	08/03/23 09:57 / sec
Radium 224 MDC	1.3	pCi/g-dry				E901.1	08/03/23 09:57 / sec
Radium 226	2.0	pCi/g-dry				E901.1	08/03/23 09:57 / sec
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1	08/03/23 09:57 / sec
Radium 226 MDC	0.1	pCi/g-dry				E901.1	08/03/23 09:57 / sec
Radium 228	1.2	pCi/g-dry				E901.1	08/03/23 09:57 / sec
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	08/03/23 09:57 / sec
Radium 228 MDC	0.2	pCi/g-dry				E901.1	08/03/23 09:57 / sec

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-046
Client Sample ID: WBSB-12 2-6"

Report Date: 08/07/23
Collection Date: 05/31/23 09:00
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1.7	pCi/g-dry				E901.1	08/03/23 11:04 / sec
Radium 224 precision (±)	0.7	pCi/g-dry				E901.1	08/03/23 11:04 / sec
Radium 224 MDC	1.0	pCi/g-dry				E901.1	08/03/23 11:04 / sec
Radium 226	1	pCi/g-dry				E901.1	08/03/23 11:04 / sec
Radium 226 precision (±)	0.1	pCi/g-dry				E901.1	08/03/23 11:04 / sec
Radium 226 MDC	0.1	pCi/g-dry				E901.1	08/03/23 11:04 / sec
Radium 228	1.2	pCi/g-dry				E901.1	08/03/23 11:04 / sec
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	08/03/23 11:04 / sec
Radium 228 MDC	0.3	pCi/g-dry				E901.1	08/03/23 11:04 / sec

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-047
Client Sample ID: WBSB-10 0-6"

Report Date: 08/07/23
Collection Date: 05/31/23 09:10
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	-0.4	pCi/g-dry	U			E901.1	08/03/23 12:10 / sec
Radium 224 precision (±)	1.6	pCi/g-dry				E901.1	08/03/23 12:10 / sec
Radium 224 MDC	2.6	pCi/g-dry				E901.1	08/03/23 12:10 / sec
Radium 226	3.5	pCi/g-dry				E901.1	08/03/23 12:10 / sec
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1	08/03/23 12:10 / sec
Radium 226 MDC	0.1	pCi/g-dry				E901.1	08/03/23 12:10 / sec
Radium 228	1.2	pCi/g-dry				E901.1	08/03/23 12:10 / sec
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	08/03/23 12:10 / sec
Radium 228 MDC	0.2	pCi/g-dry				E901.1	08/03/23 12:10 / sec

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-048
Client Sample ID: WBSB-11 0-6"

Report Date: 08/07/23
Collection Date: 05/31/23 09:35
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1.4	pCi/g-dry				E901.1	08/03/23 13:24 / sec
Radium 224 precision (±)	0.9	pCi/g-dry				E901.1	08/03/23 13:24 / sec
Radium 224 MDC	1.4	pCi/g-dry				E901.1	08/03/23 13:24 / sec
Radium 226	2.7	pCi/g-dry				E901.1	08/03/23 13:24 / sec
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1	08/03/23 13:24 / sec
Radium 226 MDC	0.1	pCi/g-dry				E901.1	08/03/23 13:24 / sec
Radium 228	1.3	pCi/g-dry				E901.1	08/03/23 13:24 / sec
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1	08/03/23 13:24 / sec
Radium 228 MDC	0.3	pCi/g-dry				E901.1	08/03/23 13:24 / sec

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-049
Client Sample ID: OPSB-03 4.2'

Report Date: 08/07/23
Collection Date: 06/01/23 09:10
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	-0.3	pCi/g-dry	U			E901.1	08/03/23 15:37 / sec
Radium 224 precision (±)	1.8	pCi/g-dry				E901.1	08/03/23 15:37 / sec
Radium 224 MDC	3.0	pCi/g-dry				E901.1	08/03/23 15:37 / sec
Radium 226	4.4	pCi/g-dry				E901.1	08/03/23 15:37 / sec
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1	08/03/23 15:37 / sec
Radium 226 MDC	0.1	pCi/g-dry				E901.1	08/03/23 15:37 / sec
Radium 228	0.9	pCi/g-dry				E901.1	08/03/23 15:37 / sec
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	08/03/23 15:37 / sec
Radium 228 MDC	0.3	pCi/g-dry				E901.1	08/03/23 15:37 / sec

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-050
Client Sample ID: OPSB-03 4.5'

Report Date: 08/07/23
Collection Date: 06/01/23 09:25
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1.6	pCi/g-dry				E901.1	08/03/23 16:44 / sec
Radium 224 precision (±)	0.7	pCi/g-dry				E901.1	08/03/23 16:44 / sec
Radium 224 MDC	1.1	pCi/g-dry				E901.1	08/03/23 16:44 / sec
Radium 226	0.8	pCi/g-dry				E901.1	08/03/23 16:44 / sec
Radium 226 precision (±)	0.1	pCi/g-dry				E901.1	08/03/23 16:44 / sec
Radium 226 MDC	0.1	pCi/g-dry				E901.1	08/03/23 16:44 / sec
Radium 228	1.3	pCi/g-dry				E901.1	08/03/23 16:44 / sec
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	08/03/23 16:44 / sec
Radium 228 MDC	0.2	pCi/g-dry				E901.1	08/03/23 16:44 / sec

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-051
Client Sample ID: OPSB-02 5.5'

Report Date: 08/07/23
Collection Date: 06/01/23 11:20
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.1	pCi/g-dry	U			E901.1	08/03/23 17:46 / sec
Radium 224 precision (±)	1.4	pCi/g-dry				E901.1	08/03/23 17:46 / sec
Radium 224 MDC	2.4	pCi/g-dry				E901.1	08/03/23 17:46 / sec
Radium 226	0.9	pCi/g-dry				E901.1	08/03/23 17:46 / sec
Radium 226 precision (±)	0.1	pCi/g-dry				E901.1	08/03/23 17:46 / sec
Radium 226 MDC	0.1	pCi/g-dry				E901.1	08/03/23 17:46 / sec
Radium 228	1.1	pCi/g-dry				E901.1	08/03/23 17:46 / sec
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	08/03/23 17:46 / sec
Radium 228 MDC	0.2	pCi/g-dry				E901.1	08/03/23 17:46 / sec

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-052
Client Sample ID: OPSB-05 3.75'

Report Date: 08/07/23
Collection Date: 06/01/23 11:55
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1.7	pCi/g-dry				E901.1	08/04/23 08:54 / sec
Radium 224 precision (±)	0.7	pCi/g-dry				E901.1	08/04/23 08:54 / sec
Radium 224 MDC	1.1	pCi/g-dry				E901.1	08/04/23 08:54 / sec
Radium 226	0.9	pCi/g-dry				E901.1	08/04/23 08:54 / sec
Radium 226 precision (±)	0.1	pCi/g-dry				E901.1	08/04/23 08:54 / sec
Radium 226 MDC	0.1	pCi/g-dry				E901.1	08/04/23 08:54 / sec
Radium 228	1.5	pCi/g-dry				E901.1	08/04/23 08:54 / sec
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1	08/04/23 08:54 / sec
Radium 228 MDC	0.3	pCi/g-dry				E901.1	08/04/23 08:54 / sec

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM Subsurface soil investigation
Lab ID: C23060688-053
Client Sample ID: DSSB-05

Report Date: 08/07/23
Collection Date: 06/01/23 12:30
DateReceived: 06/19/23
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1.2	pCi/g-dry				E901.1	08/04/23 10:57 / sec
Radium 224 precision (±)	0.6	pCi/g-dry				E901.1	08/04/23 10:57 / sec
Radium 224 MDC	0.9	pCi/g-dry				E901.1	08/04/23 10:57 / sec
Radium 226	0.8	pCi/g-dry				E901.1	08/04/23 10:57 / sec
Radium 226 precision (±)	0.1	pCi/g-dry				E901.1	08/04/23 10:57 / sec
Radium 226 MDC	0.1	pCi/g-dry				E901.1	08/04/23 10:57 / sec
Radium 228	1.1	pCi/g-dry				E901.1	08/04/23 10:57 / sec
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	08/04/23 10:57 / sec
Radium 228 MDC	0.3	pCi/g-dry				E901.1	08/04/23 10:57 / sec

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation **Work Order:** C23060688 **Report Date:** 08/04/23

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E901.1										Batch: R296981
Lab ID: MB-296981	9	Method Blank				Run: GAM-HPGE 2_230725A				07/25/23 09:16
Radium 224		0.2	pCi/g-dry							U
Radium 224 precision (±)		0.4	pCi/g-dry							
Radium 224 MDC		0.7	pCi/g-dry							
Radium 226		0.2	pCi/g-dry							
Radium 226 precision (±)		0.06	pCi/g-dry							
Radium 226 MDC		0.06	pCi/g-dry							
Radium 228		0.09	pCi/g-dry							U
Radium 228 precision (±)		0.09	pCi/g-dry							
Radium 228 MDC		0.1	pCi/g-dry							
Lab ID: LCS-296981	6	Laboratory Control Sample				Run: GAM-HPGE 2_230725A				07/25/23 10:20
Cobalt 60		8.1	pCi/g-dry		90	70	130			
Cobalt 60 precision (±)		0.55	pCi/g-dry							
Cobalt 60 MDC		0.83	pCi/g-dry							
Radium 226		50	pCi/g-dry		92	70	130			
Radium 226 precision (±)		2.3	pCi/g-dry							
Radium 226 MDC		2.6	pCi/g-dry							
Lab ID: C23060688-001ADUP	9	Sample Duplicate				Run: GAM-HPGE 2_230725A				07/25/23 12:49
Radium 224		1.5	pCi/g-dry					12	30	
Radium 224 precision (±)		0.76	pCi/g-dry							
Radium 224 MDC		1.2	pCi/g-dry							
Radium 226		1.6	pCi/g-dry					6.1	30	
Radium 226 precision (±)		0.16	pCi/g-dry							
Radium 226 MDC		0.14	pCi/g-dry							
Radium 228		1.4	pCi/g-dry					1.8	30	
Radium 228 precision (±)		0.25	pCi/g-dry							
Radium 228 MDC		0.24	pCi/g-dry							
- The RER result for Ra224 is 0.16, Ra226 is 0.44 and Ra228 is 0.07.										
Lab ID: C23060688-011ADUP	9	Sample Duplicate				Run: GAM-HPGE 2_230725A				07/27/23 08:36
Radium 224		-0.48	pCi/g-dry					5.3	30	U
Radium 224 precision (±)		1.7	pCi/g-dry							
Radium 224 MDC		2.8	pCi/g-dry							
Radium 226		4.9	pCi/g-dry					1.9	30	
Radium 226 precision (±)		0.24	pCi/g-dry							
Radium 226 MDC		0.14	pCi/g-dry							
Radium 228		0.86	pCi/g-dry					44	30	R
Radium 228 precision (±)		0.26	pCi/g-dry							
Radium 228 MDC		0.31	pCi/g-dry							
- Duplicate RPD for Ra228 is outside of the acceptance range for this analysis. However, the RER is less than or equal to the limit of 3, the RER result is 0.86. -The RER result for Ra224 is 0.01 and Ra226 is 0.28.										

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

R - Relative Percent Difference (RPD) exceeds advisory limit

U - Not detected at Minimum Detectable Concentration (MDC)

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation **Work Order:** C23060688 **Report Date:** 08/04/23

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E901.1										Batch: R297133
Lab ID: MB-297133	9	Method Blank				Run: GAM-HPGE 2_230728A				07/28/23 11:18
Radium 224		0.2	pCi/g-dry							U
Radium 224 precision (±)		0.4	pCi/g-dry							
Radium 224 MDC		0.7	pCi/g-dry							
Radium 226		0.2	pCi/g-dry							
Radium 226 precision (±)		0.05	pCi/g-dry							
Radium 226 MDC		0.05	pCi/g-dry							
Radium 228		0.1	pCi/g-dry							U
Radium 228 precision (±)		0.1	pCi/g-dry							
Radium 228 MDC		0.1	pCi/g-dry							
Lab ID: LCS-297133	6	Laboratory Control Sample				Run: GAM-HPGE 2_230728A				07/28/23 12:25
Cobalt 60		7.7	pCi/g-dry		85	70	130			
Cobalt 60 precision (±)		0.53	pCi/g-dry							
Cobalt 60 MDC		0.82	pCi/g-dry							
Radium 226		50	pCi/g-dry		92	70	130			
Radium 226 precision (±)		2.3	pCi/g-dry							
Radium 226 MDC		2.6	pCi/g-dry							
Lab ID: C23060688-023ADUP	9	Sample Duplicate				Run: GAM-HPGE 2_230728A				07/28/23 17:06
Radium 224		1.3	pCi/g-dry					1.1	30	
Radium 224 precision (±)		0.67	pCi/g-dry							
Radium 224 MDC		1.1	pCi/g-dry							
Radium 226		1.1	pCi/g-dry					5.5	30	
Radium 226 precision (±)		0.13	pCi/g-dry							
Radium 226 MDC		0.11	pCi/g-dry							
Radium 228		1.4	pCi/g-dry					1.3	30	
Radium 228 precision (±)		0.23	pCi/g-dry							
Radium 228 MDC		0.21	pCi/g-dry							
- The RER result for Ra224 is 0.02, Ra226 is 0.32, Ra228 is 0.06.										
Lab ID: C23060688-033ADUP	9	Sample Duplicate				Run: GAM-HPGE 2_230728A				08/01/23 12:13
Radium 224		0.33	pCi/g-dry					3200	30	UR
Radium 224 precision (±)		1.5	pCi/g-dry							
Radium 224 MDC		2.5	pCi/g-dry							
Radium 226		1.9	pCi/g-dry					0.5	30	
Radium 226 precision (±)		0.16	pCi/g-dry							
Radium 226 MDC		0.11	pCi/g-dry							
Radium 228		1.2	pCi/g-dry					0.7	30	
Radium 228 precision (±)		0.23	pCi/g-dry							
Radium 228 MDC		0.22	pCi/g-dry							
- Duplicate RPD for Ra224 is outside of the acceptance range for this analysis. However, the RER is less than or equal to the limit of 3, the RER result for Ra224 is 0.33. The RER result for Ra226 is 0.04 and Ra228 is 0.03										

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U - Not detected at Minimum Detectable Concentration (MDC)

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation **Work Order:** C23060688 **Report Date:** 08/04/23

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E901.1										Batch: R297281
Lab ID: MB-297281	9	Method Blank				Run: GAM-HPGE 2_230802A				08/02/23 09:38
Radium 224		0.02	pCi/g-dry							U
Radium 224 precision (±)		0.4	pCi/g-dry							
Radium 224 MDC		0.7	pCi/g-dry							
Radium 226		0.2	pCi/g-dry							
Radium 226 precision (±)		0.05	pCi/g-dry							
Radium 226 MDC		0.05	pCi/g-dry							
Radium 228		0.06	pCi/g-dry							U
Radium 228 precision (±)		0.09	pCi/g-dry							
Radium 228 MDC		0.1	pCi/g-dry							
Lab ID: C23060688-048ADUP	9	Sample Duplicate				Run: GAM-HPGE 2_230802A				08/03/23 14:34
Radium 224		-0.41	pCi/g-dry					360	30	UR
Radium 224 precision (±)		1.5	pCi/g-dry							
Radium 224 MDC		2.5	pCi/g-dry							
Radium 226		2.7	pCi/g-dry					0.5	30	
Radium 226 precision (±)		0.18	pCi/g-dry							
Radium 226 MDC		0.13	pCi/g-dry							
Radium 228		1.4	pCi/g-dry					11	30	
Radium 228 precision (±)		0.28	pCi/g-dry							
Radium 228 MDC		0.29	pCi/g-dry							
- Duplicate RPD for Ra224 is outside of the acceptance range for this analysis. However, the RER is less than or equal to the limit of 3, the RER result is 1.05. The RER result for Ra226 is 0.05 and Ra228 is 0.41.										
Lab ID: C23060688-052ADUP	9	Sample Duplicate				Run: GAM-HPGE 2_230802A				08/04/23 09:55
Radium 224		0.041	pCi/g-dry					190	30	UR
Radium 224 precision (±)		1.7	pCi/g-dry							
Radium 224 MDC		2.8	pCi/g-dry							
Radium 226		1.1	pCi/g-dry					17	30	
Radium 226 precision (±)		0.14	pCi/g-dry							
Radium 226 MDC		0.11	pCi/g-dry							
Radium 228		1.3	pCi/g-dry					16	30	
Radium 228 precision (±)		0.24	pCi/g-dry							
Radium 228 MDC		0.23	pCi/g-dry							
- Duplicate RPD for Ra224 is outside of the acceptance range for this analysis. However, the RER is less than or equal to the limit of 3, the RER result is 0.90. The RER result for Ra226 is 0.92 and Ra228 is 0.61.										
Lab ID: LCS-297281	6	Laboratory Control Sample				Run: GAM-HPGE 2_230802A				08/04/23 14:26
Cobalt 60		8.0	pCi/g-dry		88	70	130			
Cobalt 60 precision (±)		0.57	pCi/g-dry							
Cobalt 60 MDC		0.72	pCi/g-dry							
Radium 226		48	pCi/g-dry		89	70	130			
Radium 226 precision (±)		2.1	pCi/g-dry							
Radium 226 MDC		2.4	pCi/g-dry							

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

R - Relative Percent Difference (RPD) exceeds advisory limit

U - Not detected at Minimum Detectable Concentration (MDC)

Work Order Receipt Checklist

Rio Grande Resources Corporation C23060688

Login completed by:	Dakota R. Januska	Date Received:	6/19/2023
Reviewed by:	mstephens	Received by:	slr
Reviewed Date:	6/21/2023	Carrier name:	UPS

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	19.0°C No Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

Contact and Corrective Action Comments:

Energy Labs INC is missing pages three and four worth of samples from the chain of custody. All other samples are present and match the Chain of Custody.

We received the missing samples on 6/20/2023 @1000. The samples are intact and match the Chain of Custody. The Temperature for the cooler was 24.8°C and received with no temp blank or ice.
NOTE: The Lab Sample ID's will reflect a received date of when the initial samples were received which will be 6/19/2023 @1000.
Called and spoke with Ms.Anita and informed her we received the samples.

Work Order Receipt Checklist - Continued

Rio Grande Resources Corporation C23060688

Temperature Blank temperature for Cooler 1 was 19.0°C and Cooler 2 was 18.9°C.

6/19/23 DR

Chain of Custody & Analytical Request Record

ENERGY LABORATORIES — Trust our People. Trust our Data.

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Account Information *(Billing information)*

Company/Name	Rio Grande Resources Corporation
Contact	Anita Willcox
Phone	505-287-7971
Mailing Address	PO Box 1150
City, State, Zip	Grants, NM 87020
Email	anita.willcox@ga.com
Receive Invoice	☐Hard Copy ☒Email
Receive Report	☐Hard Copy ☐Email
Purchase Order	MT11572
Quote	16056
Bottle Order	

Report Information *(if different than Account Information)*

Company/Name	Rio Grande Resources Corporation
Contact	Bruce Norquist
Phone	505-287-7971
Mailing Address	PO Box 1150
City, State, Zip	Grants, NM 87020
Email	bruce.norquist@ga.com
Receive Report	☒Hard Copy ☒Email

Special Report/Formats: ☐ LEVEL IV ☐NELAC ☐ EDD/EDT *(contact laboratory)* ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	MTM Subsurface soil investigation
Sampler Name	Victor Patel
Sampler Phone	505-287-7971
Sample Origin State	New Mexico
EPA/State Compliance	☐ Yes ☒ No

URANIUM MINING CLIENTS MUST indicate sample type
☒ Unprocessed Ore
☐ Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11(e)2 Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Oil
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	EPA 901.1 Modified for Soil	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	WBSB-02 0-6"	05/17/2023	8:15 am	1	S	✓			C23060688-1
2	WBSB-04 0-6'	05/17/2023	8:35 am	1	S	✓			-2
3	WBSB-01 0-6'	05/17/2023	8:55 am	1	S	✓			-3
4	WBSB-05 0-6"	05/17/2023	9:20 am	1	S	✓			-4
5	WBSB-03 0-6"	05/17/2023	9:42 am	1	S	✓			-5
6	WBSB-07 0-6"	05/17/2023	10:14 am	1	S	✓			-6
7	WBSB-08 0-6"	05/17/2023	10:34 am	1	S	✓			-7
8	WBSB-08 1'-1.5'	05/17/2023	10:42 am	1	S	✓			-8
9	WBSB-06 0-6"	05/17/2023	10:54 am	1	S	✓			-9

ELI is REQUIRED to provide preservative traceability. If the preservatives supplied with the bottle order were **NOT** used, please attach your preservative information with this COC.

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Bruce L. Norquist	6/14/23	Bruce L. Norquist	Shelby Richins	6/9/23 1005	
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number *(cash/check only)*

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

Chain of Custody & Analytical Request Record

ENERGY LABORATORIES — Trust our People. Trust our Data.

www.energylab.com

Account Information *(Billing information)*

Company/Name	Rio Grande Resources Corporation
Contact	Anita Willcox
Phone	505-287-7971
Mailing Address	PO Box 1150
City, State, Zip	Grants, NM 87020
Email	anita.willcox@ga.com
Receive Invoice	☐Hard Copy ☒Email
Receive Report	☐Hard Copy ☐Email
Purchase Order	MT11572
Quote	16056
Bottle Order	

Report Information *(if different than Account Information)*

Company/Name	Rio Grande Resources Corporation
Contact	Bruce Norquist
Phone	505-287-7971
Mailing Address	PO Box 1150
City, State, Zip	Grants, NM 87020
Email	bruce.norquist@ga.com
Receive Report	☒Hard Copy ☒Email
Special Report/Formats:	☐ LEVEL IV ☐NELAC ☐ EDD/EDT *(contact laboratory)* ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	MTM Subsurface soil investigation
Sampler Name	Victor Patel
Sampler Phone	505-287-7971
Sample Origin State	New Mexico
EPA/State Compliance	☐ Yes ☒ No

URANIUM MINING CLIENTS MUST indicate sample type
- ☒ Unprocessed Ore
- ☐ Processed Ore (Ground or Refined) **CALL BEFORE SENDING
- ☐ 11(e)2 Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes

A - Air; W - Water; S - Soils/Solids; V - Vegetation; B - Bioassay; O - Oil; DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification *(Name, Location, Interval, etc.)*	Collection Date	Collection Time	Number of Containers	Matrix *(See Codes Above)*	EPA 901.1 Modified for Soil	See Attached	RUSH TAT	ELI LAB ID *Laboratory Use Only*
1	DSSB-01	05/17/2023	12:00 pm	1	S	✓			
2	MCSB-16 1'	05/18/2023	10:45 am	1	S	✓			
3	MCSB-16 2'	05/18/2023	11:00 am	1	S	✓			
4	MCSB-15 1'	05/18/2023	11:38 am	1	S	✓			
5	MCSB-17 1'	05/18/2023	8:45 am	1	S	✓			
6	MCSB-18 1'-1.5'	05/18/2023	9:48 am	1	S	✓			
7	DSSB-02	05/18/2023	1:00 pm	1	S	✓			
8	MCSB-11 4'	05/22/2023	11:04 am	1	S	✓			
9	MCSB-13 1'	05/22/2023	8:25 am	1	S	✓			

ELI is REQUIRED to provide preservative traceability. If the preservatives supplied with the bottle order were **NOT** used, please attach your preservative information with this COC.

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Bruce L. Norquist	6/14/23	Bruce L. Norquist		6/19/23	
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Sheila Perkins	1000	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number *(cash/check only)*

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ENERGY LABORATORIES
Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

www.energylab.com

Account Information *(Billing information)*

Company/Name	Rio Grande Resources Corporation
Contact	Anita Willcox
Phone	505-287-7971
Mailing Address	PO Box 1150
City, State, Zip	Grants, NM 87020
Email	anita.willcox@ga.com
Receive Invoice	☐Hard Copy ☒Email
Receive Report	☐Hard Copy ☐Email
Purchase Order	MT11572
Quote	16056
Bottle Order	

Report Information *(if different than Account Information)*

Company/Name	Rio Grande Resources Corporation
Contact	Bruce Norquist
Phone	505-287-7971
Mailing Address	PO Box 1150
City, State, Zip	Grants, NM 87020
Email	bruce.norquist@ga.com
Receive Report	☒Hard Copy ☒Email
Special Report/Formats:	☐ LEVEL IV ☐NELAC ☐ EDD/EDT *(contact laboratory)* ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	MTM Subsurface soil investigation
Sampler Name	Victor Patel
Sampler Phone	505-287-7971
Sample Origin State	New Mexico
EPA/State Compliance	☐ Yes ☒ No

URANIUM MINING CLIENTS MUST indicate sample type
☒ Unprocessed Ore
☐ Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11(e)2 Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Oil
DW - Drinking Water

Analysis Requested

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification *(Name, Location, Interval, etc.)*	Collection Date	Collection Time	Number of Containers	Matrix *(See Codes Above)*	EPA 901.1 Modified for Soil	See Attached	RUSH TAT	ELI LAB ID *Laboratory Use Only*
1	MCSB-12 1'	05/22/2023	9:28 am	1	S	✓			C23060688
2	MCSB-11 5'	05/22/2023	11:12 am	1	S	✓			
3	MCSB-14 1'	05/23/2023	8:53 am	1	S	✓			
4	MCSB-08 5'	05/23/2023	11:10 am	1	S	✓			
5	MCSB-08 6.5'	05/23/2023	11:25 am	1	S	✓			
6	MCSB-9 1'	05/24/2023	8:25 am	1	S	✓			
7	MCSB-9 2'	05/24/2023	8:40 am	1	S	✓			
8	MCSB-10 1'	05/24/2023	9:15 am	1	S	✓			
9	MCSB-5 4'	05/24/2023	10:40 am	1	S	✓			

ELI is REQUIRED to provide preservative traceability. If the preservatives supplied with the bottle order were **NOT** used, please attach your preservative information with this COC.

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Bruce L. Norquist	6/14/23	Bruce L. Norquist		6/19/23	
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Shelby Kitchens	1000	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number *(cash/check only)*

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Chain of Custody & Analytical Request Record

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Account Information (Billing information)

Company/Name	Rio Grande Resources Corporation
Contact	Anita Willcox
Phone	505-287-7971
Mailing Address	PO Box 1150
City, State, Zip	Grants, NM 87020
Email	anita.willcox@ga.com
Receive Invoice	☐Hard Copy ☒Email
Receive Report	☐Hard Copy ☐Email
Purchase Order	MT11572
Quote	16056
Bottle Order	

Report Information (if different than Account Information)

Company/Name	Rio Grande Resources Corporation
Contact	Bruce Norquist
Phone	505-287-7971
Mailing Address	PO Box 1150
City, State, Zip	Grants, NM 87020
Email	bruce.norquist@ga.com
Receive Report	☒Hard Copy ☒Email
Special Report/Formats:	☐ LEVEL IV ☐NELAC ☐ EDD/EDT (contact laboratory) ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	MTM Subsurface soil investigation
Sampler Name	Victor Patel
Sampler Phone	505-287-7971
Sample Origin State	New Mexico
EPA/State Compliance	☐ Yes ☒ No

URANIUM MINING CLIENTS MUST indicate sample type
- ☒ Unprocessed Ore
- ☐ Processed Ore (Ground or Refined) **CALL BEFORE SENDING
- ☐ 11(e)2 Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes

A - Air; W - Water; S - Soils/Solids; V - Vegetation; B - Bioassay; O - Oil; DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	Analysis Requested: EPA 901.1 Modified for Soil	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	MCSB-5 6'	05/24/2023	11:00 am	1	S	✓			C23060688
2	MCSB-5 7.5'	05/24/2023	11:10 am	1	S	✓			
3	MCSB-7 3'	05/24/2023	12:46 pm	1	S	✓			
4	MCSB-7 4.5'	05/24/2023	1:00 pm	1	S	✓			
5	DSSB-03	05/24/2023	1:30 pm	1	S	✓			
6	MCSB-06 6'	05/30/2023	9:15 am	1	S	✓			
7	MCSB-04 1'	05/30/2023	9:35 am	1	S	✓			
8	MCSB-04 2'	05/30/2023	9:45 am	1	S	✓			
9	MCSB-02 3'	05/30/2023	10:50 am	1	S	✓			

ELI is REQUIRED to provide preservative traceability. If the preservatives supplied with the bottle order were **NOT** used, please attach your preservative information with this COC.

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Bruce L. Norquist	6/14/23	Bruce L. Norquist		6/14/23	
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Shelby Richins	1000	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number (cash/check only)

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

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Chain of Custody & Analytical Request Record

www.energylab.com

Account Information (Billing information)

Company/Name	Rio Grande Resources Corporation
Contact	Anita Willcox
Phone	505-287-7971
Mailing Address	PO Box 1150
City, State, Zip	Grants, NM 87020
Email	anita.willcox@ga.com
Receive Invoice	☐Hard Copy ☒Email
Receive Report	☐Hard Copy ☐Email
Purchase Order	MT11572
Quote	16056
Bottle Order	

Report Information (if different than Account Information)

Company/Name	Rio Grande Resources Corporation
Contact	Bruce Norquist
Phone	505-287-7971
Mailing Address	PO Box 1150
City, State, Zip	Grants, NM 87020
Email	bruce.norquist@ga.com
Receive Report	☒Hard Copy ☒Email
Special Reports/Formats:	☐ LEVEL IV ☐NELAC ☐ EDD/EDT (contact laboratory) ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	MTM Subsurface soil investigation
Sampler Name	Victor Patel
Sampler Phone	505-287-7971
Sample Origin State	New Mexico
EPA/State Compliance	☐ Yes ☒ No

URANIUM MINING CLIENTS MUST indicate sample type
☒ Unprocessed Ore
☐ Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11(e)2 Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Oil
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	EPA 901.1 Modified for Soil	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	MCSB-02 4'	05/30/2023	11:00 am	1	S	✓			2306068
2	MCSB-02 5.2'	05/30/2023	11:15 am	1	S	✓			
3	MCSB-01 2'	05/30/2023	12:50 pm	1	S	✓			
4	MCSB-01 3'	05/30/2023	1:00 pm	1	S	✓			
5	MCSB-03 1'	05/30/2023	1:40 pm	1	S	✓			
6	MCSB-03 2'	05/30/2023	1:50 pm	1	S	✓			
7	DSSB-04	05/30/2023	2:15 pm	1	S	✓			
8	WBSB-09 0-6"	05/31/2023	8:25 am	1	S	✓			
9	WBSB-12 0-1"	05/31/2023	8:50 am	1	S	✓			

ELI is REQUIRED to provide preservative traceability. If the preservatives supplied with the bottle order were **NOT** used, please attach your preservative information with this COC.

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Bruce L. Norquist	6/14/23	Bruce L. Norquist		6/19/23	
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Shelby Robins	1020	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number (cash/check only)

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

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Chain of Custody & Analytical Request Record

www.energylab.com

Account Information (Billing information)

Company/Name	Rio Grande Resources Corporation
Contact	Anita Willcox
Phone	505-287-7971
Mailing Address	PO Box 1150
City, State, Zip	Grants, NM 87020
Email	anita.willcox@ga.com
Receive Invoice	☐Hard Copy ☒Email
Receive Report	☐Hard Copy ☐Email
Purchase Order	MT11572
Quote	16056
Bottle Order	

Report Information (if different than Account Information)

Company/Name	Rio Grande Resources Corporation
Contact	Bruce Norquist
Phone	505-287-7971
Mailing Address	PO Box 1150
City, State, Zip	Grants, NM 87020
Email	bruce.norquist@ga.com
Receive Report	☒Hard Copy ☒Email
Special Report/Formats:	☐ LEVEL IV ☐NELAC ☐ EDD/EDT (contact laboratory) ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	MTM Subsurface soil investigation
Sampler Name	Victor Patel
Sampler Phone	505-287-7971
Sample Origin State	New Mexico
EPA/State Compliance	☐ Yes ☒ No

URANIUM MINING CLIENTS MUST indicate sample type
☒ Unprocessed Ore
☐ Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11(e)2 Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Oil
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	EPA 901.1 Modified for Soil	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	WBSB-12 2-6"	05/31/2023	9:00 am	1	S	✓			
2	WBSB-10 0-6"	05/31/2023	9:10 am	1	S	✓			
3	WBSB-11 0-6"	05/31/2023	9:35 am	1	S	✓			
4	OPSB-03 4.2'	06/01/2023	9:10 am	1	S	✓			
5	OPSB-03 4.5'	06/01/2023	9:25 am	1	S	✓			
6	OPSB-02 5.5'	06/01/2023	11:20 am	1	S	✓			
7	OPSB-05 3.75'	06/01/2023	11:55 am	1	S	✓			
8	DSSB-05	06/01/2023	12:30 pm	1	S	✓			
9									

ELI is REQUIRED to provide preservative traceability. If the preservatives supplied with the bottle order were **NOT** used, please attach your preservative information with this COC.

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Bruce L. Norquist	6/14/23	Bruce L Norquist		6/19/23	
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Shelby Nichols	1000	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number (cash/check only)

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

Appendix C

Radiologic Instrument Calibration and Operational Function Check and Collimated Detector Correlation Documentation

AVM Environmental Services, Inc.
Ludlum SCA L2221 - 44-20 3x3 NaI Detector Function Check
559 - 659 KeV Gamma Radiation Soil Screening

L2221 #290801

Ludlum 44-20 3x3 NaI Detector, #PR295573

Function Check Source ID: 1% U_3O_8 Ore in Sealed can

Acceptable background Count (cpm) Range (20%) 53 to 79

Acceptable Source Count (cpm) Range (20%) 12557 to 18835

Date	Physical Check	Cal Date	Battery(1) Volts or OK	HV Volts	Threshhold mV (2)	Window mV	Window In/Out	BKG Counts cpm	Source Counrts cpm	Within Acceptable Range Y or N	MDC pCi/gm	Tech
5-17-23	✓	5-10-23	✓	577	559	100	in	70	16805	Y	—	VP
5-18-23	✓	5-10-23	✓	578	559	100	in	66	16200	Y	—	VP
5-22-23	✓	5-10-23	✓	582	559	100	in	68	15900	Y	—	VP
5-23-23	✓	5-10-23	✓	582	559	100	in	71	15508	Y	—	VP
5-25-23	✓	5-10-23	✓	578	559	100	in	73	16253	Y	—	VP
5-30-23	✓	5-10-23	✓	577	559	100	in	72	16101	Y	—	VP
5-31-23	✓	5-10-23	✓	575	559	100	in	64	15789	Y		VP
6-1-23	✓	5-10-23	✓	577	559	100	in	71	16224	Y	—	VP

Note: (1) Battery Voltage for Ludlum 2221 must be >5.3 volts; (2) Threshhold must be at 220 mV; (3) Window @ 440, must be IN

AVM Environmental Services, Inc
Scaler/Ratemeter - HP-210L Detector Function Check

Scaler/Ratemeter ID: LIZ S#274216

HP-210L Detector ID: ANA-1

Function Check Source ID: 1% U_3O_8 Ore in Sealed can

Acceptable background Count (cpm) Range (20%) 34 to 50

Acceptable Source Count (cpm) Range (20%) 2880 to 4320

Date	Physical Check	Cal date	Battery Volts or OK	HV Volts	BKG Counts cpm	Source Counrts cpm	Within Acceptable Range Y or N	Comments	Tech
10-7-22	✓	10-7-22	ok	.9	40	3700	y	@ AVM office	VP
1-4-23	✓	10-7-22	ok	.9	45	3600	y	@ AVM office	VP
4-5-23	✓	10-7-22	ok	.9	40	3600	y	@ AVM office	VP
4-11-23	✓	10-7-22	ok	.9	40	3600	y	@ AVM office	VP
4-12-23	✓	10-7-22	ok	.9	40	3600	y	@ AVM office	VP
4-13-23	✓	10-7-22	ok	.9	40	3600	y	@ AVM office	VP
4-20-23	✓	10-7-22	ok	.9	40	3600	y	@ AVM office	VP
5-9-23	✓	10-7-22	ok	.9	40	3600	y	@ AVM office	VP
5-16-23	✓	10-7-22	ok	.9	40	3400	y	@ AVM office	VP
5-17-23	✓	10-7-22	ok	.9	40	3300	y	@ AVM office	VP
5-18-23	✓	10-7-22	ok	.9	40	3400	y	@ AVM office	VP
5-22-23	✓	10-7-22	ok	.9	40	3300	y	@ AVM office	VP
5-23-23	✓	10-7-22	ok	.9	40	3400	y	@ AVM office	VP
5-24-23	✓	10-7-22	ok	.9	40	3600	y	@ AVM office	VP
5-25-23	✓	10-7-22	ok	.9	40	3400	y	@ AVM office	VP
5-30-23	✓	10-7-22	ok	.9	45	3600	y	@ AVM office	VP
5-31-23	✓	10-7-22	ok	.9	40	3300	y	@ AVM office	VP
6-1-23	✓	10-7-22	ok	.9	40	3400	y	@ AVM office	VP

Note: (1) Threshhold must be at 100 mV;

AVM Environmental Services, Inc.
Scaler/Ratemeter - 2" x 2" NaI Detector Function Check

Function Check Source ID: 1% U_3O_8 Ore in Sealed can

2" x 2" NaI Detector ID: SPA-3 S# 408522-30

Acceptable background Count (cpm) Range (20%) 6391 to 9587 (Bare)

Acceptable background Count (cpm) Range (20%) 2546 to 3820 (collimated)

Acceptable Source Count (cpm) Range (20%) 77687 to 116531

Date	Scaler/Ratemeter	Physical Check	Cal Due	Battery(1) Volts or OK	HV Volts	THR mV (2)	Window In or OUT(3)	C.C.(4)	BKG Counts cpm	Source Counrts cpm	Within Acceptable Range Y or N	MDC pCi/gm	Tech
2-1-23	L2221 S# 290801	✓	10-7-23	ok	900	10	out	1	7989 Bare / 3183 Coll.	97109	Y	–	VP
4-5-23	L2221 S# 68782	✓	10-7-23	ok	900	10	out	1	7621 Bare / 2949 Coll.	99478	Y	–	VP
4-11-23	L2221 S# 68782	✓	10-7-23	ok	900	10	out	1	7822 Bare / 3044 Coll.	99630	Y	–	VP
4-12-23	L2221 S# 68782	✓	10-7-23	ok	900	10	out	1	7947 Bare / 3122 Coll.	98687	Y	–	VP
4-13-23	L2221 S# 68782	✓	10-7-23	ok	900	10	out	1	7894 Bare / 3150 Coll.	99731	Y	–	VP
4-20-23	L2221 S# 68782	✓	10-7-23	ok	900	10	out	1	7850 Bare / 2987 Coll.	99214	Y	–	VP
5-16-23	L2221 S# 68782	✓	10-7-23	ok	900	10	out	1	7714 Bare / 3018 Coll.	97431	Y	–	VP
5-17-23	L2241-2 S# 287029	✓	10-7-23	ok	900	10	N/A	1	7914 Bare / 3002 Coll.	99331	Y	–	VP
5-18-23	L2241-2 S# 287029	✓	10-7-23	ok	900	10	N/A	1	7842 Bare / 3118 Coll.	98522	Y	–	VP
5-22-23	L2241-2 S# 287029	✓	10-7-23	ok	900	10	N/A	1	VP 7644 3168 Bare / 764 Coll.	97555	Y	–	VP
5-23-23	L2241-2 S# 287029	✓	10-7-23	ok	900	10	N/A	1	7912 Bare / 2974 Coll.	98782	Y	–	VP
5-24-23	L2241-2 S# 287029	✓	10-7-23	ok	900	10	N/A	1	8086 Bare / 3157 Coll.	98949	Y	–	VP
5-30-23	L2241-2 S# 287029	✓	10-7-23	ok	900	10	N/A	1	7814 Bare / 3160 Coll.	97901	Y	–	VP
5-31-23	L2241-2 S# 287029	✓	10-7-23	ok	900	10	N/A	1	7833 Bare / 3022 Coll.	98634	Y	–	VP
6-1-23	L2241-2 S# 287029	✓	10-7-23	ok	900	10	N/A	1	7882 Bare / 3018 Coll.	97601	Y	–	VP
6-7-23	L2241-2 S# 287029	✓	10-7-23	ok	900	10	N/A	1	7942 Bare / 3001 Coll.	98441	Y	–	VP

Note: (1) Battery Voltage for Ludlum 2221 must be >5.3 volts; (2) Threshhold must be at 10.0 mV; (3) Window Position must be OUT; (4) CC on L2241-2 set at 0.001
For L2241-2 Check HV and Threshold using Ludlum 500 pulser.

AVM Environmental Services, Inc.
Micro R Meter Function Check Form

Micro R Meter: Ludlum 19, SR#76248

Function Check Source ID: 1% U_3O_8 Ore in Sealed can

Function Check @ Calibration 115

Acceptable Function Check Reading (uR/hr) Range (20%) 92 to 138

Date	Physical Check	Cal Date	Battery(1) Volts or OK	BKG Reading uR/hr	Source Reading (2) uR/hr	Within Acceptable Range Y or N	Cal Due	Tech
10-17-22	✓	10-6-22	ok	10-12	110	y	10-6-23	VP
1-4-23	✓	10-6-22	ok	8-10	120	y	10-6-23	VP
4-5-23	✓	10-6-22	ok	8-10	110	y	10-6-23	VP
4-11-23	✓	10-6-22	ok	8-10	110	y	10-6-23	VP
4-12-23	✓	10-6-22	ok	8-10	110	y	10-6-23	VP
4-13-23	✓	10-6-22	ok	8-10	110	y	10-6-23	VP
4-20-23	✓	10-6-22	ok	8-10	110	y	10-6-23	VP
5-9-23	✓	10-6-22	ok	8-10	110	y	10-6-23	VP
5-16-23	✓	10-6-22	ok	8-10	110	y	10-6-23	VP
5-17-23	✓	10-6-22	ok	8-10	110	y	10-6-23	VP
5-18-23	✓	10-6-22	ok	8-10	110	y	10-6-23	VP
5-22-23	✓	10-6-22	ok	10-12	100	y	10-6-23	VP
5-23-23	✓	10-6-22	ok	8-10	100	y	10-6-23	VP
5-24-23	✓	10-6-22	ok	8-10	110	y	10-6-23	VP
5-25-23	✓	10-6-22	ok	10-12	110	y	10-6-23	VP
5-30-23	✓	10-6-22	ok	8-10	100	y	10-6-23	VP
5-31-23	✓	10-6-22	ok	8-10	100	y	10-6-23	VP
6-1-23	✓	10-6-22	ok	8-10	110	y	10-6-23	VP

Note: (1) Battery Voltage must be within BAT TEST Range (2) Function Check Source must be placed in the circle on the front side of the meter

AVM Environmental Services Inc.

Scaler/Ratemeter Calibration Form

Model : L2221 S/N: 68782

Reference Instrument/Source: Ludlum Pulser 500, S/N:114513

HV Calibration

HV Readout (2 points): Ref/Inst 600 / 600 Ref/Inst 900 / 900

Ratemeter Calibration

Instrument Threshold @ 100 (10 mV), WIN: Out, HV 900VDC; Pulser Threshold @ 200 (20mV)

Range/Mode	Range Multiplier	Calibration Point (Pulser Setting) cpm x multiplier	Target CPM (±5%)	As Found Reading		Left or Set Reading
Ratemeter	x1	40x1	38-42	40		40
	x1	40x10	380-420	400		400
	x10	40x100	3800-4200	4000		4000
	x100	40x1K	38K-42K	40000		40000
	x1K	40x10K	380K-420K	400000		400000
Digital Ratemeter	-	40x1	38-42	39		39
	-	40x10	380-420	400		400
	-	40x100	3800-4200	3960		3960
	-	40x1K	38K-42K	39500		39500
	-	40x10K	380K-420K	395000		395000

Threshold/Gain Calibration

WIN OUT

Pulser Amplitude (mV)	Pulser CPM		L2221 Theshold (mv)	Target CPM	L2221 CPM Found		L2221 CPM Left or Set @
10.0	40000		100 (10 mV)	27K -33K	31534		31534
20.0	40000		200 (20 mV)	27K -33K	29273		29273
30.0	40000		300 (30 mV)	27K -33K	30822		30822
40.0	40000		400 (40 mV)	27K -33K	29659		29659
50.0	40000		500 (50 mV)	27K -33K	29242		29242

Note: Use R174 Gain Control on Power Supply Board to adjust L2221 CPM @75% for Threshold/Gain Calibration

Window Cut-off Points Check

L2221 Threshold set @100 (10.0 mv)

WIN @ 100 (10.0 mV) ✓ WIN @ 400 (40.0 mV) ✓

WIN @ 200 (20.0 mV) ✓ WIN @ 500 (50.0 mV) ✓

Date 10-7-22 Calibrated By Vicky Patel

AVM Environmental Services Inc.

Scaler/Ratemeter Calibration Form

Model : L2221 S/N: 290801

Reference Instrument/Source: Ludlum Pulser 500, S/N:114513

HV Calibration

HV Readout (2 points): Ref/Inst 600 / 600 Ref/Inst 900 / 900

Ratemeter Calibration

Instrument Threshold @ 100 (10 mV), WIN: Out, HV 900VDC; Pulser Threshold @ 200 (20mV)

Range/Mode	Range Multiplier	Calibration Point (Pulser Setting) cpm x multiplier	Target CPM (±5%)	As Found Reading		Left or Set Reading
Ratemeter	x1	40x1	38-42	40		40
	x1	40x10	380-420	400		400
	x10	40x100	3800-4200	4000		4000
	x100	40x1K	38K-42K	40000		40000
	x1K	40x10K	380K-420K	400000		400000
Digital Ratemeter	-	40x1	38-42	40		40
	-	40x10	380-420	395		395
	-	40x100	3800-4200	3950		3950
	-	40x1K	38K-42K	39503		39503
	-	40x10K	380K-420K	395978		395978

Threshold/Gain Calibration

WIN OUT

Pulser Amplitude (mV)	Pulser CPM		L2221 Theshold (mv)	Target CPM	L2221 CPM Found		L2221 CPM Left or Set @
10.0	40000		100 (10 mV)	27K -33K	30889		30889
20.0	40000		200 (20 mV)	27K -33K	30419		30419
30.0	40000		300 (30 mV)	27K -33K	29799		29799
40.0	40000		400 (40 mV)	27K -33K	30238		30238
50.0	40000		500 (50 mV)	27K -33K	30330		30330

Note: Use R174 Gain Control on Power Supply Board to adjust L2221 CPM @75% for Threshold/Gain Calibration

Window Cut-off Points Check

L2221 Threshold set @100 (10.0 mv)

WIN @ 100 (10.0 mV) ✓ WIN @ 400 (40.0 mV) ✓

WIN @ 200 (20.0 mV) ✓ WIN @ 500 (50.0 mV) ✓

Date 10-7-22 Calibrated By Victor Patel

AVM Environmental Services Inc.
Scaler/Ratemeter Calibration Form

Scaler/Ratemeter Model: L2241-2 S/N: 287029

Calibration Source: Ludlum Model 500 Pulser #114513

Threshold (input sensitivity), Found at: 10 mV Left or Set at: 10 mV

Window, In/Out: N/A Window: N/A mV

Pulser Amplitude Set @: 20 mV

Range/Mode	Calibration Point (Pulser Setting) cpm x multiplier	As Found Reading	Left or Set Reading
Ratemeter	40x1	38-42	38-42
	40x10	395-400	395-400
	40x100	3.95k-4k	3.95k-4k
	40x1k	39.6k-40k	39.6k-40k
Scaler	40x1	39	39
	40x10	398	398
	40x100	3998	3998
	40x1k	39940	39940

HV Set @: 900 VDC

Date: 10-7-22 Calibrated By: Victor Patel

AVM Environmental Services Inc.
Scaler/Ratemeter Calibration Form

Scaler/Ratemeter Model: L12 S/N: 274216

Calibration Source: Ludlum Model 500 Pulser #114513

Threshold (input sensitivity), Found at: 10 mV Left or Set at: 10 mV

Window, In/Out: N/A Window: N/A mV

Pulser Amplitude Set @: 20 mV

Range/Mode	Calibration Point (Pulser Setting) cpm x multiplier	As Found Reading	Left or Set Reading
x 1	40x10	400	400
x 10	40x100	4000	4000
x 100	40x1k	40k	40k
x 1000	40x10k	400k	400k

HV Set @: 900 VDC

Date: 10-7-22 Calibrated By: [signature] Vic Patel

AVM Environmental Services Inc.
L2221 SCA/L44-20 Energy Calibration Form

SCA: L2221, SR #290801 Detector: Ludlum 44-20 (3x3 NaI Scintillator)

Calibration Source: Cs-137 Check Source, 5 uCi (August 2008) For 662 KeV Peak Cal

Threshold (input sensitivity) **652**

Window, In/Out **IN** Window **20**

HV Initial 100, At Peak 579

Maximum CPM: 198160 Background CPM: 13

HV Set @ 579 VDC

For Bi-214 609.2 KeV Peak (559 - 659 KeV ROI), Set Threshold @ 559, Window @ 100

Calibration Check w 1% U3O8 Ore Check Source: 15696 CPM

BKG = 65 cpm

Date 5-10-23 Calibrated By

AVM Environmental Services, Inc.
Field Soil Sample Gamma Radiation Screening Form
Mt. Taylor Mine Site

Instrumentation : Scaler/Ratemeter L2221 S# 68782, Detector L44-20 S#295573
Instrument Calibration Date: 10-7-22, Instrument Function Check Performed: ✓
Survey Area/Unit Decsription Mt Taylor Mine - Correlation Calibration

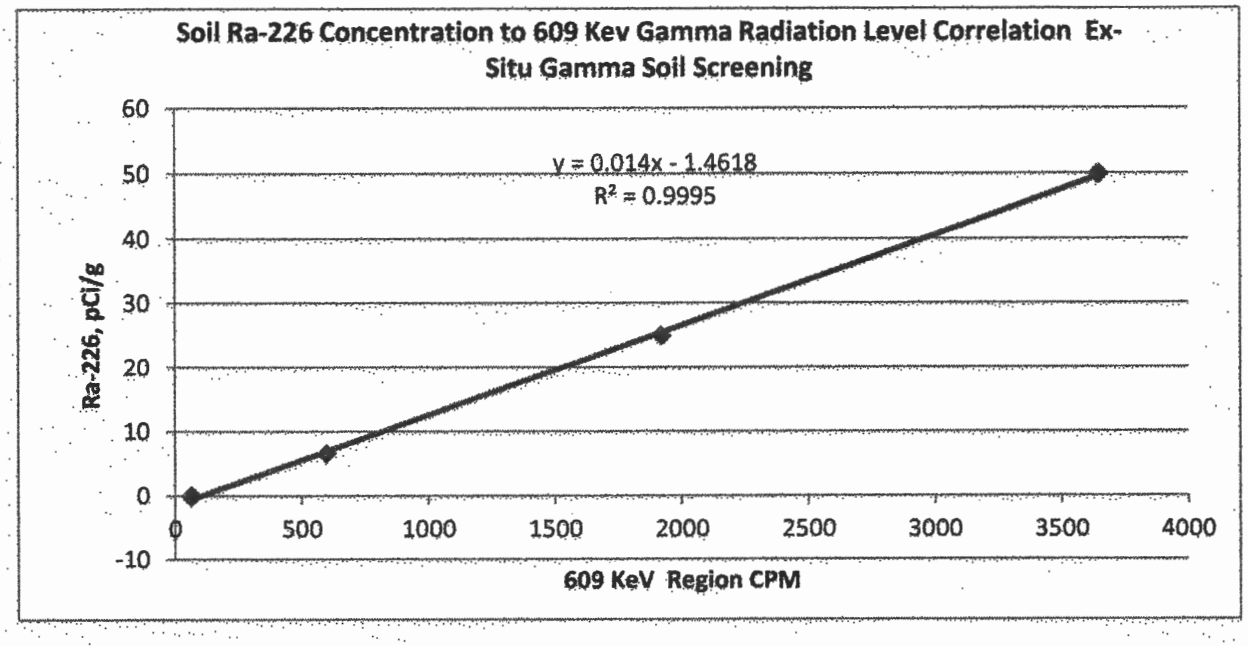
Area exposure rate:

Date/Time	Soil Sample ID	Sample Weight Grams	609 (559-669) Kev Gross Counts, CP5M	Weight Corrected CP5M	CPM	Reference Soil Compare (< or >)	Comments
5-10-23	Blank		329		66		
5-10-23	6.6pCi/g Ref. Soil	3000	2998		600		
5-10-23	25 pCi/g Ref Soil	2984	9552	9603	1921		
5-10-23	50 pCi/g Ref Soil	2976	18078	18224	3645		

Technician Signature _____, Reviewed by _____

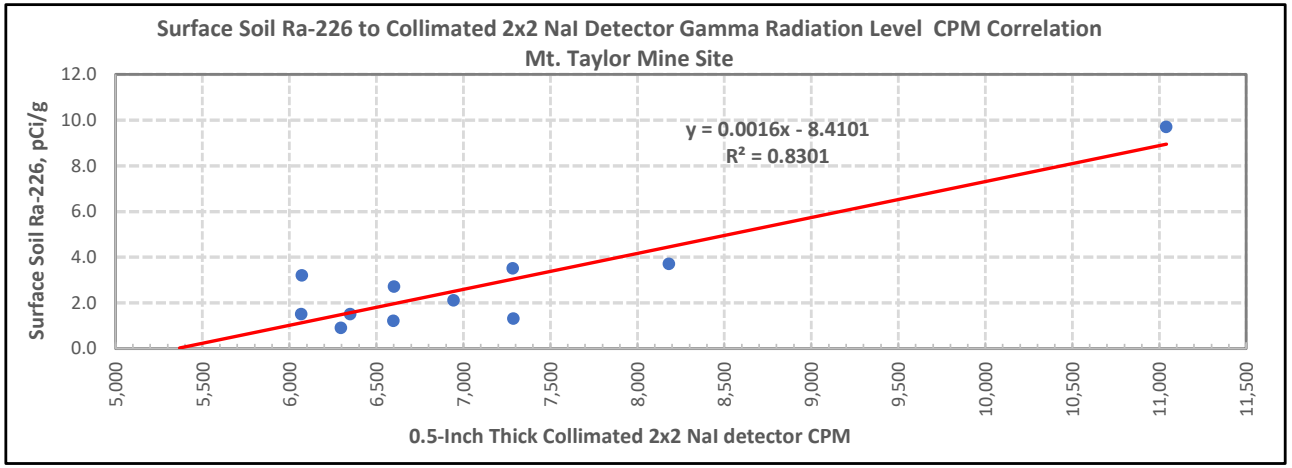
AVM Environmental Services
Ex-Situ Soil Screening Gamma Radiation Level to Ra-226 Correlation
Mt. Taylor Mine Site Subsurface Soil Investigation

Reference Soil ID	Date	Ra-226 pCi/g	Wt gms	609 KeV CP5Min Gross (3x3 Nal Detector)	CPM
Blank	5/10/2023	-	-	329	66
6.6 pCi/g Ra-226 Ref Soil	5/10/2023	6.6	3000	2998	600
25 pCi/g Ra-226 Ref Soil	5/10/2023	25	3000	9603	1921
50 pCi/g Ra-226 Ref Soil	5/10/2023	50	3000	18224	3645



Surface Soil Ra-226 to Gamma Radiation Level Correlation
Mount Taylor Mine Site

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD83 StatePlane NM West, Feet		Static Gamma Radiation Survey		Sample Laboratory Analysis	Gamma Exposure Rate µR/hr
		Northing	Easting	Bare 2x2 NaI Detector CPM	Collimated (0.5" Pb) 2x2 NaI Detector CPM	Ra-226 pCi/g	
05/17/23	WBSB-01	1,581,413	2,782,866	26,897	6,297	**0.9**	33
05/17/23	WBSB-02	1,581,390	2,782,444	26,749	6,350	**1.5**	33
05/17/23	WBSB-03	1,581,356	2,783,329	24,529	6,073	**3.2**	31
05/17/23	WBSB-04	1,581,339	2,782,706	30,064	6,069	**1.5**	37
05/17/23	WBSB-05	1,581,329	2,783,062	31,828	6,945	**2.1**	41
05/17/23	WBSB-06	1,581,271	2,782,942	35,410	7,288	**1.3**	47
05/17/23	WBSB-07	1,581,187	2,783,253	37,965	8,183	**3.7**	47
05/17/23	WBSB-08	1,581,164	2,782,988	55,849	11,042	**9.7**	70
05/31/23	WBSB-09	1,581,254	2,782,870	36,491	6,599	**1.2**	44
05/31/23	WBSB-10	1,581,263	2,783,140	34,898	7,286	**3.5**	48
05/31/23	WBSB-11	1,581,277	2,783,335	29,002	6,602	**2.7**	34



SUMMARY OUTPUT

Regression Statistics

Multiple R	0.91
R Square	0.83
Adjusted R Square	0.81
Standard Error	1.08
Observations	11

ANOVA

	df	SS	MS	F	Significance F
Regression	1	50.92	50.92	43.97	9.58E-05
Residual	9	10.42	1.16		
Total	10	61.35			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	-8.41	1.73	-4.87	0.00089	-12.32	-4.50	-12.32	-4.50
X Variable 1	0.00	0.00	6.63	0.00010	0.00104	0.00211	0.00104	0.00211

Addendum

August 14, 2023 Surface and Subsurface Soil Radiologic Characterization Report Windblown Area, Ore Pad Area and Mine Compound, Mount Taylor Mine Site

This addendum presents the revision to the Ore Pad soil radiologic characterization summary described in the August 14, 2023 Surface and Subsurface Soil Radiologic Characterization; Windblown Area, Ore Pad Area and Mine Compound Report (Report) for the Mt. Taylor Mine Site (Site). As discussed in Section 4.5 and shown in Figure 2 of the Report, the approximated depth of waste rock from ground surface to non-impacted native soil in the northwest area of the Ore Pad was estimated at 15 feet, two feet past the excavation depth limit of the trenching equipment, at two test pit locations (OPSB-01 and OPSB-08). The waste rock depth in the other areas of the Ore Pad ranged from 3.0 feet to 4.5 feet below ground surface (bgs). Upon review of historical operational information, the eastern portion of the adjacent Ore Pad Runoff Retention Pond (Retention Pond) was backfilled with low grade waste rock and used as part of the foundation for the Ore Pad Area expansion. A 1981 aerial image of the Site (Figure 1A) shows the footprint of the Retention Pond prior to backfilling to expand the Ore Pad. The 1981 aerial image explains the cause of the anomalous estimated depth of the waste rock in the northwest area of the Ore Pad compared to the remainder of the areas of the Ore Pad. As shown in Figure 2A, recent topographic contours show the elevation of the northwest area of the Ore Pad ground surface at 7320 feet mean sea level (msl) and the Retention Pond bottom ground surface at 7298 feet msl. Considering that the waste rock in the existing Retention Pond is two feet thick, the baseline elevation of the Retention Pond bottom is estimated at 7296 feet msl. Thus, the waste rock depth within the Retention Pond foot print in the northwest area of the Ore Pad is estimated at 24 feet.

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Environmental Services, Inc.

Figure 1A
Mt. Taylor Mine Site
1981 Historic Areal Image of Ore Pad and Ore Pad Retention Pond Area with 2023 Soil Sample/Test Pit Locations

Legend

- 2023 Soil Sample/Test Pit Location
- North Controlled Area Fence
- Ore Pad Characterization Area

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Figure 2A
Mt. Taylor Mine Site
Ore Pad and Ore Pad Retention Pond Area Topographic Countour with 2023 Soil Sample/Test Pit Locations

Legend

- 2023 Soil Sample/Test Pit Location (>6.8 Ra-226 pCi/g RCC Depth)
- Topographic Contour Lines
- Existing Ore Pad Retention Pond
- Historic Approx. Ore Pad Retention Pond
- Ore Pad Characterization Area
- North Controlled Area Fence

Treatment Pond Radiologic Characterization

Mt. Taylor Mine Site
San Mateo, NM

Prepared by:
AVM Environmental Services, Inc.
1717 Del Norte Blvd.
Grants, NM 87020

Prepared for:
Rio Grande Resource Corporation
PO Box 1150
Grants, NM 87020

June 4, 2024

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Appendices

Appendix A Surface and Subsurface Contamination Field Investigation Documentation (Soil Sample Log Forms, Field Soil Sample Ex-Situ Gamma Radiation Screening Forms)
Appendix B Concrete Structure Radiologic Investigation
Appendix C Radiologic Instrument Calibration and Operational Function Check and Collimated Detector Correlation Documentation
Appendix D Soil Sample COC and Laboratory Analytical Results Report

1.0 Introduction and Background

This report provides the results of the Treatment Pond Radiologic Characterization (TPRC) that was conducted at the Mt. Taylor Mine (Site) in Cibola County, near San Mateo, New Mexico. This TPRC was performed to check the status and estimate radiologic contamination exceeding the Site Radiation Cleanup Criteria (RCC) of 6.8 pCi/g Radium (Ra)-226 within six treatment ponds at the Site: Treatment Ponds 1, 4, 5, 6, 7 and 8. Any synthetic liners and previously identified radiologically impacted soils were removed from the treatment ponds during material removal efforts conducted in 2019, prior to this characterization. Additionally, various treatment pond concrete structures (hydraulic control structures) were left in place either intact or partially demolished, with concrete rumble remaining nearby most structures. The majority of the demolished concrete pieces were placed in piles south of the TPRC area. The TPRC area includes treatment pond dikes, bottoms, and concrete structures, as shown in the Figure 1. The methods and procedures used were consistent with the June 2020 Work Plan for Post-Mining Radiological Surveys of Permit Area and Impacted Lands (2020 Work Plan) and the applicable survey methods described in the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM, EPA 2000a). The RCC specified in the March 2016 *Joint Guidance for the Cleanup and Reclamation of Existing Uranium Mining Operations in New Mexico* (EMNRD, 2016) (2016 Guidance) by the Energy, Minerals & Natural Resources Department (EMNRD) and the New Mexico Environment Department (NMED) was used for the investigation level (IL). The Ra-226 cleanup criteria of 5.0 pCi/g above the background level in land averaged over 100 square meters in surface soil (top six inches) specified in the Joint Guidance is taken from the UMTRCA (40 CFR 192) regulation, which is based on an unrestricted land use exposure scenario. A 6.8 pCi/g Ra-226 IL (5.0 pCi/g plus 1.8 pCi/g background level) has been established for the Site.

The Site was an underground uranium mine located in Cibola County, near San Mateo, New Mexico. The mine was developed by Gulf Mineral Resources Company (Gulf) in the 1970s and ore production occurred from 1979 to 1982. Following transfer of the Site to Chevron Resources Company in 1985, the ore production resumed and continued until 1990. Rio Grande Resources (RGR) acquired the Site in 1991. In 1999 the Site entered standby status under Mine Permit C1002RE with EMNRD. On December 29, 2017, the permit changed to an active status, and on December 3, 2019, RGR notified MMD of intentions to begin the Site closeout/closure process. The following sections describe the strategy, methods and procedures that were used and the results of the TPRC conducted at the Site.

2.0 Previous Radiologic Characterizations

Surface gamma radiation surveys were performed periodically within operationally controlled areas of the Site to monitor changes in radiological conditions during a period of remedial excavations in the Mine Water Treatment Unit (MWTU) ponds, construction of the disposal cell and placement of contaminated mine materials, and gradual removal of ore from the ore stockpile. The most recent gamma survey prior to this characterization, conducted March 2020, showed elevated gamma radiation levels in certain operational areas within the Controlled Area boundaries, including areas within the treatment ponds. The gamma

survey results are summarized in the June 2020 Work Plan, and indicate surface soils in portions of treatment Ponds 4 through 8, and the entire Pond 1 area exceed the 6.8 pCi/g Ra-226 IL.

3.0 Objective of the Radiological Characterization

The Site is a former uranium mine, therefore the surface and subsurface soil is expected to be impacted by radionuclides associated with the uranium decay series, with Ra-226 being the primary Constituent of Concern (COC). The objective of this characterization is to evaluate Ra-226 contamination exceeding the Site IL of 6.8 pCi/g Ra-226 in surface and subsurface soils to facilitate volume estimates of radiologic impacted material within the TPRC area.

4.0 Field Investigation

Field investigations for this characterization were conducted consistent with the June 2020 Work Plan and were performed during the period of November 2, 2023 through April 29, 2024. The specified TPRC areas are shown in Figure 1. The field investigations included both static 0.5-inch thick lead collimated and uncollimated (bare) 2x2 sodium iodide (NaI) detector gamma radiologic survey measurements and Differential Global Positioning System (DGPS) based bare detector gamma scan surveys, along with ex-situ soil screening, soil sampling, and offsite vendor laboratory confirmatory sample analysis. Geo-located gamma scans were conducted to provide Ra-226 concentration level estimates in surface soil and to assist in determining data point (static gamma, soil sampling) locations to assess surface and subsurface radiologic contamination relative to the IL. Ex-situ gamma radiation soil screening was performed on soil samples collected during this TPRC to provide real-time information to estimate surface and subsurface contamination depths. Offsite vender laboratory soil sample analysis was performed to confirm contamination relative to the IL levels estimated by the field ex-situ gamma radiation soil screening.

4.1 Surface Gamma Radiation Scan and Static Survey

The instrument configuration for direct gamma radiation level measurements during this characterization consisted of lead collimated and bare 2x2 NaI scintillation detectors (Eberline SPA-3) for detection of gamma radiation, coupled to a scaler/rate meter (Ludlum 2221 or Ludlum 2241). This instrument configuration is used widely for this type of survey and is recommended by the MARSSIM. The scaler/rate meters were interfaced with a sub-meter accurate DGPS with surveying software and a data logger/controller for electronically recording the gamma radiation levels to the corresponding geo-location coordinates. The coordinate system used for this work was the State Plane Coordinate System (NAD83, New Mexico West, US Feet) system. Direct gamma radiation surveys using a NaI scintillation detector provide radiation levels in counts per unit time, generally obtained as counts per minute (cpm).

During this characterization, systematic gamma radiation scan surveys using bare 2x2 NaI detectors were performed at the Site to determine the level of Ra-226 in surface soil within the characterization areas.

Although bare detectors do not avoid lateral gamma radiation shine, bare detectors have a large field of view and provide a large scan coverage area for an efficient and conservative lateral extent of contamination assessment. To better characterize the surface soil and to assist in the selection of data point locations, the surface gamma scan survey was performed at a higher density, 30-feet transect spacing compared to the March 2020 scan density of about 60-ft transect spacing. Thirty feet spaced geo-projected transects for Treatment Ponds 4, 5, 6, 7 and 8 were digitally created using a mapping software and loaded on the field data logger/controller. A gamma scan survey was not conducted at Treatment Pond 1 since the March 2020 gamma scan showed uniformly elevated measurements over the entire area making the additional surface gamma scan with a bare detector unnecessary in selecting data point locations. Data point locations were selected in Treatment Pond 1 by selecting locations that would adequately characterize the elements of the treatment pond as well as the areal extent of the area, as shown in Figure 2. Additionally, three of the data point locations in Treatment Pond 1 were biasedly located in material removal excavations performed prior to this characterization. Based on a conservative field of view (FOV) of at least six feet diameter for a bare 2x2 NaI detector for Ra-226 gamma radiations, scanning transects spacing of 30 feet would provide at least a 20% scan coverage. The gamma scan survey was performed by scanning along these transects with a bare 2x2 NaI detector at 12 inches above the ground surface at a scan rate of about three feet per second, with a data collection time interval of two seconds.

The geo-located gamma scan data includes the gamma scan point ID, date and time, location coordinates, and bare detector gamma cpm. The scan data was exported from the data logger and the bare detector cpm were converted to equivalent Ra-226 estimate using the Site-specific correlation (Ra-226 pCi/g = 0.0005 x CPM)-7.3228 R^2 = 0.97) (2020 Work Plan). The scan data was mapped using mapping software, arranged in color coded ranges and then reviewed to identify areas that exceeded the IL. The color-coded range was structured to include the 6.8 pCi/g Ra-226 IL as shown in Figure 2. The characterization gamma scan survey included approximately 3,810 gamma scan data points within the TP characterization area. The gamma scan data was exported from the scan system data logger into an Excel file. The detector cpm was converted into equivalent estimated surface soil Ra-226 concentration in pCi/g using the Site-specific correlation for bare detectors as discussed in Section 4.5 of the 2020 Work Plan. A typical gamma scan data export table from the scan system data logger is shown in Table 1. Gamma scan survey data for this characterization are provided in an electronic file.

Thirty seven data point locations were selected within the Treatment Ponds 4, 5, 6, 7 and 8 characterization area based on surface gamma scan survey results and twelve data point locations were selected in the Treatment Pond 1 characterization area as described above, totaling in forty nine data point locations. One-minute static gamma radiation surveys were performed prior to collecting a soil sample at each data point location using a collimated 2x2 NaI detector. The survey data were recorded on Static Gamma Radiation Survey Forms, which are included in Appendix A. A Site-specific correlation for a 2x2 NaI 0.5-inch thick lead collimated detector was previously performed during the August 2023 Soil Radiologic Characterization. This correlation regression yielded an equation of Ra-226 = (cpm x 0.0016) – 8.41 with an acceptable R^2 value of 0.83. The collimated detector measurements were converted to soil Ra-226

concentrations using this correlation equation. The static gamma survey results are summarized in Table 2.

Treatment pond concrete structures located within the TPRC areas were surveyed by collecting a one minute collimated detector static gamma count on the intact structure walls. The static gamma survey was conducted with the collimated detector housing at contact with the concrete surface, which located the detector at 1.75 inches from the concrete surface. The results of the concrete surveys are included in Appendix B. In order to convert the collimated detector static survey results in cpm to the Ra-226 IL in pCi/g, the 2x2 NaI collimated detector was calibrated for the same survey geometry at the Department of Energy (DOE) Grants concrete calibration Pad. The calibration is included in Appendix C. The calibration indicates a level of 7,200 cpm for the 0.5 inch thick lead collimated detector at contact would be equivalent to the 6.8 pCi/g Ra-226 IL in concrete.

4.2 Soil Sampling and Ex-Situ Gamma Radiation Soil Screening

Soil sampling and on-Site ex-situ gamma radiation soil screening were performed from November 2, 2023, through April 29, 2024. These methods were used to estimate surface and subsurface soil Ra-226 contamination exceeding the IL at data point locations within the TPRC areas. The ex-situ gamma radiation soil screening was conducted to provide a real-time estimate of Ra-226 concentrations in soil samples. This method is more reliable than in-situ direct gamma radiation level measurements and allows for more certain real-time Ra-226 concentration assessments. The on-Site ex-situ soil screening method consists of selectively measuring the 609 KeV region gamma radiations of Bi-214, a decay product of Ra-226. A single channel analyzer (Ludlum L2221) integrated with a Ludlum 44-20 3x3 NaI scintillation detector was used to measure the 609 keV energy peak region of Bi-214. The soil sample was placed around the plastic lined detector in a heavily lead shielded counting chamber. The heavily shielded counting chamber lowers the system background counts, thus improving the system's minimum detectable concentration (MDC). A reference soil with the Ra-226 concentration of 6.6 pCi/g, comparable to the 6.8 pCi/g IL, was prepared and was used for soil screening during this characterization. The 6.6 pCi/g reference soil provides a conservative estimate of Ra-226 concentration in samples below the IL.

A total of 49 data point locations were selected for this TPRC, shown in Figure 2. Thirty seven data point locations were selected within the Treatment Pond 4, 5, 6, 7 and 8 characterization areas. The surface gamma scan indicated that no significant gamma shine was observed within these characterization areas. As a result, surface (0 to 6 inches) soil samples were not collected at the data points within this characterization area. The surface soil Ra-226 level was determined using the 0.5 inch thick collimated detector static gamma survey at these 37 data point locations. A one minute collimated detector static gamma survey provides a significantly higher certainty for a data point survey and the collimator mitigates any low level lateral gamma radiation shine from any nearby hot spots. A one minute collimated static gamma survey and both surface and subsurface soil samples were collected at the remaining twelve data point locations, which are all located within the Treatment Pond 1 characterization area.

Soil samples were collected from each of the 49 data point locations. The number and depth of the samples at each data point location varied depending upon location and soil screening results. At the 37 data points from the Treatment Pond 4, 5, 6, 7 and 8 characterization areas, a subsurface (6-12 inch) soil sample was collected, and ex-situ soil gamma screened. At five data point locations in this characterization area, TP-5B, TP-11, TP-15B, TP-16B and TP-21, a subsurface soil sample at a depth of 1-2 feet was collected and ex-situ soil screened since the 6-12 inch subsurface sample soil screening result was above the IL. At location TP-5B, an additional subsurface soil sample at a depth of 2-3 feet was collected since the 1-2 feet subsurface sample screening result was 6.0 pCi/g, near the IL. No additional subsurface soil samples were necessary at these locations. At each of the remaining 12 data points located in the Treatment Pond 1 characterization area, a surface and a subsurface (6 – 12") soil sample was collected, and ex-situ soil screened. At three data points located on the pond dike crests, TP-39, TP-41 and TP-46, the surface soil sample ex-situ soil screening results were above the IL. The 6-12 inch subsurface soil sample ex-situ soil screening results were above the IL in only one data point location, TP-36. The 1-2 feet subsurface soil sample ex-situ soil screening results at TP-36 was below the IL. No additional subsurface soils samples were necessary at these locations.

A backhoe was used to excavate a trench at each selected data point location for subsurface soil sample collection. The trenches were excavated in approximately 6 to 12 inches depth intervals. At each interval, a subsurface soil sample was collected from the base of the excavation for ex-situ soil screening. Stainless steel sampling trowels were used to collect all of the soil samples. The excavation continued until on-Site ex-situ soil screening indicated Ra-226 concentrations below the 6.8 pCi/g IL. The soil sample logs and the field soil screening forms are included in Appendix A. The soil ex-situ gamma screening data is summarized in Table 3, which includes Ra-226 concentrations of the samples relative to the 6.8 pCi/g IL.

Although the primary objective of the ex-situ gamma radiation soil screening was to determine the Ra-226 concentrations above or below the 6.8 pCi/g IL, Ra-226 concentrations were estimated in all soil samples collected and screened. A calibration/correlation of the ex-situ soil screening system was performed using a 6.6 pCi/g, a 25 pCi/g and a 50 pCi/g reference soil. This correlation is included in Appendix C. The estimated Ra-226 concentration of the subsurface soil samples determined using this correlation are included in Tables 3 and 4.

A total of nine, including one field quality assurance/quality check (QA/QC) duplicate, soil samples that were ex-situ soil screened on-Site were sent to an offsite vendor laboratory, Energy Laboratories, in Casper, WY. These soil samples were analyzed for Ra-226 using EPA Method 901.1 (modified for soil matrix) for the confirmation of the on-Site ex-situ soil screening results. The laboratory results report is included in Appendix D and are summarized in Table 3. As shown in the table, the estimated Ra-226 levels determined by the on-Site ex-situ soil screening are comparable with the laboratory Ra-226 results, specifically in regard to determining the Ra-226 levels above or below the IL.

4.3 Treatment Pond 1 Area Characterization Summary

In addition to subsurface soil samples, surface soil samples were collected at data points from within the Treatment Pond 1 characterization area to confirm the static gamma survey with a collimated detector, which indicated that the surface soil may not be elevated, as indicated by the 2020 bare detector surface soil gamma scan. As outlined in Tables 3 and 4, the soil screening results show that the surface and subsurface (6-12") soil Ra-226 levels are below the 6.8 pCi/g IL in all six samples located on the pond bottom in Treatment Pond 1. The surface and subsurface (6-12 inch) soil sample at location TP-35, which was collected from the base of a previously excavated area from the north dike, and the surface and subsurface (6-12 inch) soil sample at location TP-45, which was collected from the east dike crest, show Ra-226 levels below the 6.8 pCi/g IL. The ex-situ soil screening results show that samples collected from the crests of the dikes at four data point locations (TP-36, TP-39, TP-41 and TP- 46) the Ra-226 levels exceed the IL. Similar to TP-35, data point TP-41 was located at the base of a previous excavation. The subsurface soil (6-12 inch) Ra-226 levels are below the IL at all data point locations except for one location, TP-36. The screening results show the Ra-226 level at TP-36 in the 6-12 inch subsurface soil sample at 10.4 pCi/g, which is above the IL, and the 1-2 feet subsurface soil sample showed the Ra-226 level below the IL at 2.3 pCi/g. As shown in Figure 3, surface soil in the Treatment Pond 1 dikes exceeded the IL in some areas, but the subsurface soil is generally below the IL.

A one minute collimated detector static gamma survey was conducted on the concrete structure within the Treatment Pond 1 characterization area. The concrete structure was designated CS-10 and is located on the western dike inside slope. The gamma survey shows radiation cpm levels ranging from 9,408 to 25,471 cpm, above the 6.8 pCi/g Ra-226 IL equivalent of 7,200 cpm at all 7 survey points selected withing the concrete structure. Portions of the elevated gamma cpm levels may be due to apparent waste rock material near and surrounding the concrete structure, and from concrete surface staining from the historic retention of mine wastewater and sediments. A gamma radiation level of 90,000 cpm was observed in the bottom of the concrete sump, likely due to the remaining layer of mine waste sediments and soil. Further direct radiation surveys of the concrete structure in place may not be effective. Removal of the concrete structures and radiation surveys of the underlying soil and sampling and surveying of the concrete may provide a better understanding of the Ra-226 levels within the concrete structure.

4.4 Treatment Pond 4, 5, 6 and 7 Area Characterization Summary

Because lateral gamma radiation shine was not a significant concern at these ponds, the surface soil (0-6 inch) Ra-226 levels were determined by a collimated detector one minute gamma static survey. As shown in Table 2, Table 4, and Figure 2, the surface static gamma survey results show the surface soil (0-6 inch) Ra-226 level in Treatment Pond 4, 5, 6 and 7 pond bottoms are below the IL, except for areas that are down gradient of the concrete structures and at a few isolated areas of elevated gamma radiation levels, likely remnants from previous removal efforts. The elevated surface static gamma levels near the concrete structures appear to be due to contaminated sediment in the concrete structure sumps and from apparent

mine waste material around the structures. The soil along the north dike crest of Treatment Pond 4 appears to be generally below the IL. The surface soil along the east and west dike crests are generally above the IL. The subsurface soil along the east and west dike crests are generally below the IL, except for the 6-12 inch subsurface sample at TP-11. Ex-situ soil screening results from the 6-12 inch subsurface sample at TP-11 of 64.4 pCi/g is likely due to apparent mine waste rock visible in the area. The Ra-226 levels in the subsequent 1–2 feet subsurface soil sample at TP-11 is below the IL. The surface soil on the south dike crest of Treatment Pond 4 appears to be below the IL, except near the concrete structure. The soil on the west dike outside slopes and crests of Treatment Pond 5, 6 and 7 are generally below the IL, except near the concrete structures. The surface soil on the east dike crest of Treatment Pond 5 is above the IL at various isolated locations, shown in Figures 2 and 3.

One minute collimated detector static gamma surveys conducted at nine concrete structures, shown in Figure 1, located on the dike inside slopes and/or crests at Treatment Pond 4, 5, 6, and 7 show gamma radiation levels ranging from 5,500 cpm to 45,600 cpm. As stated previously, the IL equivalent cpm for the concrete survey is 7,200 cpm. Portions of the elevated gamma cpm levels may be due to apparent waste rock material near and surrounding the concrete structure, and from concrete surface staining from the historic retention of mine wastewater and sediments. Mine waste sediments were also observed inside all the concrete structure sumps, which showed elevated gamma survey readings of up to 31,000 cpm. The concrete structure static gamma survey forms are included in Appendix B. In general, the majority of the concrete comprising the structures are likely to be below the IL, but it will be difficult to assess by gamma radiation surveys as concrete surface staining from the retention of mine waste water and sediments and apparent waste rock material near and surrounding the concrete structure are still present. Further direct radiation surveys of the concrete structure in place may not be effective.

Removal of the concrete structures and radiation surveys of the underlying soil and sampling and surveying of the concrete may provide a better understanding of the Ra-226 levels within the concrete structure. Several random pieces of the demolished concrete structures were surveyed for gamma radiation. The demolished concrete structure pieces are piled in fairly low gamma shine area south of Treatment Pond 7. The results, included in Appendix B, show all pieces surveyed were below the 7200 cpm IL, which supports the assumption that the sediments and apparent waste rock material near and surrounding the concrete structures may be impacting the direct gamma survey of the in-place concrete structures.

4.5 Treatment Pond 8 Area Characterization Summary

As shown in Table 2, Table 4, Figure 2 and 3, the surface static gamma survey results show the surface soil (0-6 inch) Ra-226 level in the bottom of Treatment Pond 8 is below the IL, except in a small isolated area at data point TP-6, which is estimated by ex-situ soil screening at 9 pCi/g. The 6–12 inch subsurface soil sample at TP-6 showed Ra-226 level at 3.1 pCi/g, well below the IL. Surface soil Ra-226 levels in portions of the south and west dike slopes and crests are above the IL. Ra-226 in the subsurface soil at these locations are below the IL. Elevated surface gamma scans with a bare detector along the east dike crest and outside

slope appear to be mostly due to lateral gamma radiation shine from adjacent areas outside of the Treatment Pond 8 characterization area.

4.6 Borrow Area A Soil Piles

Two soil piles located in the East Borrow area were sampled to estimate Ra-226 levels relative to the IL. Soil in these piles apparently came from the mine water treatment ponds. Pile 1 contained shrub/wood debris and treatment pond waste residue. Pile 2 contained fine treatment pond waste residue along with pieces of synthetic liner. Gamma exposure rates were measured at several locations on each pile. Exposure rates on pile 1 ranged from 100 to 200 uR/hr, and ranged from 100 to 300 uR/hr on Pile 2. A five-point composite soil sample was collected from both the surface and from within Pile 1. A soil sample was not collected from Pile 2 because the gamma exposure rate measurements indicated Ra-226 levels significantly above the IL and the fine pond waste residue on the surface of the pile posed airborne radiation safety concerns and the spread of contamination in the area due to windy conditions. As shown in Table 3, ex-situ soil gamma screening of the samples from Pile 1 indicates Ra-226 levels significantly above the IL.

5.0 Soil Sampling and Analysis

Soil samples from the Treatment Pond areas collected for on-Site ex-situ gamma radiation soil screening were collected consistent with the 2020 Work Plan. Field QA/QC duplicate samples were split at a frequency of 10% of the total number of soil samples collected. A total of 67 surface and subsurface soil samples were collected during this characterization. Field sampling equipment used for soil sampling included: stainless steel scoops, bowls, and spoons that were decontaminated between sample locations. The soil sampling equipment decontamination was conducted by brushing off loose visible soil and wiped with clean towels. Excavator buckets were cleaned by removing any loose, visible soil. Any soils excavated from the test pits were returned to the test pit excavations from which the soil came. Personal protection equipment (PPE), such as gloves, were brushed off and scanned for residual contamination and were disposed of.

Surface and subsurface soil samples were analyzed by on-Site ex-situ gamma radiation soil screening (AVM SOP-4) to estimate Ra-226 concentrations. A completed Chain-of-Custody (COC) along with confirmatory soil samples were placed in labeled Ziploc bags, and packaged in a cooler with a sealed lid and shipped to Energy Laboratories, Inc for Ra-226 analysis. The soil samples were analyzed for Ra-226 with a reporting limit of 0.5 pCi/g, using EPA Method 901.1 (modified for soil matrix). The completed COCs are included with the analytical results reports in Appendix D.

6. 0 Quality Assurance and Quality Control Measures

QA/QC measures were implemented during this characterization to ensure that decisions were made based on data of acceptable quality. All radiologic survey instruments have been calibrated at least annually. Additionally, operational functions checks were performed on all radiologic instruments daily prior to use.

The calibration and function check documents are included in Appendix C. During this characterization, no instruments were found to be out of calibration or inoperable as indicated by the operational function checks. The instrument background measurements for bare 2x2 NaI detectors during daily operational function checks were less than 10,000 cpm as shown in Appendix C. The bare detector field of view (FOV) at 12 inches above the ground surface is conservatively assumed at an area of six feet diameter. The 2x2 NaI detector response factor is determined to be 0.0005 pCi/g/cpm from the linear regression for the Site-specific correlation included in Appendix C. Based on the above detector parameters, the Ra-226 minimum detectable concentrations (MDCs) for a scan survey at a scan speed of three feet per second, calculated using MARSSIM guidance, were less than 1.0 pCi/g, which is significantly below 50% of the 6.8 pCi/g IL. The instrument background measurements for the 0.5 inch thick lead collimated 2x2 NaI detectors during daily operational function checks were less than 3,200 cpm, as shown in Appendix C. The bare detector field of view (FOV) at 12 inches above the ground surface is conservatively assumed at an area of 1.5 feet diameter. The collimated 2x2 NaI detector response factor is determined to be 625 cpm/pCi/g from the linear regression for the Site-specific correlation included in Appendix C. Based on the above collimated detector parameters, the Ra-226 minimum detectable concentrations (MDCs) for a one minute static survey, calculated using MARSSIM guidance, was less than 0.5 pCi/g, which is significantly below 50% of the 6.8 pCi/g IL. The ex-situ soil gamma radiation screening system was calibrated prior to mobilization in the field and daily operational function checks were performed prior to use. The calibration and function check documentation are included in Appendix C. Based on the highest system background (blank) measurements from daily operational function checks and efficiency (pCi/g/cpm), the highest Ra-226 MDC for the screening system calculated was less than 1.0 pCi/g, significantly less than the 6.8 pCi/g IL. The MDCs during the supplemental characterization met the QA objective.

The QA/QC measures also included nine field QA/QC duplicate soil samples out of the 67 soil samples collected sent to the off-site vendor laboratory for analysis to confirm contamination relative to the IL levels estimated by the field ex-situ gamma radiation soil screening. The QA/QC duplicate vendor laboratory results are included in Table 3. All QA/QC sample results confirm Ra-226 concentration levels relative to the IL level determined by the field ex-situ gamma radiation soil screening. The Ra-226 concentration in QA/QC duplicate samples estimated by on-sit ex-situ gamma radiation soil screening are comparable to the off-site vendor laboratory analytical results.

Tables

Table 1
Typical Gamma Scan Data Exported from the Scan System Data Logger

ID	Time	Northing[1] (feet)	Easting[1] (feet)	MSL Elevation (feet)	CPM 2x2 Bare NaI Detector	Ra-226 pCi/g[2]	Zone_ID
1	10/18/2023 8:12	1579902.54	2781775.10	7300	24761	5.06	Treatment_Ponds
2	10/18/2023 8:12	1579903.88	2781775.74	7300	23724	4.54	Treatment_Ponds
3	10/18/2023 8:12	1579904.17	2781778.02	7300	25456	5.41	Treatment_Ponds
4	10/18/2023 8:12	1579903.99	2781781.66	7300	25463	5.41	Treatment_Ponds
5	10/18/2023 8:12	1579904.34	2781785.64	7300	24786	5.07	Treatment_Ponds
6	10/18/2023 8:12	1579904.46	2781790.40	7300	23246	4.30	Treatment_Ponds
7	10/18/2023 8:12	1579903.97	2781795.09	7301	23822	4.59	Treatment_Ponds
8	10/18/2023 8:12	1579903.49	2781800.02	7300	25694	5.53	Treatment_Ponds
9	10/18/2023 8:12	1579904.14	2781805.18	7301	31410	8.39	Treatment_Ponds
10	10/18/2023 8:12	1579904.09	2781810.07	7301	28672	7.02	Treatment_Ponds
11	10/18/2023 8:12	1579904.27	2781814.71	7301	25935	5.65	Treatment_Ponds
12	10/18/2023 8:12	1579904.36	2781819.65	7301	26984	6.17	Treatment_Ponds
13	10/18/2023 8:12	1579904.09	2781821.94	7301	26902	6.13	Treatment_Ponds
14	10/18/2023 8:12	1579903.77	2781822.84	7301	28593	6.98	Treatment_Ponds
15	10/18/2023 8:12	1579903.22	2781827.06	7301	28036	6.70	Treatment_Ponds
16	10/18/2023 8:12	1579902.15	2781831.73	7302	27870	6.62	Treatment_Ponds
17	10/18/2023 8:12	1579902.11	2781836.90	7302	26062	5.71	Treatment_Ponds
18	10/18/2023 8:13	1579902.06	2781842.31	7302	27827	6.59	Treatment_Ponds
19	10/18/2023 8:13	1579903.05	2781848.05	7302	27534	6.45	Treatment_Ponds
20	10/18/2023 8:13	1579902.68	2781853.78	7302	25994	5.68	Treatment_Ponds
21	10/18/2023 8:13	1579903.18	2781859.71	7302	26539	5.95	Treatment_Ponds
22	10/18/2023 8:13	1579903.39	2781865.09	7302	28415	6.89	Treatment_Ponds
23	10/18/2023 8:13	1579903.06	2781874.06	7302	26264	5.81	Treatment_Ponds
24	10/18/2023 8:13	1579902.23	2781879.73	7303	23133	4.25	Treatment_Ponds
25	10/18/2023 8:13	1579903.30	2781885.83	7303	24734	5.05	Treatment_Ponds
26	10/18/2023 8:13	1579903.75	2781891.77	7303	22704	4.03	Treatment_Ponds
27	10/18/2023 8:13	1579903.75	2781897.38	7303	22324	3.84	Treatment_Ponds
28	10/18/2023 8:13	1579902.96	2781902.73	7303	20758	3.06	Treatment_Ponds
29	10/18/2023 8:13	1579899.92	2781907.85	7303	19594	2.48	Treatment_Ponds
30	10/18/2023 8:13	1579899.78	2781914.18	7304	20910	3.14	Treatment_Ponds
31	10/18/2023 8:13	1579900.82	2781919.94	7304	20171	2.77	Treatment_Ponds
32	10/18/2023 8:13	1579901.72	2781925.63	7304	22063	3.71	Treatment_Ponds
33	10/18/2023 8:13	1579901.53	2781931.45	7304	20831	3.10	Treatment_Ponds
34	10/18/2023 8:13	1579901.71	2781937.44	7305	22406	3.88	Treatment_Ponds
35	10/18/2023 8:13	1579904.08	2781942.73	7305	22237	3.80	Treatment_Ponds
36	10/18/2023 8:13	1579903.40	2781948.33	7305	21049	3.20	Treatment_Ponds
37	10/18/2023 8:13	1579903.70	2781954.27	7305	20684	3.02	Treatment_Ponds
38	10/18/2023 8:13	1579904.71	2781959.77	7306	19715	2.54	Treatment_Ponds
39	10/18/2023 8:13	1579904.25	2781965.50	7306	19402	2.38	Treatment_Ponds
40	10/18/2023 8:13	1579903.80	2781971.03	7306	19788	2.57	Treatment_Ponds

(1) projection: StatePlane NAD 1983 NM West - Feet

(2) Ra-226 pCi/g determined from surface soil gamma radiation scan using 2x2 NaI detector and Site-specific gamma radiation level (cpm) correlation

Table 2
Static Gamma Radiation Survey at Data Point/Soil Sample Locations

Data Point ID	Treatment Pond ID	Survey Date	Data Point Coordinate NAD83 StatePlane NM West, Feet		Static Gamma Radiation Survey Collimated (0.5" PB) 2x2 Detector	
			Northing	Easting	Static Gamma CPM	Surface Soil Static Gamma Estimated Ra-226 pCi/g
TP-1	8	11/13/2023	1581160	2782050	8154	4.6
TP-2	8	11/13/2023	1581049	2782082	6452	1.9
TP-3	8	11/13/2023	1581054	2782194	8391	5.0
TP-4	8	11/13/2023	1581056	2781878	6148	1.4
TP-5	8	11/13/2023	1581009	2781973	6414	1.9
TP-5B	8	11/13/2023	1580938	2781891	12872	12.2
TP-6	8	11/13/2023	1580922	2782111	10909	9.0
TP-7	8	11/13/2023	1580883	2782046	25660	32.6
TP-8	4	11/13/2023	1580701	2781885	6271	1.6
TP-9	4	11/13/2023	1580657	2781727	11168	9.5
TP-10	4	11/13/2023	1580626	2781847	7220	3.1
TP-11	4	11/13/2023	1580610	2781955	47231	67.2
TP-12	4	11/13/2023	1580536	2781864	9564	6.9
TP-13	4	11/13/2023	1580469	2782022	29197	38.3
TP-14	4	11/13/2023	1580448	2781724	14340	14.5
TP-15	4	11/13/2023	1580405	2781891	7949	4.3
TP-15B	4	11/13/2023	1580374	2781812	37940	52.3
TP-16	4/5	11/2/2023	1580347	2781902	6253	1.6
TP-16B	5	11/2/2023	1580328	2781811	34845	47.3
TP-17	5	11/2/2023	1580244	2781736	6229	1.6
TP-18	5	11/2/2023	1580226	2782002	7005	2.8
TP-19	5	11/2/2023	1580227	2782127	10742	8.8
TP-20	5	11/2/2023	1580228	2781915	6205	1.5
TP-21	5	11/2/2023	1580208	2781840	32143	43.0
TP-22	5	11/2/2023	1580165	2781780	15930	17.1
TP-23	5/6	11/1/2023	1580123	2781924	7359	3.4
TP-24	6	11/1/2023	1580069	2781800	7873	4.2
TP-25	6	11/1/2023	1580062	2782028	6629	2.2
TP-26	6	11/1/2023	1580069	2781851	19833	23.3
TP-27	6	11/1/2023	1580070	2781925	6839	2.5
TP-28	6	11/2/2023	1580058	2781819	19305	22.5
TP-29	6/7	11/1/2023	1580018	2781918	6952	2.7
TP-30	7	11/1/2023	1579960	2781881	7672	3.9
TP-31	7	11/1/2023	1579960	2781945	6195	1.5
TP-32	7	11/1/2023	1579963	2781801	8654	5.4
TP-33	7	11/1/2023	1579962	2782026	5955	1.1
TP-34	7	11/1/2023	1579905	2781906	5895	1.0
TP-35	1	4/15/2024	1580506	2782478	9284	6.4
TP-36	1	4/15/2024	1580485	2782620	21880	26.6
TP-37	1	4/15/2024	1580440	2782508	7677	3.9
TP-38	1	4/15/2024	1580409	2782635	10030	7.6
TP-39	1	4/15/2024	1580389	2782407	13401	13.0
TP-40	1	4/15/2024	1580369	2782563	8484	5.2
TP-41	1	4/15/2024	1580303	2782726	34091	46.1
TP-42	1	4/15/2024	1580282	2782640	8149	4.6
TP-43	1	4/15/2024	1580242	2782586	8081	4.5
TP-44	1	4/15/2024	1580214	2782663	8627	5.4
TP-45	1	4/15/2024	1580206	2782536	10022	7.6
TP-46	1	4/15/2024	1580316	2782449	32407	43.4

Table 3

Treatment Pond Characterization Area Soil Sample Field Ex-Situ Screening and Vendor Laboratory Results Summary

Sample Data						Field Soil Screening Data							Laboratory Data			
Sample ID	Sample Depth (ft)	Pond /Area	Sample Date	Sample Time	Description	Screen Date	Sample Weight grams	609 (559-669) Kev Gross Counts CP5M	CPM	6.6 pCi/g Ra-226 Reference Soil CPM	Soil Gamma Screening Estimated Ra-226 pCi/g	Soil IL (< or >)	Sample Sent to Lab	Ra-226 pCi/g	Error Estimate pCi/g	MDC pCi/g
TP-1	6"-12"	8	11/13/2023	1130	Light brown/white specks	11/16/2023	3000	1481	296	488	2.7	<	-	-	-	-
TP-2	6"-12"	8	11/13/2023	1300	Light brown sandy	11/16/2023	3000	1227	245	488	2.0	<	-	-	-	-
TP-3	6"-12"	8	11/13/2023	1150	Brown packed clay	11/16/2023	3000	1242	248	488	2.0	<	-	-	-	-
TP-4	6"-12"	8	11/13/2023	1115	Brown packed clay	11/16/2023	3000	1410	282	488	2.5	<	-	-	-	-
TP-5	6"-12"	8	11/13/2023	1250	Light brown sandy	11/16/2023	3000	1102	220	488	1.6	<	-	-	-	-
TP-5B	6"-12"	8	11/13/2023	1025	Light grey/brown silty sand	11/16/2023	3000	4353	871	488	10.7	>	-	-	-	-
TP-5B	1.5'-2.0'	8	11/14/2024	915	Light grey/brown silty sand	11/16/2024	3000	2676	535	488	6.0	≈	-	-	-	-
TP-5B	2'-3'	8	11/14/2023	920	Rocky light grey silty	11/16/2023	3000	1928	386	488	3.9	<	-	-	-	-
TP-5B	3'-3.5'	8	11/14/2023	930	Light brown silty	11/16/2023	3000	1251	250	488	2.0	<	-	-	-	-
TP-6	6"-12"	8	11/13/2023	1315	Brown silty sand w/ stones	11/16/2023	3000	1643	329	488	3.1	<	-	-	-	-
TP-7	6"-12"	8	11/13/2023	1210	Light brown silty/loam clay	11/16/2023	3000	1478	296	488	2.7	<	-	-	-	-
TP-8	6"-12"	4	11/13/2023	1330	Light brown packed silty clay	11/16/2023	3000	1341	268	488	2.3	<	-	-	-	-
TP-9	6"-12"	4	11/14/2023	755	Light brown packed silty clay	11/16/2023	3000	1361	272	488	2.3	<	-	-	-	-
TP-10	6"-12"	4	11/14/2023	900	Brown silty loam	11/16/2023	3000	1153	231	488	1.8	<	-	-	-	-
TP-11	6"-12"	4	11/13/2023	1345	Light brown/white specks	11/16/2023	3000	23511	4702	488	64.4	>	x	61.5	1.4	0.7
TP-11	1.5'-2'	4	11/16/2023	1105	Light brown packed silty clay	11/16/2023	3000	1439	288	488	2.6	<	x	1.1	0.1	0.1
TP-12	6"-12"	4	11/14/2023	850	Brown packed clay & silty	11/16/2023	3000	1320	264	488	2.2	<	-	-	-	-
TP-13	6"-12"	4	11/13/2023	1405	Light brown silty sand	11/16/2023	3000	1389	278	488	2.4	<	-	-	-	-
TP-14	6"-12"	4	11/14/2023	810	Light brown/white specks	11/16/2023	3000	1388	278	488	2.4	<	-	-	-	-
TP-15	6"-12"	4	11/14/2023	835	Light brown sandy	11/16/2023	3000	1120	224	488	1.7	<	-	-	-	-
TP-15B	6"-12"	4	11/14/2023	825	Brown silty with cobble	11/16/2023	3000	7551	1510	488	19.7	>	x	15.2	0.5	0.3
TP-15B	1'-1.5'	4	11/16/2023	1135	Light brown sandy	11/16/2023	3000	1362	272	488	2.4	<	x	1.2	0.2	0.2
TP-16	6"-12"	4/5	11/7/2023	1225	Brown silty clay	11/8/2023	3000	1321	264	541	2.2	<	-	-	-	-
TP-16B	6"-12"	5	11/7/2023	1048	Brown hardpack silty	11/8/2023	3000	3782	756	541	9.1	>	-	-	-	-
TP-16B	1'-1.5'	5	11/16/2023	1150	Brown hardpack silty clay	11/16/2023	3000	1960	392	488	4.0	<	-	-	-	-
TP-17	6"-12"	5	11/2/2023	1135	Light brown sandy/silty	11/8/2023	3000	1373	275	541	2.4	<	-	-	-	-
TP-18	6"-12"	5	11/7/2023	1000	Light brown sandy/silty	11/8/2023	3000	1191	238	541	1.9	<	-	-	-	-
TP-19	6"-12"	5	11/2/2023	1340	Light brown hardpack silty	11/8/2023	3000	1463	293	541	2.6	<	-	-	-	-
TP-20	6"-12"	5	11/7/2023	1010	Dark brown silty/clay	11/8/2023	3000	1164	233	541	1.8	<	-	-	-	-
TP-21	6"-12"	5	11/7/2023	1025	Brown silty clay	11/8/2023	2716	8363	1673	541	22.0	>	-	-	-	-
TP-21	1'-1.5'	5	11/16/2023	1205	Brown silty clay	11/16/2023	3000	1440	288	488	2.6	<	-	-	-	-
TP-22	6"-12"	5	11/7/2023	1040	Light brown sandy/silty	11/8/2023	3000	1186	237	541	1.9	<	-	-	-	-
TP-23	6"-12"	5/6	11/2/2023	1330	Brown silty loam, thin clay	11/8/2023	3000	1314	263	541	2.2	<	-	-	-	-
TP-24	6"-12"	6	11/2/2023	1115	Brown loamy clay	11/8/2023	3000	1218	244	541	1.9	<	-	-	-	-
TP-25	6"-12"	6	11/2/2023	1310	Light brown sandy	11/8/2023	3000	1231	246	541	2.0	<	-	-	-	-
TP-26	6"-12"	6	11/7/2023	1210	Brown silty packed, specks rock	11/8/2023	3000	1213	243	541	1.9	<	-	-	-	-
TP-27	6"-12"	6	11/7/2023	1150	Light brown sandy	11/8/2023	3000	1053	211	541	1.5	<	-	-	-	-
TP-28	6"-12"	6	11/2/2023	1125	Light brown sandy/silty	11/8/2023	3000	1305	261	541	2.2	<	-	-	-	-

Table 3 (cont.)

Treatment Pond Characterization Area Soil Sample Field Ex-Situ Screening and Vendor Laboratory Results Summary

Sample Data						Field Soil Screening Data							Laboratory Data			
Sample ID	Sample Depth (ft)	Pond /Area	Sample Date	Sample Time	Description	Screen Date	Sample Weight grams	609 (559-669) Kev Gross Counts CP5M	CPM	6.6 pCi/g Ra-226 Reference Soil CPM	Soil Gamma Screening Estimated Ra-226 pCi/g	Soil IL (< or >)	Sample Sent to Lab	Ra-226 pCi/g	Error Estimate pCi/g	MDC pCi/g
TP-29	6"-12"	6/7	11/7/2023	845	Light brown sandy/silty	11/8/2023	3000	1302	260	541	2.2	<	-	-	-	-
TP-30	6"-12"	7	11/7/2023	901	Dark brown silty/clay	11/8/2023	3000	1367	273	541	2.4	<	-	-	-	-
TP-31	6"-12"	7	11/7/2023	915	Light brown sandy/silty	11/8/2023	3000	1267	253	541	2.1	<	-	-	-	-
TP-32	6"-12"	7	11/2/2023	1103	Brown loamy clay	11/8/2023	3000	1278	256	541	2.1	<	-	-	-	-
TP-33	6"-12"	7	11/2/2023	1255	Light brown sandy	11/8/2023	3000	1419	284	541	2.5	<	-	-	-	-
TP-34	6"-12"	7	11/2/2023	1245	Light brown sandy/silty	11/8/2023	3000	1332	266	541	2.3	<	-	-	-	-
TP-35	0-6"	1	4/15/2024	950	Light brown loamy/silty clay	4/17/2024	3000	1774	355	494	3.5	<	-	-	-	-
TP-35	6"-12"	1	4/16/2024	1050	Brown silty clay	4/17/2024	3000	954	191	494	1.2	<	-	-	-	-
TP-36	0-6"	1	4/16/2024	840	Light brown loamy/silty clay	4/17/2024	3000	2684	537	494	6.1	≈	-	-	-	-
TP-36	6"-12"	1	4/16/2024	1100	light brown silty clay w/ grey rocks	4/17/2024	3000	4247	849	494	10.4	>	x	8.8	0.5	0.3
TP-36	1'-2'	1	4/17/2024	1120	Light brown silty/sandy clay	4/17/2024	3000	1352	270	494	2.3	<	x	0.7	0.2	0.2
TP-37	0-6"	1	4/16/2024	820	Dark brown silty/sandy clay	4/17/2024	3000	1145	229	494	1.7	<	-	-	-	-
TP-37	6"-12"	1	4/16/2024	1300	Dark brown clay w/ small rock	4/17/2024	3000	1153	231	494	1.8	<	-	-	-	-
TP-38	0-6"	1	4/16/2024	830	Light brown loamy/silty clay	4/17/2024	3000	2196	439	494	4.7	<	-	-	-	-
TP-38	6"-12"	1	4/16/2024	1215	Brown silty/sandy clay w/ roots	4/17/2024	3000	1067	213	494	1.5	<	-	-	-	-
TP-39	0-6"	1	4/16/2024	910	Light brown loamy/silty clay	4/17/2024	3000	4898	980	494	12.3	>	-	-	-	-
TP-39	6"-12"	1	4/16/2024	1035	Brown silty clay w/ roots	4/17/2024	3000	1505	301	494	2.8	<	-	-	-	-
TP-40	0-6"	1	4/15/2024	945	Light brown loamy/silty clay	4/17/2024	3000	1106	221	494	1.6	<	-	-	-	-
TP-40	6"-12"	1	4/16/2024	1250	Light brown silty/sandy clay	4/17/2024	3000	1140	228	494	1.7	<	-	-	-	-
TP-41	0-6"	1	4/16/2024	845	Light brown loamy/silty clay	4/17/2024	2800	12188	2612	494	35.1	>	x	43.5	1.1	0.5
TP-41	6"-12"	1	4/16/2024	1115	Light brown silty clay	4/17/2024	2700	1243	276	494	2.4	<	x	1.9	0.3	0.3
TP-42	0-6"	1	4/15/2024	930	Light brown loamy/silty clay	4/17/2024	2936	1171	239	494	1.9	<	-	-	-	-
TP-42	6"-12"	1	4/16/2024	1240	Brown silty/sandy clay	4/17/2024	3000	975	195	494	1.3	<	-	-	-	-
TP-43	0-6"	1	4/15/2024	940	Light brown loamy/silty clay	4/17/2024	3000	1165	233	494	1.8	<	-	-	-	-
TP-43	6"-12"	1	4/16/2024	1230	light brown silty clay w/ roots	4/17/2024	3000	1101	220	494	1.6	<	-	-	-	-
TP-44	0-6"	1	4/15/2024	915	Light brown loamy/silty clay	4/17/2024	3000	1224	245	494	2.0	<	-	-	-	-
TP-44	6"-12"	1	4/16/2024	1125	Light brown loamy/silty clay	4/17/2024	3000	1101	220	494	1.6	<	-	-	-	-
TP-45	0-6"	1	4/16/2024	850	Light brown loamy/silty clay	4/17/2024	2700	1558	346	494	3.4	<	-	-	-	-
TP-45	6"-12"	1	4/16/2024	1015	Brown silty clay	4/17/2024	3000	1109	222	494	1.6	<	-	-	-	-
TP-46	0-6"	1	4/16/2024	900	Light brown loamy/silty clay w/ grey rock	4/17/2024	3000	21504	4301	494	58.7	>	-	-	-	-
TP-46	6"-12"	1	4/16/2024	1025	Dark brown silty/clay w/ small rocks	4/17/2024	3000	1766	353	494	3.5	<	x	2.3	0.3	0.2
EBP-1	Surface	East Borrow	4/30/2024	830	Composite from surface of pile	4/30/2024	3000	16930	3386	533	45.9	>	-	-	-	-
EBP-1	Internal	East Borrow	4/30/2024	853	Composite from various depths from inside pile	4/30/2024	3000	14135	2827	533	38.1	>	-	-	-	-

Table 4
Treatment Pond Surface and Subsurface Soil Ra-226 Level Summary

Data Point ID	Treatment Pond ID	Static Gamma Estimated Ra-226 pCi/g 0-6" (surface) Soil	Ex-Situ Soil Screening Estimated Ra-226 pCi/g			
			0-6" Soil (surface)	6"-12" Soil	1'-2' Soil	2'-3' Soil
TP-1	8	4.6	-	2.7	-	-
TP-2	8	1.9	-	2.0	-	-
TP-3	8	5.0	-	2.0	-	-
TP-4	8	1.4	-	2.5	-	-
TP-5	8	1.9	-	1.6	-	-
TP-5B	8	12.2	-	10.7	6.0	3.9
TP-6	8	9.0	-	3.1	-	-
TP-7	8	32.6	-	2.7	-	-
TP-8	4	1.6	-	2.3	-	-
TP-9	4	9.5	-	2.3	-	-
TP-10	4	3.1	-	1.8	-	-
TP-11	4	67.2	-	64.4	2.6	-
TP-12	4	6.9	-	2.2	-	-
TP-13	4	38.3	-	2.4	-	-
TP-14	4	14.5	-	2.4	-	-
TP-15	4	4.3	-	1.7	-	-
TP-15B	4	52.3	-	19.7	2.4	-
TP-16	4/5	1.6	-	2.2	-	-
TP-16B	5	47.3	-	9.1	4.0	-
TP-17	5	1.6	-	2.4	-	-
TP-18	5	2.8	-	1.9	-	-
TP-19	5	8.8	-	2.6	-	-
TP-20	5	1.5	-	1.8	-	-
TP-21	5	43.0	-	22	2.6	-
TP-22	5	17.1	-	1.9	-	-
TP-23	5/6	3.4	-	2.2	-	-
TP-24	6	4.2	-	1.9	-	-
TP-25	6	2.2	-	2	-	-
TP-26	6	23.3	-	1.9	-	-
TP-27	6	2.5	-	1.5	-	-
TP-28	6	22.5	-	2.2	-	-
TP-29	6/7	2.7	-	2.2	-	-
TP-30	7	3.9	-	2.4	-	-
TP-31	7	1.5	-	2.1	-	-
TP-32	7	5.4	-	2.1	-	-
TP-33	7	1.1	-	2.5	-	-
TP-34	7	1.0	-	2.3	-	-
TP-35	1	6.4	3.5	1.2	-	-
TP-36	1	26.6	6.1	10.4	2.3	-
TP-37	1	3.9	1.7	1.8	-	-
TP-38	1	7.6	4.7	1.5	-	-
TP-39	1	13.0	12.3	2.8	-	-
TP-40	1	5.2	1.6	1.7	-	-
TP-41	1	46.1	35.1	2.4	-	-
TP-42	1	4.6	1.9	1.3	-	-
TP-43	1	4.5	1.8	1.6	-	-
TP-44	1	5.4	2.0	1.6	-	-
TP-45	1	7.6	3.4	1.6	-	-
TP-46	1	43.4	58.7	3.5	-	-

Note: Surface Soil Static Gamma Estimated pCi/g levels were estimated from .5" lead collimated detector static gamma measurements.

Figures

N
W E
S

Environmental Services, Inc.

Figure 1
Mt. Taylor Mine Site
Treatment Pond Characterization
Areas and Concrete Structure Locations

Legend

- Concrete Structure
- North Controlled Fence
- Treatment Pond Characterization Area

0 50 100 200 300 Feet

N
W E
S

AVM Environmental Services, Inc.

Figure 2
Mt. Taylor Mine Site
Treatment Ponds Characterzation Area
Data Point Locations and
Gamma Survey Data

Legend

Estimated Ra-226

- <1.8 pCi/g
- 1.9 - 6.8 pCi/g
- 6.9 - 10.0 pCi/g
- 10.1 - 20.0 pCi/g
- 20.1 - 30.0 pCi/g
- 30.1 - 40.0 pCi/g
- >40.1 pCi/g
- Data Point
- North Controlled Fence
- Treatment Pond Characterization Area

Note: Ra-226 pCi/g is determined from surface soil gamma radiation scan and static cpm using 2x2 NaI detector and Site specific gamma radiation level (cpm) correlation.

50 100 200 300 Feet

Figure 3
Mt. Taylor Mine Site
Treatment Ponds Characterzation Area
Estimated Depth of Contamination above the 6.8 pCi/g Ra-226 Investigation Level

AVM Environmental Services, Inc.

Legend

- Treatment Pond Characterization Area
- Berm Profile above the Ra-226 6.8 pCi/g Investigation Level
- 6 Inch Contamination depth above the Ra-226 6.8 pCi/g Investigation Level
- 1 ft Contamination depth above the Ra-226 6.8 pCi/g Investigation Level
- 1.5 ft Contamination depth above the Ra-226 6.8 pCi/g Investigation Level
- Concrete Structure
- North Controlled Fence

Appendices

Appendix A	Surface and Subsurface Contamination Field Investigation Documentation (Soil Sample Log Forms, Field Soil Sample Ex-Situ Gamma Radiation Screening Forms)
Appendix B	Concrete Structure Radiologic Investigation
Appendix C	Radiologic Instrument Calibration and Operational Function Check and Collimated Detector Correlation Documentation
Appendix D	Soil Sample COC and Laboratory Analytical Results Report

AVM Environmental Services, Inc.
Gamma Radiation Survey

Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter L2221 S#290801, Detector SPA-3 #30

Instrument Calibration Date: 2-19-24, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Decsription Mt Taylor Mine Site Treatment Ponds

Survey Date/Time	Survey Point ID/Description	Survey Point Coordinate		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-13-23	TP-1	1581160.23	2782050.33	8154	
11-13-23	TP-2	1581048.51	2782082.19	6452	
11-13-23	TP-3	1581053.56	2782193.53	8391	
11-13-23	TP-4	1581056.28	2781877.80	6148	
11-13-23	TP-5	1581008.60	2781973.38	6414	
11-13-23	TP-5B	1580937.63	2781890.74	12872	
11-13-23	TP-6	1580921.93	2782110.62	10909	
11-13-23	TP-7	1580883.33	2782045.88	25660	
11-13-23	TP-8	1580701.01	2781884.91	6271	
11-13-23	TP-9	1580657.09	2781726.59	11168	
11-13-23	TP-10	1580625.66	2781846.72	7220	
11-13-23	TP-11	1580609.85	2781954.68	47231	
11-13-23	TP-12	1580536.13	2781863.94	9564	
11-13-23	TP-13	1580469.14	2782022.02	29197	
11-13-23	TP-14	1580448.27	2781723.76	14340	
11-13-23	TP-15	1580405.00	2781891.33	7949	
11-13-23	TP-15B	1580374.22	2781811.70	37940	
11-2-23	TP-16	1580347.37	2781901.68	6253	
11-2-23	TP-16B	1580327.56	2781811.01	34845	
11-2-23	TP-17	1580244.30	2781736.20	6229	
11-2-23	TP-18	1580226.28	2782002.49	7005	
11-2-23	TP-19	1580226.78	2782127.17	10742	
11-2-23	TP-20	1580228.47	2781915.38	6205	
11-2-23	TP-21	1580207.85	2781839.85	32143	
11-2-23	TP-22	1580164.80	2781780.30	15930	

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Gamma Radiation Survey

Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter 2221 SN290801, Detector SPA-3 #30

Instrument Calibration Date: 2-19-24, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Decsription Mt. Taylor Mine Site Treatment Ponds

Survey Date/Time	Survey Point ID/Description	Survey Point Coordinate		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-2-23	TP-23	1580122.85	2781924.41	7359	
11-2-23	TP-24	1580068.98	2781799.51	7873	
11-2-23	TP-25	1580062.13	2782027.54	6629	
11-2-23	TP-26	1580069.28	2781851.47	19835	
11-2-23	TP-27	1580070.01	2781925.21	6839	
11-2-23	TP-28	1580057.59	2781819.32	19305	
11-2-23	TP-29	1580017.82	2781917.62	6952	
11-2-23	TP-30	1579960.47	2781880.55	7672	
11-2-23	TP-31	1579960.46	2781944.76	6195	
11-2-23	TP-32	1579963.04	2781801.01	8654	
11-2-23	TP-33	1579962.22	2782025.52	5455	
4-10-24	TP-34	1579905.48	2781906.24	5895	
4-10-24	TP-35	1580505.83	2782477.73	9284	
4-10-24	TP-36	1580484.67	2782620.22	21880	
4-10-24	TP-37	1580439.62	2782507.78	7677	
4-10-24	TP-38	1580408.58	2782634.69	10030	
4-10-24	TP-39	1580389.39	2782406.73	13401	
4-10-24	TP-40	1580369.24	2782563.39	8484	
4-10-24	TP-41	1580303.17	2782725.85	34091	
4-10-24	TP-42	1580282.42	2782639.66	8149	
4-10-24	TP-43	1580242.16	2782585.55	8081	
4-10-24	TP-44	1580214.10	2782662.94	8627	
4-10-24	TP-45	1580205.92	2782535.59	10022	
4-10-24	TP-46	1580316.03	2782448.56	32407	

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Subsurface Soil Sample Log Form
Mt. Taylor Mine Site

Sample ID	Sample Date/Time	Sample Depth	Sample Description	Comments/Notes
TP-32	11-2-23 @1103	6"-12"	Brown Clay/loamy	
TP-24	11-2-23 @1115	6"-12"	Brow Clay/loamy Roots	
TP-28	11-2-23 @1125	6"-12"	light brown Sandy/Silty Roots	
TP-17	11-2-23 @1135	6"-12"	light brown Sandy/silty Roots	
TP-34	11-2-23 @1245	6"-12"	light brown Sandy/silty Roots	
TP-33	11-2-23 @1255	6"-12"	light brown Sandy Roots	
TP-25	11-2-23 @1310	6"-12"	light brown Sandy Roots	
TP-23	11-2-23 @1330	6"-12"	Brown Silty loam - Small layer of Dark Clay	
TP-19	11-2-23 @1340	6"-12"	light brown hardpack silty Roots	
TP-29	11-7-23 @845	6"-12"	light brown Silty/Sandy Roots	
TP-30	11-7-23 @901	6"-12"	Dark Brown Clay & Silt Sandstone Refusal @ 28"	
TP-31	11-7-23 @915	6"-12"	light brown Silty Sand Sandstone Bed @16"	
TP-18	11-7-23 @1000	6"-12"	light brown silty Sand	
TP-20	11-7-23 @1010	6"-12"	Dark brown Silty/Sand & Clay	
TP-21	11-7-23 @1025	6"-12"	Brown Silty Clay	

AVM Environmental Services, Inc.
Subsurface Soil Sample Log Form
Mt. Taylor Mine Site

Sample ID	Sample Date/Time	Sample Depth	Sample Description	Comments/Notes
TP-22	11-7-23 @1040	6"-12"	light Brown Silty Sand	
TP-16B	11-7-23 @1048	6"-12"	Brown hardpack Silty	
TP-27	11-7-23 @1150	6"-12"	light brown Sandy Sandstone @1.4'	
TP-26	11-7-23 @1210	6"-12"	Brown Silty/Rock speckled w/ white Soil	
TP-16	11-7-23 @1225	6"-12"	Brown Clay Silty Hard Rock	
TP-5b	11-13-23 @1025	6"-12"	Light Grey/ brown silty Sand gravel	
TP-4	11-13-23 @1115	6"-12"	Brown Packed Clay	
TP-1	11-13-23 @1130	6"-12"	light brown/grey-white limestone	plastic debris
TP-3	11-13-23 @1150	6"-12"	Brown Packed Clay	
TP-7	11-13-23 @1210	6"-12"	light brown Silty/loamy Clay	
TP-5	11-13-23 @1250	6"-12"	light brown Sandy	
TP-2	11-13-23 @1300	6"-12"	light brown Sandy	
TP-6	11-13-23 @1315	6"-12"	brown Silty Sand w/stones	
TP-8	11-13-23 @1330	6"-12"	light brown Packed Silt clay	
TP-11	11-13-23 @1345	6"-12"	light brown/white Silty	

AVM Environmental Services, Inc.
Subsurface Soil Sample Log Form
Mt. Taylor Mine Site

Sample ID	Sample Date/Time	Sample Depth	Sample Description	Comments/Notes
TP-13	11-13-23 @1405	6"-12"	light brown Silty Sand	
TP-9	11-14-23 @755	6"-12"	Light brown Packed Silty Clay	
TP-14	11-14-23 @810	6"-12"	light brown Packed white specks 1" Rock	
TP-15B	11-14-23 @825	6"-12"	Brown Silty w/ cobble	
TP-15	11-14-23 @835	6"-12"	Light brown Sandy	
TP-12	11-14-23 @850	6"-12"	light brown packed Silty Dark brown Clay	
TP-10	11-14-23 @900	6"-12"	Brown Silty loamy moist	
TP-5B	11-14-23 @920	2'-3.0'	Grey Rocky	
TP-5B	11-14-23 @930	3'-3.5'	light brown Silty	
TP-11	11-14-23 @1105	1.5'-2'	light brown Packed Clay	
TP-11	11-16-23 @1112	2'-2.5'	light brown Packed Clay	
TP-15B	11-16-23 @1135	1'-1.5'	light brown Sandy	
TP-16B	11-16-23 @1150	1'-1.5'	brown Hard pack Clay	
TP-21	11-16-23 @1205	1'-1.5'	brown Silty Clay	

AVM Environmental Services, Inc.
Subsurface Soil Sample Log Form
Mt. Taylor Mine Site

Sample ID	Sample Date/Time	Sample Depth	Sample Description	Comments/Notes
TP-44	4-15-24 915	0-6"	light brown loam/silt/clay	
TP-42	4-15-24 930	0-6"	"	
TP-43	4-15-24 940	0-6"	"	
TP-40	4-15-24 945	0-6"	"	
TP-35	4-15-24 950	0-6"	"	
TP-37	4-16-24 820	0-6"	Dark brown / Sandy / silty clay	
TP-38	4-16-24 830	0-6"	light brown loam/silt clay	
TP-36	4-16-24 840	0-6"	"	
TP-41	4-16-24 845	0-6"	"	
TP-45	4-16-24 350	0-6"	"	
TP-46	4-16-24 900	0-6"	" Slight grey.	
TP-~~49~~ VP 39	4-16-24 910	0-6"	"	
TP-45	4-16-24 1015	6"-12"	Brown silty clay	
TP-46	4-16-24 1025	6"-12"	Dark brown silty clay w/ roots	
TP-39	4-16-24 1035	6"-12"	Brown silty clay Roots	

AVM Environmental Services, Inc.
Subsurface Soil Sample Log Form
Mt. Taylor Mine Site

Sample ID	Sample Date/Time	Sample Depth	Sample Description	Comments/Notes
TP-35	4-16-24 1050	6"-12"	Brown Silt, Clay	
TP-36	4-16-24 1100	6"-12"	light brown Silty Clay hardpack Grey Rocks	
TP-41	4-16-24 1115	6"-12"	light brown silty clay	
TP-44	4-16-24 1125	6"-12"	light brown loamy/silty clay	
TP-38	4-16-24 1215	6"-12"	Brown silty/Sandy Clay Roots	
TP-43	4-16-24 1230	6"-12"	light brown silty/sand clay Roots	
TP-42	4-16-24 1240	6"-12"	Brown Silty/Sand Clay	
TP-40	4-16-24 1250	6"-12"	light brown Silty Sand Clay	
TP-37	4-16-24 1300	6"-12"	Dark Brown Clay w Stones 3/4"	
TP-36	4-17-24 1120	1'-2'	light brown Sandy silty Clay hard rock	
TP-36	4-17-24 1130	2'-3'	" " Not hard rock	

AVM Environmental Services, Inc.
Subsurface Soil Sample Log Form
Mt. Taylor Mine Site

Sample ID	Sample Date/Time	Sample Depth	Sample Description	Comments/Notes
EBP-1 Surface	4-30-24 830	0-6"	Composite Sample from surface of pile	grey material present
EBP-1 Internal	4-30-24 853	Various	Composite Sample from various depths inside of pile	"

AVM Environmental Services, Inc.
Field Soil Sample Gamma Radiation Screening Form
Mt. Taylor Mine Site

Instrumentation: Scaler/Ratemeter L2221 S#68782, Detector 44-20 S# 295573
Instrument Calibration Date: 5-10-23, Instrument Function Check Performed: Y
Survey Area/Unit Description Mt. Taylor Mine Site

Area exposure rate: 10-12 uR/hr

Date	Soil Sample ID	Sample Weight Grams	609 (559-669) Kev Gross Counts, CPSM	Weight Corrected CPSM	CPM	Reference Soil Compare (< or >)	Comments
11-8-23	Blank	-	314		63		
11-8-23	6.6 pCi/g Ra-226 Ref Soil	3000	2707		541		
11-8-23	TP-32 6"-12" 11-2-23 @1103	3000	1278		256		
11-8-23	TP-24 6"-12" 11-2-23 @1115	3000	1218		244		
11-8-23	TP-28 6"-12" 11-2-23 @1125	3000	1305		261		
11-8-23	TP-17 6"-12" 11-2-23 @1135	3000	1373		275		
11-8-23	TP-34 6"-12" 11-2-23 @1245	3000	1322		266		
11-8-23	TP-33 6"-12" 11-2-23 @1255	3000	1419		284		
11-8-23	TP-25 6"-12" 11-2-23 @1310	3000	1291		258		
11-8-23	TP-23 6"-12" 11-2-23 @1330	3000	1314		263		
11-8-23	TP-19 6"-12" 11-2-23 @1340	3000	1463		293		QA/QC 5 min: 1423
11-8-23	TP-29 6"-12" 11-7-23 @845	3000	1302		260		
11-8-23	TP-30 6"-12" 11-7-23 @901	3000	1367		273		
11-8-23	TP-31 6"-12" 11-7-23 @915	3000	1267		253		
11-8-23	TP-18 6"-12" 11-7-23 @1000	3000	1191		238		

Technician Signature _____ Reviewed by _____

AVM Environmental Services, Inc.
Field Soil Sample Gamma Radiation Screening Form
Mt. Taylor Mine Site

Instrumentation : Scaler/Ratemeter L2221 SN 68782, Detector 44-20 SN 295573
Instrument Calibration Date: 5-10-23, Instrument Function Check Performed: Y
Survey Area/Unit Description Mt. Taylor Mine Site

Area exposure rate: 10-12 uR/hr

Date	Soil Sample ID	Sample Weight Grams	609 (559-669) Kev Gross Counts, CPSM	Weight Corrected CPSM	CPM	Reference Soil Compare (< or >)	Comments
11-8-23	TP-20 6"-12" 11-7-23 @ 1010	3000	1164		233		
11-8-23	TP-21 6"-12" 11-7-23 @ 1025	2716	7571	8363	1673		
11-8-23	TP-22 6"-12" 11-7-23 @ 1040	3000	1186		237		
11-8-23	TP-16B 6"-12" 11-7-23 @ 1048	3000	3782		756		
11-8-23	TP-27 6"-12" 11-7-23 @ 1150	3000	1053		211		QA/QC cpsmin: 1052
11-8-23	TP-26 6"-12" 11-7-23 @ 1210	3000	1213		243		
11-8-23	TP-16 6"-12" 11-7-23 @ 1225	3000	1321		264		
11-16-23	Blank	-	335		67		
~~11-16-23~~	~~6.6 pCi/g Ref Soil~~	~~3000~~	~~335~~		~~67~~		
11-16-23	6.6 pCi/g Ref Soil	3000	2479		488		
11-16-23	TP-5B 6"-12" 11-13-23 @ 1025	3000	4353		871		
11-16-23	TP-4 6"-12" 11-13-23 @ 1115	3000	1410		282		
11-16-23	TP-1 6"-12" 11-13-23 @ 1130	3000	1481		296		
11-16-23	TP-3 6"-12" 11-13-23 @ 1150	3000	1242		248		
11-16-23	TP-7 6"-12" 11-13-23 @ 1210	3000	1478		296		

VP

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Field Soil Sample Gamma Radiation Screening Form
Mt. Taylor Mine Site

Instrumentation : Scaler/Ratemeter L2221 S#68782, Detector 44-20 S# 295523
Instrument Calibration Date: 5-10-23, Instrument Function Check Performed: Y
Survey Area/Unit Description Mt. Taylor Mine Site

Area exposure rate: 10-12 uR/hr

Date	Soil Sample ID	Sample Weight Grams	609 (559-669) Kev Gross Counts, CPSM	Weight Corrected CPSM	CPM	Reference Soil Compare (< or >)	Comments
11-16-23	TP-5 6"-12" 11-13-23 @ 1250	3000	1102		220		
11-16-23	TP-2 6"-12" 11-13-23 @ 1300	3000	1227		245		
11-16-23	TP-6 6"-12" 11-13-23 @ 1315	3000	1643		329		
11-16-23	TP-8 6"-12" 11-13-23 @ 1330	3000	1341		268		
11-16-23	TP-11 6"-12" 11-13-23 @ 1345	3000	23511		4702		avac CPSM: 23785
11-16-23	TP-13 6"-12" 11-13-23 @ 1405	3000	1389		278		
11-16-23	TP-9 6"-12" 11-14-23 @ ~~810~~ 755	3000	1361		272		
11-16-23	TP-14 6"-12" 11-14-23 @ 810	3000	1388		278		
11-16-23	TP-15B 6"-12" 11-14-23 @ 825	3000	7551		1510		
11-16-23	TP-15 6"-12" 11-14-23 @ 835	3000	1120		224		
11-16-23	TP-12 6"-12" 11-14-23 @ 850	3000	1320		264		
11-16-23	TP-10 6"-12" 11-14-23 @ 900	3000	1153		231		
11-16-23	TP-5B 2'-3' 11-14-23 @ 920	3000	1928		386		
11-16-23	TP-5B 3'-3.5' 11-14-23 @ 930	3000	1251		250		
11-16-23	TP-11 1.5'-2' 11-16-23 @ 1105	3000	1439		288		

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Field Soil Sample Gamma Radiation Screening Form
Mt. Taylor Mine Site

Instrumentation : Scaler/Ratemeter L2221 S# 68782, Detector 44-20 S# 295573
Instrument Calibration Date: 5-10-23, Instrument Function Check Performed: Y
Survey Area/Unit Description: Mt. Taylor Mine Site

Area exposure rate: 10-12

Date	Soil Sample ID	Sample Weight Grams	609 (559-669) Kev Gross Counts, CP5M	Weight Corrected CP5M	CPM	Reference Soil Compare (< or >)	Comments
11-16-23	TP-15B 1'-1.5' 11-16-23 @1135	3000	1362		272		
11-16-23	TP-16B 1'-1.5' 11-16-23 @1150	3000	1960		392		
11-16-23	TP-21 1'-1.5' 11-16-23 @1205	3000	1440		288		
11-16-23	TP-5B 1.5'-2.0' 11-14-23 @915	3000	2676		535		

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Field Soil Sample Gamma Radiation Screening Form
Mt. Taylor Mine Site

Instrumentation : Scaler/Ratemeter L2221 S# 63782, Detector 44-20 S# 295573
Instrument Calibration Date: 5-10-23, Instrument Function Check Performed: Y
Survey Area/Unit Description Mt. Taylor mine site

Area exposure rate: 10-12

Date	Soil Sample ID	Sample Weight Grams	609 (559-669) Kev Gross Counts, CPSM	Weight Corrected CPSM	CPM	Reference Soil Compare (< or >)	Comments
4-17-24	Blank		310		62		
4-17-24	66 pCi/g Ra-226 Ref Soil	3000	2468		494		
4-17-24	TP-45 6"-12" 4-16-24 @ 1015	3000	1109		222		
4-17-24	TP-46 6"-12" 4-16-24 @ 1025	3000	1766		353		
4-17-24	TP-39 6"-12" 4-16-24 @ 1035	3000	1505		301		
4-17-24	TP-36 6"-12" 4-16-24 @ 1100	3000	4247		849		
4-17-24	TP-41 6"-12" 4-16-24 @ 1115	2700	1243	1381	276		
4-17-24	TP-44 6"-12" 4-16-24 @ 1125	3000	1101		220		
4-17-24	TP-38 6"-12" 4-16-24 @ 1215	3000	1067		213		
4-17-24	TP-42 6"-12" 4-16-24 @ 1240	3000	975		195		
4-17-24	TP-40 6"-12" 4-16-24 @ 1250	3000	1140		228		
4-17-24	TP-37 6"-12" 4-16-24 @ 1300	3000	1153		231		QA/QC CPSM: 1101
4-17-24	TP-35 6"-12" 4-16-24 @ 1050	3000	954		191		
4-17-24	TP-43 6"-12" 4-16-24 @ 1230	3000	1101		220		
4-17-24	TP-44 0-6" 4-15-24 @ 915	3000	1224		245		

Technician Signature _____ Reviewed by _____

AVM Environmental Services, Inc.
Field Soil Sample Gamma Radiation Screening Form
Mt. Taylor Mine Site

Instrumentation : Scaler/Ratemeter Ludlum 2221 S#68782, Detector 44-20 S# 295573
Instrument Calibration Date: 5-10-23, Instrument Function Check Performed: ✓
Survey Area/Unit Description: Mt. Taylor mine Site

Area exposure rate: 10-12

Date	Soil Sample ID	Sample Weight Grams	609 (559-669) Kev Gross Counts, CPSM	Weight Corrected CPSM	CPM	Reference Soil Compare (< or >)	Comments
4-17-24	TP-42 0-6" 4-15-24 @ 930	2936	1171	1197	239		
4-17-24	TP-43 0-6" 4-15-24 @ 940	3000	1165		233		
4-17-24	TP-40 0-6" 4-15-24 @ 945	3000	1106		221		
4-17-24	TP-35 0-6" 4-15-24 @ 950	3000	1774		355		
4-17-24	TP-37 0-6" 4-16-24 @ 820	3000	1145		229		
4-17-24	TP-38 0-6" 4-16-24 @ 830	3000	2196		439		
4-17-24	TP-36 0-6" 4-16-24 @ 840	3000	2684		537		QA/QC CPSM: 2673
4-17-24	TP-41 0-6" 4-16-24 @ 845	2800	12188	13059	2612		
4-17-24	TP-45 0-6" 4-16-24 @ 850	2700	1558	1731	346		
4-17-24	TP-46 0-6" 4-16-24 @ 900	3000	21504		4301		
4-17-24	TP-39 0-6" 4-16-24 @ 910	3000	4898		980		
4-17-24	TP-36 1'-2' 4-17-24 @ 1120	3000	1352		270		

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Field Soil Sample Gamma Radiation Screening Form
Mt. Taylor Mine Site

Instrumentation : Scaler/Ratemeter 12221 S#68782, Detector 44-20 S#295573
Instrument Calibration Date: 5-10-23, Instrument Function Check Performed: Y
Survey Area/Unit Description Mt. Taylor Mine Site

Area exposure rate: 10-12 uR/hr.

Date	Soil Sample ID	Sample Weight Grams	609 (559-669) Kev Gross Counts, CP5M	Weight Corrected CP5M	CPM	Reference Soil Compare (< or >)	Comments
4-30-24	Blank	—	327		65		
4-30-24	6.6 pCi/g Ra-226	3000	2663		533		
4-30-24	EBP-1 Surface 4-30-24 @830	3000	16930		3386		
4-30-24	EBP-1 Internal 4-30-24 @853	3000	14135		2827		

Technician Signature [signature], Reviewed by [signature]

AVM Environmental Services, Inc.
Gamma Radiation Survey
Concrete Structures

Instrumentation : Scaler/Ratemeter L2221 SN#290801 Detector SPA-3 #30

Instrument Calibration Date: 2-19-24 Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Decsription Treatment Bed 4/5 CS-1 Ra-226 6.8pC/g ILT 7200

Survey Date/Time	Survey Area ID/Description	Gamma Radiation Reading CPM	Comments/Notes
4-22-24	CS-1 East inside wall	7970	
"	CS-1 South East wall	30312	
"	CS-1 West inside wall	9022	
"	CS-1 South west wall	13633	

Technician Signature _____ Reviewed by _____

AVM Environmental Services, Inc.
Gamma Radiation Survey
Concrete Structures

Instrumentation : Scaler/Ratemeter L2221 S#290801 Detector SPA-3 #30

Instrument Calibration Date: 2-19-24 Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Description Treatment Pond 5 CS-2 Ra-226 6.8 pC/L IL = 7200

Survey Date/Time	Survey Area ID/Description	Gamma Radiation Reading CPM	Comments/Notes
4-22-24	CS-2 ~~West~~ North wall	10559	
"	CS-2 West wall	11509	
"	CS-2 West Wall Divider	12688	
"	CS-2 West wall	7355	
"	CS-2 South wall	8901	
"	CS-2 base North	17024	Sediments
"	CS-2 base South	18844	

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Gamma Radiation Survey
Concrete Structures

Instrumentation : Scaler/Ratemeter L2221 S#290801, Detector SPA-3 #30

Instrument Calibration Date: 2-19-24, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Decsription Treatment Pond 6 CS-3 Ra-226 6.8 pCi/g 1L 7200

Survey Date/Time	Survey Area ID/Description	Gamma Radiation Reading CPM	Comments/Notes
4-22-24	CS-3 South wall	13081	
"	CS-3 South base	14425	
"	CS-3 North base	34721	Elevated gamma readings around Structure 2 103000

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Gamma Radiation Survey
Concrete Structures

Instrumentation : Scaler/Ratemeter L2221 S#290801, Detector SPA-3 #30

Instrument Calibration Date: 2-19-24, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No:

Survey Area/Unit Description Treatment Pond to CS-4 Ra-226 6.8 pCi/g 1L ≈ 7200

Survey Date/Time	Survey Area ID/Description	Gamma Radiation Reading CPM	Comments/Notes
4-22-24	CS-4 North upper box top	7155	
"	CS-4 East upper box top	6952	
"	CS-4 South upper box top	6938	
"	CS-4 West upper box top	10395	
"	CS-4 North lower box Top	8988	
"	CS-4 west lower box top	15543	
"	CS-4 South lower box top	9062	
"	CS-4 North lower box wall	26459	
"	CS-4 West lower box wall	39452	
"	CS-4 South lower box wall	39466	

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Gamma Radiation Survey
Concrete Structures

Instrumentation : Scaler/Ratemeter L2221 S#290801, Detector SPA-3 #30

Instrument Calibration Date: 2-19-24, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Decsription Treatment Pond 6 CS-4 Ra-226 6.8 pCi/gIL = 7200

Survey Date/Time	Survey Area ID/Description	Gamma Radiation Reading CPM	Comments/Notes
4-22-24	CS-4 East lower box wall	23780	
11	CS-4 Lower box base	14800	

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Gamma Radiation Survey
Concrete Structures

Instrumentation : Scaler/Ratemeter 2221 S#290801, Detector SPA-3 #30

Instrument Calibration Date: 2-19-24, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Decsription Treatment Pond 6 CS-5 Ra-226 6.8 pCi/g ≈ 7200 1L

Survey Date/Time	Survey Area ID/Description	Gamma Radiation Reading CPM	Comments/Notes
4-22-24	CS-5 South upper box top	6281	
"	CS-5 North upper box top	5938	
"	CS-5 East lower box top	6477	
"	CS-5 West lower box top	6762	
"	CS-5 North lower box top	7119	
"	CS-5 North lower box inside wall	6806	
"	CS-5 East lower box inside wall	6426	
"	CS-5 South lower box inside wall	6122	
"	CS-5 West lower box inside wall	7241	

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Gamma Radiation Survey
Concrete Structures

Instrumentation : Scaler/Ratemeter L2221 SN290801, Detector SPA-3 #30

Instrument Calibration Date: 2-19-24, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Description Treatment Pond 6/7 CS-6 Ra-226 6.8pCi/g ILTC 7200

Survey Date/Time	Survey Area ID/Description	Gamma Radiation Reading CPM	Comments/Notes
4-22-24	CS-6 South/East Top	5762	
"	CS-6 South/East inside wall	5711	
"	CS-6 East inside wall	5590	
"	CS-6 North/East inside wall	5838	
"	CS-6 Middle base	6702	
"	CS-6 South base	7255	
"	CS-6 South/west inside wall	6004	
"	CS-6 West inside wall	6542	
"	CS-6 North/west inside wall	7271	

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Gamma Radiation Survey
Concrete Structures

Instrumentation : Scaler/Ratemeter L2221 SN#290801, Detector SPA-3 #30

Instrument Calibration Date: 2-19-24, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Decsription Treatment Pad 7 CS-7 Ra-226 6.8pCi/g IL # 7200

Survey Date/Time	Survey Area ID/Description	Gamma Radiation Reading CPM	Comments/Notes
4-22-24	CS-7 North West box top	11804	
11	CS-7 North East box top	10611	
11	CS-7 East box top	11861	
11	CS-7 South box top	10354	

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Gamma Radiation Survey
Concrete Structures

Instrumentation : Scaler/Ratemeter L2221 S#290801, Detector SPA-3 #30

Instrument Calibration Date: 2-19-24, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Decsription Treatment Pond 7 CS-8 Ra-226 68 pCi/g 1L = 7200

Survey Date/Time	Survey Area ID/Description	Gamma Radiation Reading CPM	Comments/Notes
4-22-24	CS-8 box base	31092	
"	CS-8 North inside wall	20294	
"	CS-8 South inside wall	15894	
"	CS-8 ~~South~~ North wall	22039	
"	CS-8 ~~South~~ North base	29815	
"	CS-8 South wall	14452	
"	CS-8 South base	14080	

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Gamma Radiation Survey
Concrete Structures

Instrumentation : Scaler/Ratemeter L2221 S# 290801, Detector SPA-3 #30

Instrument Calibration Date: 2-19-24, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Decsription Treatment Pond 7 CS-9 Ra-226 6.8 pCi/g ILR ≈ 7200

Survey Date/Time	Survey Area ID/Description	Gamma Radiation Reading CPM	Comments/Notes
4-22-24	CS-9 North upper box Top	6342	
4-22-24	CS-9 East upper box Top	6099	
"	CS-9 South upper box ~~wall~~ Top	6891	
"	CS-9 West upper box Top	8801	
"	CS-9 North lower box Top	9122	
"	CS-9 North lower box inside wall	27352	
"	CS-9 West lower box Top	15852	
"	CS-9 West lower box inside wall	45633	
"	CS-9 South lower box Top	10558	
"	CS-9 lower box base of Sump	20500	mine residue / soil

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Gamma Radiation Survey
Concrete Structures

Instrumentation : Scaler/Ratemeter L2221 S#290801, Detector SPA-3 #30

Instrument Calibration Date: 2-19-24, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Decsription Treatment Pond 1 CS-10 Ra-226 6.8 pCi/g, IL = 7200

Survey Date/Time	Survey Area ID/Description	Gamma Radiation Reading CPM	Comments/Notes
4-22-24	CS-10 North/East Wall	25471	
"	CS-10 North/West Wall	13104	
"	CS-10 North base	13052	
"	CS-10 Sump base	90000	Mine residue / Soil
"	CS-10 South/East Wall	16022	
"	CS-10 South/West Wall	9408	
"	CS-10 South base	10272	

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Scaler/Ratemeter - 2" x 2" NaI Detector Function Check

Function Check Source ID: 1% U_3O_8 Ore in Sealed can

2" x 2" NaI Detector ID: SPA-3 S#408522-30

Acceptable background Count (cpm) Range (20%) 6524 to 9786 (Bare)

Acceptable background Count (cpm) Range (20%) 2537 to 3805 (collimated)

Acceptable Source Count (cpm) Range (20%) 77104 to 115656

Date	Scaler/Ratemeter	Physical Check	Cal Due	Battery[1] Volts or OK	HV Volts	THR mV[2]	Window In or OUT[3]	C.C.[4]	BKG Counts cpm	Source Counrts cpm	Within Acceptable Range Y or N	MDC pCi/gm	Tech
2-19-24	L2221 S#290801	✓	2-19-25	ok	900	10	out	1	8351 Bare 3120 Coll.	96753	y	–	VP
4-7-24	L2221 S#290801	✓	2-19-25	ok	900	10	out	1	8272 Bare 3110 Coll.	97815	y	–	VP
4-8-24	L2221 S#290801	✓	2-19-25	OK	900	10	out	1	8249 Bare 3095 Coll.	96238	y	–	VP
4-10-24	L2221 S#290801	✓	2-19-25	Ok	900	10	out	1	8440 Bare 3065 Coll.	96064	y	–	VP
4-15-24	L2221 S#290801	✓	2-19-25	ok	900	10	out	1	8345 Bare 3119 Coll.	97475	y	–	VP
4-16-24	L2221 S#290801	✓	2-19-25	ok	900	10	out	1	8411 Bare 3124 Coll.	96227	y	–	VP
4-17-24	L2221 S#290801	✓	2-19-25	ok	900	10	out	1	8401 Bare 3193 Coll.	97111	y	–	VP
4-22-24	L2221 S#290801	✓	2-19-25	OK	900	10	out	1	8093 Bare 3144 Coll.	96431	y	–	VP
4-23-24	L2221 S#290801	✓	2-19-25	ok	900	10	out	1	8205 Bare 3092 Coll.	95968	y	–	VP
4-30-24	L2221 S#290801	✓	2-19-25	ok	900	10	out	1	8264 Bare 3263 Coll.	96356	y	–	VP
									Bare Coll.				
									Bare Coll.				
									Bare Coll.				
									Bare Coll.				
									Bare Coll.				
									Bare Coll.				

Note: (1) Battery Voltage for Ludlum 2221 must be >5.3 volts; (2) Threshhold must be at 10.0 mV; (3) Window Position must be OUT; (4) CC on L2241-2 set at 0.001
For L2241-2 Check HV and Threshold using Ludlum 500 pulser.

AVM Environmental Services, Inc.
Scaler/Ratemeter - 2" x 2" NaI Detector Function Check

Function Check Source ID: 1% U_3O_8 Ore in Sealed can

2" x 2" NaI Detector ID: SPA-3 S#408522-30

Acceptable background Count (cpm) Range (20%) 6391 to 9587 (Bare)

Acceptable background Count (cpm) Range (20%) 2546 to 3820 (collimated)

Acceptable Source Count (cpm) Range (20%) 77687 to 116531

Date	Scaler/Ratemeter	Physical Check	Cal Due	Battery[1] Volts or OK	HV Volts	THR mV[2]	Window In or OUT[3]	C.C.[4]	BKG Counts cpm	Source Counts cpm	Within Acceptable Range Y or N	MDC pCi/gm	Tech
10-17-23	L2221 S#240801	✓	5-15-24	6.0	900	10	out	1	7978 Bare / 3024 Coll.	97941	Y	—	VP
10-18-23	L2221 S#240801	✓	5-15-24	OK	900	10	out	1	7874 Bare / 2931 Coll.	98494	Y	—	VP
10-25-23	L2221 S#240801	✓	5-14-24	ok	900	10	out	1	7950 Bare / 2916 Coll.	98651	Y	—	VP
11-1-23	L2221 S#240801	✓	5-14-24	ok	900	10	out	1	7824 Bare / 3111 Coll.	99371	Y	—	VP
11-2-23	L2221 S#240801	✓	5-14-24	ok	900	10	out	1	7980 Bare / 2910 Coll.	98416	Y	—	VP
11-7-23	L2221 S#240801	✓	5-14-24	ok	900	10	out	1	7861 Bare / 3090 Coll.	97213	Y	—	VP
11-13-23	L2221 S#240801	✓	5-14-24	ok	900	10	out	1	7880 Bare / 2974 Coll.	97008	Y	—	VP
11-20-23	L2221 S#240801	✓	5-14-24	ok	900	10	out	1	7811 Bare / 2840 Coll.	96911	Y	—	VP
									Bare / Coll.				
									Bare / Coll.				
									Bare / Coll.				
									Bare / Coll.				
									Bare / Coll.				
									Bare / Coll.				
									Bare / Coll.				
									Bare / Coll.				

Note: (1) Battery Voltage for Ludlum 2221 must be >5.3 volts; (2) Threshhold must be at 10.0 mV; (3) Window Position must be OUT; (4) CC on L2241-2 set at 0.001
For L2241-2 Check HV and Threshold using Ludlum 500 pulser.

AVM Environmental Services, Inc.
Micro R Meter Function Check Form

Micro R Meter: Ludlum 19, SR#76248

Function Check Source ID: 1% U_3O_8 Ore in Sealed can

Function Check @ Calibration 135

Acceptable Function Check Reading (uR/hr) Range (20%) 108 to 162

Date	Physical Check	Cal Date	Battery(1) Volts or OK	BKG Reading uR/hr	Source Reading (2) uR/hr	Within Acceptable Range Y or N	Cal Due	Tech
11-13-23	✓	11-3-23	ok	10-12	130	Y	11-3-24	VP
4-7-24	✓	11-3-23	ok	10-12	140	Y	11-3-24	VP
4-8-24	✓	11-3-23	ok	10-12	140	Y	11-3-24	VP
4-10-24	✓	11-3-23	ok	10-12	130	Y	11-3-24	VP
4-15-24	✓	11-3-23	ok	10-12	130	Y	11-3-24	VP
4-16-24	✓	11-3-23	ok	10-12	140	Y	11-3-24	VP
4-17-24	✓	11-3-23	ok	10-12	140	Y	11-3-24	VP
4-22-24	✓	11-3-23	ok	10-12	130	Y	11-3-24	VP
4-23-24	✓	11-3-23	ok	10-12	130	Y	11-3-24	VP
4-30-24	✓	11-3-23	ok	10-12	140	Y	11-3-24	VP

Note: (1) Battery Voltage must be within BAT TEST Range (2) Function Check Source must be placed in the circle on the front side of the meter

AVM Environmental Services, Inc.
Ludlum SCA L2221 - 44-20 3x3 NaI Detector Function Check
559 - 659 KeV Gamma Radiation Soil Screening

L2221 #290801

Ludlum 44-20 3x3 NaI Detector, #PR295573

Function Check Source ID: 1% U_3O_8 Ore in Sealed can

Acceptable background Count (cpm) Range (20%) 53 to 79

Acceptable Source Count (cpm) Range (20%) 12557 to 18835

Date	Physical Check	Cal Date	Battery[1] Volts or OK	HV Volts	Threshhold mV [2]	Window mV	Window In/Out	BKG Counts cpm	Source Counts cpm	Within Acceptable Range Y or N	MDC pCi/gm	Tech
5-17-23	✓	5-10-23	✓	577	559	100	in	70	16805	Y	—	VP
5-18-23	✓	5-10-23	✓	578	559	100	in	66	16200	Y	—	VP
5-22-23	✓	5-10-23	✓	582	559	100	in	68	15900	Y	—	VP
5-23-23	✓	5-10-23	✓	582	559	100	in	71	15508	Y	—	VP
5-25-23	✓	5-10-23	✓	578	559	100	in	73	16253	Y	—	VP
5-30-23	✓	5-10-23	✓	577	559	100	in	72	16101	Y	—	VP
5-31-23	✓	5-10-23	✓	575	559	100	in	64	15789	Y		VP
6-1-23	✓	5-10-23	✓	577	559	100	in	71	16224	Y	—	VP
11-8-23	✓	5-10-23	✓	576	559	100	in	60	16170	Y	—	VP
11-16-23	✓	5-10-23	✓	577	559	100	in	68	15327	Y	—	VP
4-17-24	✓	5-10-23	✓	578	559	100	in	74	15518	Y	—	VP
4-30-24	✓	5-10-23	✓	577	559	100	in	69	16122	Y	—	VP

Note: (1) Battery Voltage for Ludlum 2221 must be >5.3 volts; (2) Threshhold must be at 220 mV; (3) Window @ 440, must be IN

AVM Environmental Services Inc.
Scaler/Ratemeter - Detector Calibration Form

Scaler/Ratemeter: L2221 S# 290801
Detector: SPA-3 S# 408522-30

Source: U308 ore in can S# FC-2 Strength 1%

Scaler/Ratemeter Threshhold set @ 10 mV, Window IN/OUT Out, Window N/A mV

HV	Reading, CPM (Source)	Reading, CPM (Background)
500	17200	470
550	37012	738
600	57214	998
650	71774	1379
700	84865	1633
750	93899	1765
800	95561	1837
850	96093	1895
900	97180	2012
950	97636	2018
1000	100155	2037
1050	113726	2090
1100	133647	2249
1150	161780	2497
1200	199910	3198
1250		
1300		
1350		
1400		

Background reading at designated function check location in AVM office.

Count #	Reading (CPM) Bare	Collimated
1	8139	3129
2	8284	3144
3	8301	3004
4	8107	3170
5	8155	3171
Average	8197	3124

FC Range (6524-9786) (2537-3805)

Count Readings with 1 percent U_3O_8 can directly under collimated detector on designated function check location in AVM office.

Count #	Reading (CPM)
1	96354
2	95928
3	96716
4	96662
5	96241
Average	96380

HV Set @ 900 VDC (Instrument) 900 VDC (DVM Fluke 8020B)

Input Sensitivity (THR), mV 10

Function Check with 1 percent U_3O_8 ore in can. Can Directly under the detector in the collimator.
Acceptable Function check range is 77104 to 115656 CPM

Notes:

Date 2-19-24 By

AVM Environmental Services Inc.
Scaler/Ratemeter - Detector Calibration Form

Scaler/Ratemeter L2221 S# 290801
Detector SPA-3 S# 408522-30

Source U308 ore in con S# EC-2 Strength 1%

Scaler/Ratemeter Threshhold set @ 10 mV, Window IN/OUT out, Window N/A mV

HV Set @ 900 VDC (Instrument) 900 VDC (DVM Fluke 8020B)

Count Readings for Calibration Pad GPB (0.0 ± 0.3 pCi/gm Ra-226)

	Bare (Uncollimated) @ 1'		Collimated @ 1'	
#1	11498	cpm	2766	cpm
#2	11820	cpm	2839	cpm
#3	11614	cpm	2849	cpm
#4	11823	cpm	2883	cpm
#5	11777	cpm	2772	cpm
BKG Average	11706	cpm	2812	cpm

Count Readings for Calibration Pad GPL (87.78 pCi/gm Ra-226)

	Bare (Uncollimated) @ 1'		Collimated @ 1'	
#1	90635	cpm	53328	cpm
#2	90696	cpm	53884	cpm
#3	90626	cpm	53443	cpm
#4	90778	cpm	54004	cpm
#5	91414	cpm	53996	cpm
Gross Average	90830	cpm	53731	cpm
Net Source Pad	79123	cpm	50919	cpm
Eff(net cpm/87.78 pCi/gm	901	cpm/pCi/gm	580	cpm/pCi/gm

µR/hr Reading for Calibration Pad GPL (87.78 pCi/gm Ra-226)

Ludlum Model 19 serial # 76248

Reading @ 1' 115 µR/hr
1.276^{-03} µR/hr/cpm

Date 2-19-24 By

AVM Environmental Services Inc.

Scaler/Ratemeter Calibration Form

Model : L2221 S/N: 68782

Reference Instrument/Source: Ludlum Pulser 500, S/N:114513

HV Calibration

HV Test (2 points): Ref/Inst 600/600 Ref/Inst 900/900

Ratemeter Calibration

Instrument Threshold @ 100 (10 mV), WIN: Out, HV 900VDC; Pulser Threshold @ 200 (20mV)

Range/Mode	Range Multiplier	Calibration Point (Pulser Setting) cpm x multiplier	Target CPM (±5%)	As Found Reading		Left or Set Reading
Ratemeter	x1	40x1	38-42	40		40
	x1	40x10	380-420	397		397
	x10	40x100	3800-4200	3996		3996
	x100	40x1K	38K-42K	39948		39948
	x1K	40x10K	380K-420K	400751		400751
Digital Ratemeter	-	40x1	38-42	39-40		39-40
	-	40x10	380-420	392-401		392-401
	-	40x100	3800-4200	3996-4005		3996-4005
	-	40x1K	38K-42K	39K-40K		39K-40K
	-	40x10K	380K-420K	400K		400K

Threshold/Gain Calibration

WIN OUT

Pulser Amplitude (mV)	Pulser CPM		L2221 Theshold (mv)	Target CPM	L2221 CPM Found		L2221 CPM Left or Set @
10.0	40000		100 (10 mV)	27K -33K	31255		31255
20.0	40000		200 (20 mV)	27K -33K	30801		30801
30.0	40000		300 (30 mV)	27K -33K	30951		30951
40.0	40000		400 (40 mV)	27K -33K	29579		29579
50.0	40000		500 (50 mV)	27K -33K	31042		31042

Note: Use R174 Gain Control on Power Supply Board to adjust L2221 CPM @75% for Threshold/Gain Calibration

Window Cut-off Points Check

L2221 Threshold set @100 (10.0 mv)

WIN @ 100 (10.0 mV) ✓ WIN @ 400 (40.0 mV) ✓

WIN @ 200 (20.0 mV) ✓ WIN @ 500 (50.0 mV) ✓

Date 2-19-24 Calibrated By

AVM Environmental Services Inc.

Scaler/Ratemeter Calibration Form

Model.: L2221 S/N: 290801

Reference Instrument/Source: Ludlum Pulser 500, S/N:114513

HV Calibration

HV Test (2 points): Ref/Inst 600/600 Ref/Inst 900/900

Ratemeter Calibration

Instrument Threshold @ 100 (10 mV), WIN: Out, HV 900VDC; Pulser Threshold @ 200 (20mV)

Range/Mode	Range Multiplier	Calibration Point (Pulser Setting) cpm x multiplier	Target CPM (±5%)	As Found Reading		Left or Set Reading
Ratemeter	x1	40x1	38-42	40		40
	x1	40x10	380-420	400		400
	x10	40x100	3800-4200	4002		4002
	x100	40x1K	38K-42K	40020		40020
	x1K	40x10K	380K-420K	400220		400220
Digital Ratemeter	-	40x1	38-42	39		39
	-	40x10	380-420	402		402
	-	40x100	3800-4200	4004		4004
	-	40x1K	38K-42K	40026		40026
	-	40x10K	380K-420K	400221		400221

Threshold/Gain Calibration

WIN OUT

Pulser Amplitude (mV)	Pulser CPM		L2221 Theshold (mv)	Target CPM	L2221 CPM Found		L2221 CPM Left or Set @
10.0	40000		100 (10 mV)	27K -33K	31194		31194
20.0	40000		200 (20 mV)	27K -33K	29354		29354
30.0	40000		300 (30 mV)	27K -33K	30765		30765
40.0	40000		400 (40 mV)	27K -33K	30082		30082
50.0	40000		500 (50 mV)	27K -33K	29842		29842

Note: Use R174 Gain Control on Power Supply Board to adjust L2221 CPM @75% for Threshold/Gain Calibration

Window Cut-off Points Check

L2221 Threshold set @100 (10.0 mv)

WIN @ 100 (10.0 mV) ✓ WIN @ 400 (40.0 mV) ✓

WIN @ 200 (20.0 mV) ✓ WIN @ 500 (50.0 mV) ✓

Date 2-19-24 Calibrated By

AVM Environmental Services Inc.
L2221 SCA/L44-20 Energy Calibration Form

SCA: L2221, SR #290801 Detector: Ludlum 44-20 (3x3 NaI Scintillator)

Calibration Source: Cs-137 Check Source, 5 uCi (August 2008) For 662 KeV Peak Cal

Threshold (input sensitivity) **652**

Window, In/Out **IN** Window **20**

HV Initial 100, At Peak 579

Maximum CPM: 198160 Background CPM: 13

HV Set @ 579 VDC

For Bi-214 609.2 KeV Peak (559 - 659 KeV ROI), Set Threshold @ 559, Window @ 100

Calibration Check w 1% U3O8 Ore Check Source: 15696 CPM

BKG = 65 cpm

Date 5-10-23 Calibrated By

AVM Enviro. ..tal Services, Inc.
Field Soil Sample Gamma Radiation Screening Form
Mt. Taylor Mine Site

Instrumentation : Scaler/Ratemeter L2221 SN 68782 , **Detector** L44-20 SN 295573
Instrument Calibration Date: 10-7-22 , **Instrument Function Check Performed:** ✓
Survey Area/Unit Decsription Mt Taylor Mine - Correlation Calibration

Area exposure rate:

Date/Time	Soil Sample ID	Sample Weight Grams	609 (559-669) Kev Gross Counts, CP5M	Weight Corrected CP5M	CPM	Reference Soil Compare (< or >)	Comments
5-10-23	Blank		329		66		
5-10-23	6.6pCi/g Ref. Soil	3000	2998		600		
5-10-23	25pCi/g Ref Soil	2984	9552	9603	1921		
5-10-23	50pCi/g Ref Soil	2976	18078	18224	3645		

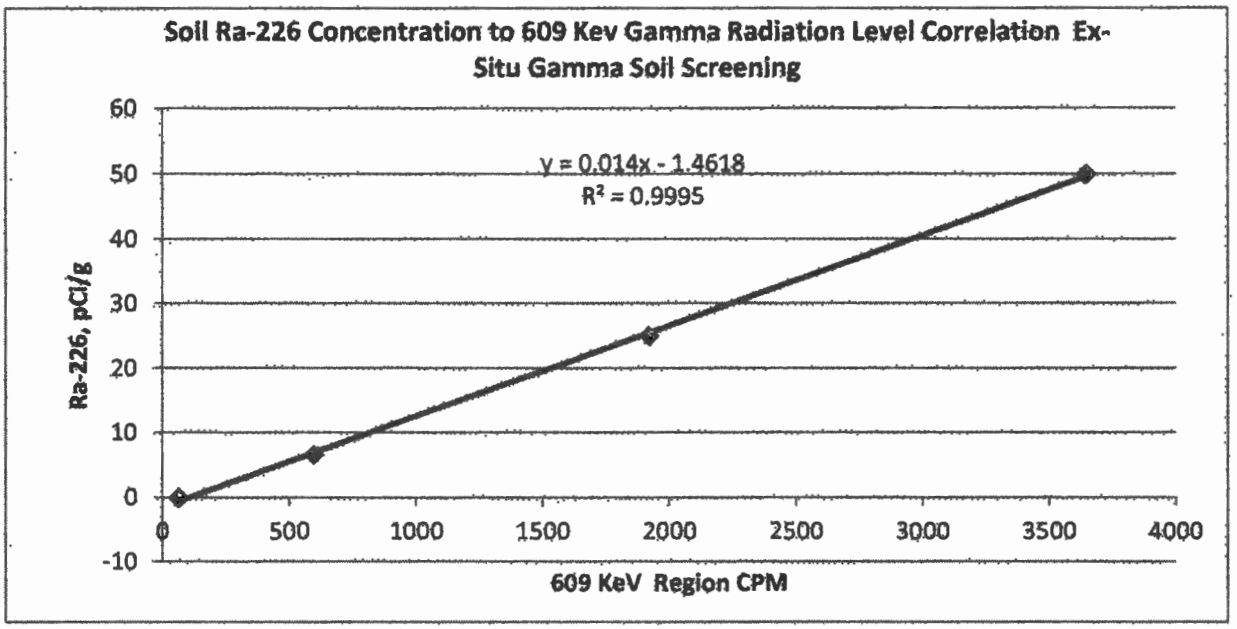
Technician Signature _____, Reviewed by _____

AVM Environmental Services

Ex-Situ Soil Screening Gamma Radiation Level to Ra-226 Correlation

Mt. Taylor Mine Site Subsurface Soil Investigation

Reference Soil ID	Date	Ra-226 pCi/g	Wt gms	609 KeV CP5Min Gross (3x3 NaI Detector)	CPM
Blank	5/10/2023	-	-	329	66
6.6 pCi/g Ra-226 Ref Soil	5/10/2023	6.6	3000	2998	600
25 pCi/g Ra-226 Ref Soil	5/10/2023	25	3000	9603	1921
50 pCi/g Ra-226 Ref Soil	5/10/2023	50	3000	18224	3645



AVM Environmental Services, Inc.
Gamma Radiation Survey
Concrete Correlation Form

Instrumentation : Scaler/Ratemeter L2221 S#290801, Detector SPA-3 #30

Instrument Calibration Date: 2-19-24, Instrument Daily Function Check Performed: ✓

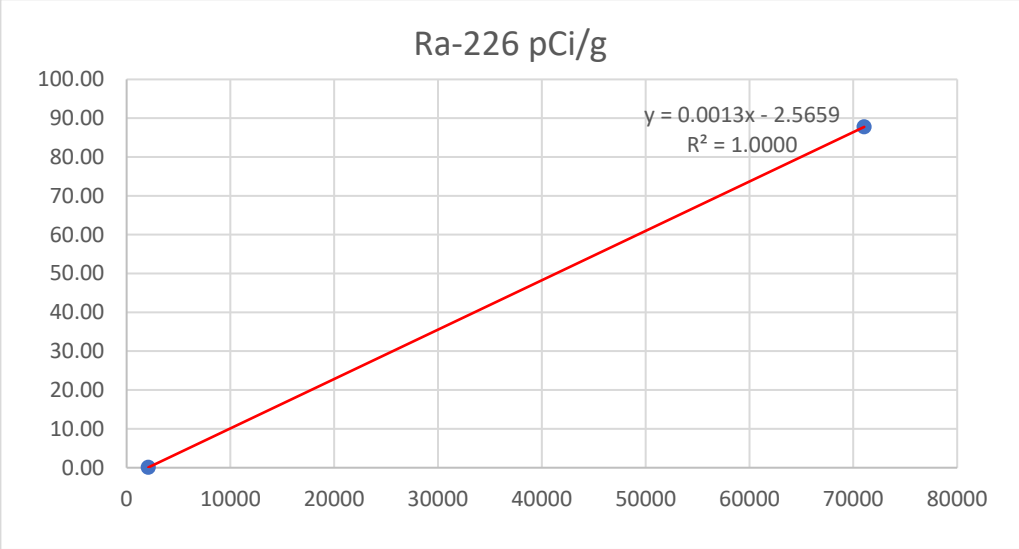
2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Decsription Grants Calibration Pad site - DOE

Survey Date	Calibration Pad ID	Gamma Radiation Reading, CPM		Comments/Notes
		SPA-3, 0.5-inch lead collimated	SPA-3, 1.0-inch lead collimated	
4-18-24	GPB	2019	1989	
		2148	1865	
		2123	2076	uR/hr @ Contact 9.5
11	GPL	70818	74469	
		71213	74463	uR/hr @ Contact 205
		71137	74487	

Technician Signature _____, Reviewed by _____

Grants DOE Calibration Pad
0.5 inch lead collimated 2x2 detector calibration for concrete investigation



Concrete ID	CPM	Ra-226 pCi/g
Cal Pad GPB	2097	0.10
Cal Pad GPL	71056	87.78

Designer and Manufacturer of Scientific and Industrial Instruments

www.ludlums.com

CERTIFICATE OF CALIBRATION

LUDLUM MEASUREMENTS, INC.
501 Oak Street
325-235-5494
Sweetwater, TX 79556, U.S.A.

ACCREDITED
CERT # 4084.01

Customer AVM ENVIRONMENTAL SERVICES INC ORDER NO. 20457182/547880

Mfg. Ludlum Measurements, Inc. Model 19 Serial No. 76248

M. Model Serial No.

Cal. Date 3-Nov-23 Cal Due Date 3-Nov-24 Cal. Interval 1 Year Meterface 202-1070

Check mark ☑ applies to applicable instr. and/or detector IAW mfg. spec. T. 73 °F RH 37 % Alt 708.1 mm Hg

☐ New Instrument Instrument Received ☐ Within Toler. +-10% ☑ 10-20% ☐ Out of Tol. ☐ Requiring Repair ☐ Other-See comments

☑ Mechanical ck. ☑ Meter Zeroed ☐ Background Subtract ☐ Input Sens. Linearity
☑ F/S Resp. ck ☑ Reset ck. ☐ Window Operation ☑ Geotropism
☑ Audio ck. ☐ Alarm Setting ck. ☑ Batt. ck.

☐ Calibrated in accordance with LMI SOP 14.8 ☑ Calibrated in accordance with LMI SOP 14.9

Instrument Volt Set 800 V Input Sens. 37 mV Det. Oper. 800 V at 37 mV Threshold Dial Ratio = mV

☐ HV Readout (2 points) Ref./Inst. / V Ref./Inst. / V

COMMENTS:

Gamma Calibration: GM detectors positioned perpendicular to source except for M 44-9 in which the front of probe faces source.
Multimeter uncertainty within 1.3% of reading, Gamma uncertainty within 5.0% of reading, Neutron uncertainty within 7.0% of reading, Count rate uncertainty within 5.4% of reading

RANGE/MULTIPLIER	REFERENCE CAL. POINT	INSTRUMENT REC'D "AS FOUND READING"	INSTRUMENT METER READING
5000	4000µR/hr	4200 µR/hr	4000 µR/hr
5000	1000µR/hr	1100	1000
500	400µR/hr = 69800 cpm	410	400
500	100µR/hr	110	100
250	200µR/hr = 33800 cpm	210	200
250	100µR/hr	100	100
50	6980 cpm	42	40
50	1750 cpm	10	10
25	3380 cpm	22	20
25	845 cpm	5	5

Range(s) Calibrated Electronically

Digital Readout	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING

Log Scale	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING

Ludlum Measurements, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology, or to the calibration facilities of other International Standards Organization members, or have been derived from accepted values of natural physical constants or have been derived by the ratio type of calibration techniques.
All pass/fail determinations are based on the manufacturer's specifications without considering uncertainty factors.
Measurement results represent expanded uncertainties expressed at approximately the 95% level of confidence, using a coverage factor of k=2.
The calibration system conforms to the requirements of ANSI/NCSL Z540-1-1994 and ANSI N323AB-2013

ISO/IEC 17025:2017(E)
State of Texas Calibration License No. LO-1963

Reference Instruments and/or Sources: Cs-137 S/N: ☐ 059 ☐ 2171CP ☐ 2261CP ☐ 720 ☐ 734 ☐ 781 ☐ 1131 ☐ 1616 ☐ 1696 ☐ 1909 ☐ 1916CP ☐ 2324/2521
☐ 5717CO ☐ 5719CO ☐ 60846 ☐ 70897 ☐ 73410 ☐ E552 ☐ G112 ☑ 2168CP ☐ S-394 ☐ S-1054 ☐ T10081 ☐ T10082 Neutron Am-241 Be ☐ T-304 Ra-226 ☐ Y982
☐ E551 ☐ 5105 ☐ CSV280

☐ Alpha S/N ☐ Beta S/N ☐ Other

☐ m 500 S/N 114520 ☐ Oscilloscope S/N ☑ Multimeter S/N 53950165

Calibrator Sheba Lee Sheba Lee Title Calibrator Date 3-Nov-23

QC'd By Title Final QC Date 3NOV23

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FORM C22A 01/07/2020 Page 1 of 1

AC Inst. Only ☐ Passed Dielectric (Hi-Pot) and Continuity Test ☐ Failed:

CERTIFICATE OF CALIBRATION

LUDLUM MEASUREMENTS, INC.
501 Oak Street
325-235-5494
Sweetwater, TX 79556, U.S.A.
www.ludlums.com

ACCREDITED
CERT # 4084.01

Model No. / Serial No. 500 / 114513

Customer AVM ENVIRONMENTAL SERVICES INC ORDER NO. 20460064/549833

Date 13-Dec-23 Cal Due Date 13-Dec-24 Cal. Interval 1 Year Procedure 500/Rev 8

☐ New Instrument Instrument Received ☑ Within Tolerance ☐ Out of Tol. ☐ Requiring Repair ☐ Other-See Comments

T. 73 °F RH 36 % Alt 714.2 mm Hg ☑ Meter Zeroed ☑ Mechanical Check

PULSE WIDTH Uncertainty within 0.85% of reading

	As Found	As Left	Acceptable Range (µs)
NEG PULSE	1.7	1.7	1.5 - 1.9
POS PULSE	1.7	1.7	< 2.25

PULSE AMPLITUDE (NEGATIVE) Uncertainty within 1.3% of reading

Reference Amplitude	As Found Amplitude Reading	As Left Amplitude Reading	Acceptable Range	Reference Amplitude	As Found Amplitude Reading	As Left Amplitude Reading	Acceptable Range
1 V	1 V	1 V	0.9 - 1.1	4 V	4.1 V	4.1 V	3.6 - 4.4
100 mV	100 mV	100 mV	90 - 110	400 mV	410 mV	410 mV	360 - 440
10 mV	10 mV	10 mV	9 - 11	40 mV	41 mV	41 mV	36 - 44
1 mV	1 mV	1 mV	0.9 - 1.1	4 mV	4.1 mV	4.1 mV	3.6 - 4.4

PULSE AMPLITUDE (POSITIVE) Uncertainty within 1.3% of reading

Reference Amplitude	As Found Amplitude Reading	As Left Amplitude Reading	Acceptable Range
3 V	3 V	3 V	2.7 - 3.3
300 mV	300 mV	300 mV	270 - 330
30 mV	30 mV	30 mV	27 - 33
3 mV	3 mV	3 mV	2.7 - 3.3

PULSE FREQUENCY (PERIOD) Uncertainty within 0.46% of reading

Pulser Range	As Found Period	As Left Period	Acceptable Range
x 10K	6.667	6.667	6.534 - 6.8
x 1K	66.70	66.70	65.34 - 68
x 100	667.2	667.2	653.4 - 680
x 10	6671	6671	6534 - 6800
x 1	66.71	66.71	65.34 - 68
x 0.1	90	90	88.2 - 91.8 Counts

Digital High Voltage Uncertainty within 1.3% of reading

Reference Voltage	As Found Voltage Reading	As Left Voltage Reading	Acceptable Range
500 V			490 - 510
1500 V			1470 - 1530

Analog High Voltage Uncertainty within 1.3% of reading

Reference Voltage	As Found Voltage Reading	As Left Voltage Reading	Acceptable Range
500 V	500	500	475 - 525
2000 V	2000	2000	1900 - 2100

CPM Reading	As Found cpm Reading	As Left cpm Reading	Acceptable Range
MAX	992	992	981 - 999
MIN	0-1	0-1	0 - 1*

* READING OF 0-99 IS ACCEPTABLE FOR INSTRUMENTS WITH A S/N 100000 AND BELOW OR MAIN BOARD = 5208-066

COMMENTS:

CAL'D W/ 39" CABLE.

Ludlum Measurements, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology, or to the calibration facilities of other International Standards Organization members, or have been derived from accepted values of natural physical constants or have been derived by the ratio type of calibration techniques.
All pass/fail determinations are based on the manufacturer's specifications without considering uncertainty factors.
Measurement results represent expanded uncertainties expressed at approximately the 95% level of confidence, using a coverage factor of k=2.
The calibration system conforms to the requirements of ANSI/NCSL Z540-1-1994 and ANSI N323AB-2013

ISO/IEC 17025:2017(E)
State of Texas Calibration License No. LO-1963

Reference Instruments:

Frequency Counter	Model BK 1856D	S/N 332L14297	Cal Date	17-Feb 2023
Oscilloscope	Model Tektronix 72-6820	S/N 1102645	Cal Date	11-Oct 2023
Voltmeter	Model Fluke 83V	S/N 94000441	Cal Date	2-Jun 2023

Calibrator William Tinsley William Tinsley Title Calibrator Date 13-December 2023

QC'd By [signature] Title Final QC Date 14 Dec 23

This certificate shall not be reproduced except in full, without the written approval of Ludlum Measurements, Inc.

AC Inst. Only ☑ Passed Dielectric (Hi-Pot) and Continuity Test ☐ Failed: _____

ANALYTICAL SUMMARY REPORT

May 24, 2024

Rio Grande Resources Corporation
PO Box 1150
Grants, NM 87020-1150

Work Order: C24040791 Quote ID: C16056

Project Name: MTM TP Soil Characterization

Energy Laboratories, Inc. Casper WY received the following 10 samples for Rio Grande Resources Corporation on 4/24/2024 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C24040791-001	TP-11 [6-12]inches	11/13/23 13:45	04/24/24	Solid	Gamma Sample Preparation Drying/Grinding, Radiochemistry Gross Gamma
C24040791-002	TP-15B [6-12]Inches	11/14/23 8:25	04/24/24	Solid	Same As Above
C24040791-003	TP-11 [1-2]Feet	11/16/23 11:05	04/24/24	Solid	Same As Above
C24040791-004	TP-15B [1-1.5]Feet	11/16/23 11:35	04/24/24	Solid	Same As Above
C24040791-005	TP-41 [0-6]Inches	04/16/24 8:45	04/24/24	Solid	Same As Above
C24040791-006	TP-46 [6-12]Inches	04/16/24 10:25	04/24/24	Solid	Same As Above
C24040791-007	TP-36 [6-12]Inches	04/16/24 11:00	04/24/24	Solid	Same As Above
C24040791-008	TP-41 [6-12]Inches	04/16/24 11:15	04/24/24	Solid	Same As Above
C24040791-009	TP-36 [1-2]Feet	04/17/24 11:20	04/24/24	Solid	Same As Above
C24040791-010	TP-DS 01	04/17/24 13:00	04/24/24	Solid	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager .

Report Approved By:

CLIENT: Rio Grande Resources Corporation
Project: MTM TP Soil Characterization
Work Order: C24040791

Report Date: 05/24/24

CASE NARRATIVE

ORIGINAL SAMPLE SUBMITTAL(S)
All original sample submittals have been returned with the data package.

SAMPLE TEMPERATURE COMPLIANCE: 4°C (±2°C)
Temperature of samples received may not be considered properly preserved by accepted standards. Samples that are hand delivered immediately after collection shall be considered acceptable if there is evidence that the chilling process has begun.

GROSS ALPHA ANALYSIS
Method 900.0 for gross alpha and gross beta is intended as a drinking water method for low TDS waters. Data provided by this method for non potable waters should be viewed as inconsistent.

RADON IN AIR ANALYSIS
The desired exposure time is 48 hours (2 days). The time delay in returning the canister to the laboratory for processing should be as short as possible to avoid excessive decay. Maximum recommended delay between end of exposure to beginning of counting should not exceed 8 days.

SOIL/SOLID SAMPLES
All samples reported on an as received basis unless otherwise indicated.

ATRAZINE, SIMAZINE AND PCB ANALYSIS
Data for PCBs, Atrazine and Simazine are reported from EPA 525.2. PCB data reported by ELI reflects the results for seven individual Aroclors. When the results for all seven are ND (not detected), the sample meets EPA compliance criteria for PCB monitoring.

SUBCONTRACTING ANALYSIS
Subcontracting of sample analyses to an outside laboratory may be required. If so, ENERGY LABORATORIES will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

BRANCH LABORATORY LOCATIONS
eli-b - Energy Laboratories, Inc. - Billings, MT
eli-g - Energy Laboratories, Inc. - Gillette, WY
eli-h - Energy Laboratories, Inc. - Helena, MT

ISO 17025 DISCLAIMER:
The results of this Analytical Report relate only to the items submitted for analysis.

ENERGY LABORATORIES, INC. - CASPER,WY certifies that certain method selections contained in this report meet requirements as set forth by the above accrediting authorities. Some results requested by the client may not be covered under these certifications. All analysis data to be submitted for regulatory enforcement should be certified in the sample state of origin. Please verify ELI's certification coverage by visiting www.energylab.com

ELI appreciates the opportunity to provide you with this analytical service. For additional information and services visit our web page www.energylab.com.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM TP Soil Characterization
Lab ID: C24040791-001
Client Sample ID: TP-11 [6-12]

Report Date: 05/24/24
Collection Date: 11/13/23 13:45
DateReceived: 04/24/24
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	-0.8	pCi/g-dry	U			E901.1	05/16/24 15:53 / haw
Radium 224 precision (±)	8.0	pCi/g-dry				E901.1	05/16/24 15:53 / haw
Radium 224 MDC	13.3	pCi/g-dry				E901.1	05/16/24 15:53 / haw
Radium 226	61.5	pCi/g-dry				E901.1	05/16/24 15:53 / haw
Radium 226 precision (±)	1.4	pCi/g-dry				E901.1	05/16/24 15:53 / haw
Radium 226 MDC	0.7	pCi/g-dry				E901.1	05/16/24 15:53 / haw
Radium 228	0.4	pCi/g-dry	U			E901.1	05/16/24 15:53 / haw
Radium 228 precision (±)	1.2	pCi/g-dry				E901.1	05/16/24 15:53 / haw
Radium 228 MDC	1.7	pCi/g-dry				E901.1	05/16/24 15:53 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM TP Soil Characterization
Lab ID: C24040791-002
Client Sample ID: TP-15B [6-12]

Report Date: 05/24/24
Collection Date: 11/14/23 08:25
DateReceived: 04/24/24
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.9	pCi/g-dry	U			E901.1	05/17/24 12:48 / haw
Radium 224 precision (±)	3.1	pCi/g-dry				E901.1	05/17/24 12:48 / haw
Radium 224 MDC	5.2	pCi/g-dry				E901.1	05/17/24 12:48 / haw
Radium 226	15.2	pCi/g-dry				E901.1	05/17/24 12:48 / haw
Radium 226 precision (±)	0.5	pCi/g-dry				E901.1	05/17/24 12:48 / haw
Radium 226 MDC	0.3	pCi/g-dry				E901.1	05/17/24 12:48 / haw
Radium 228	1.6	pCi/g-dry				E901.1	05/17/24 12:48 / haw
Radium 228 precision (±)	0.4	pCi/g-dry				E901.1	05/17/24 12:48 / haw
Radium 228 MDC	0.5	pCi/g-dry				E901.1	05/17/24 12:48 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM TP Soil Characterization
Lab ID: C24040791-003
Client Sample ID: TP-11 [1-2]

Report Date: 05/24/24
Collection Date: 11/16/23 11:05
DateReceived: 04/24/24
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.4	pCi/g-dry	U			E901.1	05/17/24 14:57 / haw
Radium 224 precision (±)	1.5	pCi/g-dry				E901.1	05/17/24 14:57 / haw
Radium 224 MDC	2.6	pCi/g-dry				E901.1	05/17/24 14:57 / haw
Radium 226	1.1	pCi/g-dry				E901.1	05/17/24 14:57 / haw
Radium 226 precision (±)	0.1	pCi/g-dry				E901.1	05/17/24 14:57 / haw
Radium 226 MDC	0.1	pCi/g-dry				E901.1	05/17/24 14:57 / haw
Radium 228	1.1	pCi/g-dry				E901.1	05/17/24 14:57 / haw
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1	05/17/24 14:57 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1	05/17/24 14:57 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM TP Soil Characterization
Lab ID: C24040791-004
Client Sample ID: TP-15B [1-1.5]

Report Date: 05/24/24
Collection Date: 11/16/23 11:35
DateReceived: 04/24/24
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.5	pCi/g-dry	U			E901.1	05/17/24 16:01 / haw
Radium 224 precision (±)	2.1	pCi/g-dry				E901.1	05/17/24 16:01 / haw
Radium 224 MDC	3.6	pCi/g-dry				E901.1	05/17/24 16:01 / haw
Radium 226	1.2	pCi/g-dry				E901.1	05/17/24 16:01 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1	05/17/24 16:01 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1	05/17/24 16:01 / haw
Radium 228	1.3	pCi/g-dry				E901.1	05/17/24 16:01 / haw
Radium 228 precision (±)	0.4	pCi/g-dry				E901.1	05/17/24 16:01 / haw
Radium 228 MDC	0.4	pCi/g-dry				E901.1	05/17/24 16:01 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM TP Soil Characterization
Lab ID: C24040791-005
Client Sample ID: TP-41 [0-6]

Report Date: 05/24/24
Collection Date: 04/16/24 08:45
DateReceived: 04/24/24
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1.7	pCi/g-dry	U			E901.1	05/20/24 09:23 / haw
Radium 224 precision (±)	6.6	pCi/g-dry				E901.1	05/20/24 09:23 / haw
Radium 224 MDC	10.9	pCi/g-dry				E901.1	05/20/24 09:23 / haw
Radium 226	43.5	pCi/g-dry				E901.1	05/20/24 09:23 / haw
Radium 226 precision (±)	1.1	pCi/g-dry				E901.1	05/20/24 09:23 / haw
Radium 226 MDC	0.5	pCi/g-dry				E901.1	05/20/24 09:23 / haw
Radium 228	1.5	pCi/g-dry				E901.1	05/20/24 09:23 / haw
Radium 228 precision (±)	0.7	pCi/g-dry				E901.1	05/20/24 09:23 / haw
Radium 228 MDC	1.0	pCi/g-dry				E901.1	05/20/24 09:23 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM TP Soil Characterization
Lab ID: C24040791-006
Client Sample ID: TP-46 [6-12]

Report Date: 05/24/24
Collection Date: 04/16/24 10:25
DateReceived: 04/24/24
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	2.3	pCi/g-dry				E901.1	05/20/24 10:26 / haw
Radium 224 precision (±)	1.3	pCi/g-dry				E901.1	05/20/24 10:26 / haw
Radium 224 MDC	2.0	pCi/g-dry				E901.1	05/20/24 10:26 / haw
Radium 226	2.3	pCi/g-dry				E901.1	05/20/24 10:26 / haw
Radium 226 precision (±)	0.3	pCi/g-dry				E901.1	05/20/24 10:26 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1	05/20/24 10:26 / haw
Radium 228	1	pCi/g-dry				E901.1	05/20/24 10:26 / haw
Radium 228 precision (±)	0.4	pCi/g-dry				E901.1	05/20/24 10:26 / haw
Radium 228 MDC	0.5	pCi/g-dry				E901.1	05/20/24 10:26 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM TP Soil Characterization
Lab ID: C24040791-007
Client Sample ID: TP-36 [6-12]

Report Date: 05/24/24
Collection Date: 04/16/24 11:00
DateReceived: 04/24/24
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	4.2	pCi/g-dry				E901.1	05/20/24 11:44 / haw
Radium 224 precision (±)	2.3	pCi/g-dry				E901.1	05/20/24 11:44 / haw
Radium 224 MDC	3.6	pCi/g-dry				E901.1	05/20/24 11:44 / haw
Radium 226	8.8	pCi/g-dry				E901.1	05/20/24 11:44 / haw
Radium 226 precision (±)	0.5	pCi/g-dry				E901.1	05/20/24 11:44 / haw
Radium 226 MDC	0.3	pCi/g-dry				E901.1	05/20/24 11:44 / haw
Radium 228	1.3	pCi/g-dry				E901.1	05/20/24 11:44 / haw
Radium 228 precision (±)	0.5	pCi/g-dry				E901.1	05/20/24 11:44 / haw
Radium 228 MDC	0.7	pCi/g-dry				E901.1	05/20/24 11:44 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM TP Soil Characterization
Lab ID: C24040791-008
Client Sample ID: TP-41 [6-12]

Report Date: 05/24/24
Collection Date: 04/16/24 11:15
DateReceived: 04/24/24
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	2.2	pCi/g-dry				E901.1	05/20/24 13:27 / haw
Radium 224 precision (±)	1.3	pCi/g-dry				E901.1	05/20/24 13:27 / haw
Radium 224 MDC	2.0	pCi/g-dry				E901.1	05/20/24 13:27 / haw
Radium 226	1.9	pCi/g-dry				E901.1	05/20/24 13:27 / haw
Radium 226 precision (±)	0.3	pCi/g-dry				E901.1	05/20/24 13:27 / haw
Radium 226 MDC	0.3	pCi/g-dry				E901.1	05/20/24 13:27 / haw
Radium 228	1.6	pCi/g-dry				E901.1	05/20/24 13:27 / haw
Radium 228 precision (±)	0.5	pCi/g-dry				E901.1	05/20/24 13:27 / haw
Radium 228 MDC	0.6	pCi/g-dry				E901.1	05/20/24 13:27 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM TP Soil Characterization
Lab ID: C24040791-009
Client Sample ID: TP-36 [1-2]

Report Date: 05/24/24
Collection Date: 04/17/24 11:20
DateReceived: 04/24/24
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.6	pCi/g-dry	U			E901.1	05/20/24 16:12 / haw
Radium 224 precision (±)	2.1	pCi/g-dry				E901.1	05/20/24 16:12 / haw
Radium 224 MDC	3.6	pCi/g-dry				E901.1	05/20/24 16:12 / haw
Radium 226	0.7	pCi/g-dry				E901.1	05/20/24 16:12 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1	05/20/24 16:12 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1	05/20/24 16:12 / haw
Radium 228	1.3	pCi/g-dry				E901.1	05/20/24 16:12 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1	05/20/24 16:12 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1	05/20/24 16:12 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM TP Soil Characterization
Lab ID: C24040791-010
Client Sample ID: TP-DS 01

Report Date: 05/24/24
Collection Date: 04/17/24 13:00
DateReceived: 04/24/24
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.5	pCi/g-dry	U			E901.1	05/21/24 08:43 / haw
Radium 224 precision (±)	2.2	pCi/g-dry				E901.1	05/21/24 08:43 / haw
Radium 224 MDC	3.6	pCi/g-dry				E901.1	05/21/24 08:43 / haw
Radium 226	0.8	pCi/g-dry				E901.1	05/21/24 08:43 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1	05/21/24 08:43 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1	05/21/24 08:43 / haw
Radium 228	1.1	pCi/g-dry				E901.1	05/21/24 08:43 / haw
Radium 228 precision (±)	0.4	pCi/g-dry				E901.1	05/21/24 08:43 / haw
Radium 228 MDC	0.4	pCi/g-dry				E901.1	05/21/24 08:43 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected at Minimum Detectable Concentration (MDC)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation **Work Order:** C24040791 **Report Date:** 05/23/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E901.1										Batch: R306411
Lab ID: MB-306411	9	Method Blank				Run: GAM-HPGE 2_240516A				05/16/24 13:03
Radium 224		0.3	pCi/g-dry							U
Radium 224 precision (±)		0.9	pCi/g-dry							
Radium 224 MDC		1	pCi/g-dry							
Radium 226		0.1	pCi/g-dry							U
Radium 226 precision (±)		0.1	pCi/g-dry							
Radium 226 MDC		0.2	pCi/g-dry							
Radium 228		0.2	pCi/g-dry							U
Radium 228 precision (±)		0.2	pCi/g-dry							
Radium 228 MDC		0.4	pCi/g-dry							
Lab ID: C24040791-008ADUP	9	Sample Duplicate				Run: GAM-HPGE 2_240516A				05/20/24 15:10
Radium 224		-0.15	pCi/g-dry					230	30	UR
Radium 224 precision (±)		2.6	pCi/g-dry							
Radium 224 MDC		4.3	pCi/g-dry							
Radium 226		1.8	pCi/g-dry					3.9	30	
Radium 226 precision (±)		0.26	pCi/g-dry							
Radium 226 MDC		0.23	pCi/g-dry							
Radium 228		1.7	pCi/g-dry					6.9	30	
Radium 228 precision (±)		0.44	pCi/g-dry							
Radium 228 MDC		0.44	pCi/g-dry							

- Duplicate RPD for Ra224 is outside of the acceptance range for this analysis. However, the RER is less than or equal to the limit of 3, the RER result is 0.82. The RER result for Ra226 is 0.19 and Ra228 is 0.17.

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

R - Relative Percent Difference (RPD) exceeds advisory limit

U - Not detected at Minimum Detectable Concentration (MDC)

Work Order Receipt Checklist

Rio Grande Resources Corporation C24040791

Login completed by:	Cristen C. Smith	Date Received:	4/24/2024
Reviewed by:	tjones	Received by:	CCS
Reviewed Date:	4/30/2024	Carrier name:	FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	14.9°C No Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

For methods that require zero headspace or require preservation check at the time of analysis due to potential interference, the pH is verified at analysis. Nonconforming sample pH is documented as part of the analysis and included in the sample analysis comments.

Contact and Corrective Action Comments:

None

Chain of Custody & Analytical Request Record

Trust our People. Trust our Data.

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Account Information (Billing information)

Company/Name	Rio Grande Resources Corporation
Contact	Anita Willcox
Phone	505-287-7971
Mailing Address	PO Box 1150
City, State, Zip	Grants, NM 87020
Email	anita.willcox@ga.com
Receive Invoice	☐Hard Copy ☒Email
Receive Report	☐Hard Copy ☒Email
Purchase Order	MT11705
Quote	
Bottle Order	

Report Information (if different than Account Information)

Company/Name	AVM Environmental Services, Inc.
Contact	Victor Patel
Phone	505-287-4593
Mailing Address	1717 Del Norte Blvd
City, State, Zip	Grants, NM 87020
Email	vpatelavm@outlook.com
Receive Report	☐Hard Copy ☒Email

Special Report/Formats: ☐ LEVEL IV ☐NELAC ☐ EDD/EDT (contact laboratory) ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	MTM TP Soil Characterization
Sampler Name	Victor Patel
Sampler Phone	505-287-4593
Sample Origin State	New Mexico
EPA/State Compliance	☐ Yes ☒ No

URANIUM MINING CLIENTS MUST indicate sample type
☒ Unprocessed Ore
☐ Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11(e)2 Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes
A - Air
W - Water
S - Soils/ Solids
V - Vegetation
B - Bioassay
O - Oil
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	EPA 901.1 Modified for Soil	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	TP-11 6"-12"	11/13/2023	1:45 pm	1	S	✓			C24040791
2	TP-15B 6"-12"	11/14/2023	8:25 am	1	S	✓			
3	TP-11 1'-2'	11/16/2023	11:05 am	1	S	✓			
4	TP-15B 1'-1.5'	11/16/2023	11:35 am	1	S	✓			
5	TP-41 0"-6"	04/16/2024	8:45 am	1	S	✓			
6	TP-46 6"-12"	04/16/2024	10:25 am	1	S	✓			
7	TP-36 6"-12"	04/16/2024	11:00 am	1	S	✓			
8	TP-41 6"-12"	04/16/2024	11:15 am	1	S	✓			
9									

ELI is REQUIRED to provide preservative traceability. If the preservatives supplied with the bottle order were **NOT** used, please attach your preservative information with this COC.

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Victor Patel	4-22-24/1000				
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Chester Smith	4/24/24 10:10	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number (cash/check only)

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

ENERGY LABORATORIES
Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

www.energylab.com

Account Information (Billing information)

Company/Name	Rio Grande Resources Corporation
Contact	Anita Willcox
Phone	505-287-7971
Mailing Address	PO Box 1150
City, State, Zip	Grants, NM 87020
Email	anita.willcox@ga.com
Receive Invoice	☐Hard Copy ☒Email
Receive Report	☐Hard Copy ☒Email
Purchase Order	MT11705
Quote	
Bottle Order	

Report Information (if different than Account Information)

Company/Name	AVM Environmental Services, Inc.
Contact	Victor Patel
Phone	505-287-4593
Mailing Address	1717 Del Norte Blvd
City, State, Zip	Grants, NM 87020
Email	vpatelavm@outlook.com
Receive Report	☐Hard Copy ☒Email
Special Report/Formats:	☐ LEVEL IV ☐NELAC ☐ EDD/EDT (contact laboratory) ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	MTM TP Soil Characterization
Sampler Name	Victor Patel
Sampler Phone	505-287-4593
Sample Origin State	New Mexico
EPA/State Compliance	☐ Yes ☒ No

URANIUM MINING CLIENTS MUST indicate sample type
☒ Unprocessed Ore
☐ Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11(e)2 Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Oil
DW - Drinking Water

Analysis Requested

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	EPA 901.1 Modified for Soil	See Attached	RUSH TAT	ELI LAB ID Laboratory Use Only
1	TP-36 1'-2'	04/17/2024	11:20 am	1	S	✓			C24040791
2	TP-DS 01	04/17/2024	1:00 pm	1	S	✓			
3									
4									
5									
6									
7									
8									
9									

ELI is REQUIRED to provide preservative traceability. If the preservatives supplied with the bottle order were **NOT** used, please attach your preservative information with this COC.

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Victor Patel	4-22-24 / 1000				
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Cristal Smith	4/24/24 10:10	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number (cash/check only)

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

North Controlled Area Soil Radiologic Characterization

Mt. Taylor Mine Site
San Mateo, NM

Prepared by:
AVM Environmental Services, Inc.
1717 Del Norte Blvd.
Grants, NM 87020

Prepared for:
Rio Grande Resource Corporation
PO Box 1150
Grants, NM 87020

June 5, 2025

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Appendices

Appendix A Surface and Subsurface Contamination Field Investigation Documentation (Soil Sample Log Forms, Field Soil Sample Ex-Situ Gamma Radiation Screening Forms)
Appendix B Radiologic Instrument Calibration, Operational Function Check, and Collimated Detector Correlation Documentation
Appendix C Soil Sample COC and Laboratory Analytical Results Report

1.0 Introduction and Background

This report provides the results of the North Controlled Area (NCA) Soil Radiologic Characterization (SRC) that was conducted at the Mt. Taylor Mine (Site) in Cibola County, near San Mateo, New Mexico. This NCA SRC was performed to check the status and estimate radiologic contamination in soil exceeding the Site Radiation Cleanup Criteria (RCC) of 6.8 pCi/g Radium (Ra)-226, which is also used as the Site Investigation Level (IL). The NCA SRC area includes the Mine Water Treatment Area, the Ore Pad Runoff Retention Pond, the North Diversion Channel, Borrow Area A, the Marquez Arroyo bed, and the area between the Marquez Arroyo and the northern boundary fence of the NCA. The previously characterized Mine Water Treatment Ponds (1, 4, 5, 6, 7 & 8), the Ore Pad Area and the two active Mine Water Treatment Ponds (2 & 3) are not included in this NCA SRC. The methods and procedures used were consistent with the agency May 2022 approved June 2020 Work Plan for Post-Mining Radiological Surveys of Permit Area and Impacted Lands (Work Plan), and the applicable survey methods described in the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM, EPA 2000a). The RCC specified in the March 2016 *Joint Guidance for the Cleanup and Reclamation of Existing Uranium Mining Operations in New Mexico* (EMNRD, 2016) (2016 Guidance) by the Energy, Minerals & Natural Resources Department (EMNRD) and the New Mexico Environment Department (NMED) was used for the investigation level (IL) the NCA SRC. The Ra-226 cleanup criteria of 5.0 pCi/g above the background level in land averaged over 100 square meters in surface soil (top six inches) specified in the Joint Guidance is taken from the UMTRCA (40 CFR 192) regulation, which is based on an unrestricted land use exposure scenario. A 6.8 pCi/g Ra-226 IL (5.0 pCi/g plus 1.8 pCi/g background level) has been established for the Site.

The Site was an underground uranium mine located in Cibola County, near San Mateo, New Mexico. The mine was developed by Gulf Mineral Resources Company (Gulf) in the 1970s and ore production occurred from 1979 to 1982. Following the transfer of the Site to Chevron Resources Company in 1985, the ore production resumed and continued until 1990. Rio Grande Resources (RGR) acquired the Site in 1991. In 1999 the Site entered standby status under Mine Permit C1002RE with EMNRD. On December 29, 2017, the permit changed to an active status, and on December 3, 2019, RGR notified EMNRD of intentions to begin the Site closeout/closure process. The following sections describe the strategy, methods and procedures that were used and the results of the NCA SRC conducted at the Site.

2.0 Previous Radiologic Characterizations

Surface gamma radiation surveys were performed periodically within operationally controlled areas of the Site, including the NCA, to monitor changes in radiological conditions during a period of remedial excavations in the Mine Water Treatment Ponds, construction of the disposal cell, placement of contaminated mine materials, and the gradual removal of ore from the Ore Pad stockpile. The most recent gamma survey in this area prior to this characterization was conducted in March 2020 and showed gamma radiation levels exceeding the 6.8 pCi/g Ra-226 IL in numerous areas at the Site, including areas within the NCA. The 2020 gamma survey results are summarized in the Work Plan.

3.0 Objective of the Soil Radiological Characterization

The Site is a former uranium mine, therefore the surface and subsurface soil is expected to be impacted by radionuclides associated with the uranium decay series, with Ra-226 being the primary Constituent of Concern (COC). The objective of this characterization is to evaluate Ra-226 contamination exceeding the 6.8 pCi/g Ra-226 IL in surface and subsurface soils to facilitate the estimation of the volume of radiologic impacted soil within the NCA SRC area.

4.0 Field Investigation

Field investigations for this NCA SRC were conducted consistent with the Work Plan and were performed during the period of July 2024 through January 2025. The field investigation included both 0.5-inch thick lead collimated and bare (uncollimated) 2x2 sodium iodide (NaI) detector Differential Global Positioning System (DGPS) based gamma radiation scan surveys, and measurements. Additionally, static gamma radiation surveys, soil sampling, ex-situ soil screening, and offsite vendor laboratory confirmatory sample analysis were utilized during this SRC. The DGPS based gamma scan surveys were conducted to provide lateral Ra-226 concentration level estimates in surface soils. To assess subsurface radiological contamination, areas of potentially similar vertical extent of contamination were selected based on the DGPS gamma scan surveys, and data point (static gamma survey and subsurface soil samples) locations were selected to provide an area contamination depth profile estimation. Ex-situ gamma radiation soil screening was performed on the soil samples collected to provide real-time information to estimate surface and subsurface Ra-226 contamination levels. Offsite vender laboratory soil sample analysis was utilized to confirm the contamination levels estimated by ex-situ soil screening.

4.1 Surface Gamma Radiation Scan and Static Surveys

The instrument configuration used for direct gamma radiation level measurements during this characterization consisted of 0.5 inch thick lead collimated and bare 2x2 NaI scintillation detectors (Eberline SPA-3 or Ludlum 44-10) coupled to a scaler/rate meter, such as a Ludlum 2221 or Ludlum 2241. This instrument configuration is widely used for this type of survey and is recommended by the MARSSIM. The scaler/rate meters were interfaced with a sub-meter accurate DGPS with surveying software and a data logger/controller for electronically recording the gamma radiation levels to the corresponding geo-location coordinates. The coordinate system used for this work was the State Plane Coordinate System (NAD83, New Mexico West, US Feet) system. The direct gamma radiation surveys using a NaI scintillation detector provide radiation levels in counts per minute (cpm).

During this characterization, systematic gamma radiation scan surveys using bare 2x2 NaI detectors were performed at the Site to estimate the level of Ra-226 in surface soil within the characterization areas. Although bare detectors do not avoid lateral gamma radiation shine, bare detectors have a large field of view and provide a large scan coverage area for an efficient and conservative lateral extent of

contamination assessment. To better characterize the surface soil and to assist in the selection of data point locations, the surface gamma scan survey was performed at a higher density, 25-feet transect spacing, compared to the March 2020 scan density of about 60-ft transect spacing. Based on a conservative field of view (FOV) of about ten feet diameter for a bare 2x2 NaI detector for Ra-226 gamma radiation, scanning transects spacing of 25 feet would provide at least a 40% scan coverage, which is sufficient to identify and characterize any surface soil contamination. The gamma scan survey was performed by scanning along these transects with the detector at 12 inches above the ground surface at a scan rate of about three feet per second, with a data collection time interval of two seconds. A Bare detector gamma scan survey was performed in areas away from the Ore Pad, which could result in lateral gamma radiation shine. In areas near the Ore Pad, a 0.5 inch thick lead collimated detector was used to mitigate lateral gamma radiation shine. The bare/collimated detector gamma scan boundary is shown in Figure 2.

Twenty-five feet spaced geo-projected transects within the NCA were digitally created using a mapping software and loaded on the field data logger/controller. During this characterization, a gamma scan survey was not conducted in the Ore Pad Runoff Retention Pond since previous gamma scan surveys showed uniformly and significantly elevated measurements compared to the IL, making additional surface gamma scan surveys unnecessary in assisting with selecting data point locations for subsurface investigation.

The geo-located gamma scan data includes the gamma scan point ID number, date and time, location coordinates, and detector cpm. The scan data was exported from the data logger and the bare detector cpm were converted to equivalent Ra-226 estimate using the Site-specific correlation (Ra-226 pCi/g = 0.0005 x CPM)-7.32 R^2 = 0.97). The collimated detector cpm data was converted to equivalent Ra-226 estimate using the Site-specific correlation (Ra-226 pCi/g = 0.0016 x CPM)-7.5 R^2 = 0.83). The 20,357 discrete gamma scan points collected during the gamma scan survey were exported from the scan system and the detector cpm data was converted into the equivalent estimated surface soil Ra-226 pCi/g concentration using the appropriate Site-specific correlation. The data was then plotted using a mapping software, shown in Figure 2, and arranged in graduated color ranges, then reviewed to identify areas that exceeded the Ra-226 IL. A typical gamma scan data export table from the scan system data logger is shown in Table 1. Gamma scan survey data collected during this characterization are provided in an electronic file.

As previously discussed, areas of potentially similar vertical extent of contamination were selected based on the DGPS gamma scan surveys. A total of forty test pit (TP) data point locations, shown in Figure 3, were selected within these areas for the estimation of the vertical extent of Ra-226 contamination above IL. A one-minute collimated detector static gamma radiation survey was performed to estimate surface soil Ra-226 levels prior to collecting any soil samples at each data point location. Of the 40 TP data point locations, two were in the Ore Pad Retention Pond and one was located in the bed of the Marquez Arroyo. Additionally, seven investigation (INV) data point locations were selected where gamma scan surveys showed an isolated area with Ra-226 levels slightly above the IL. The investigation (INV) locations were inspected and one-minute collimated detector static gamma measurements were performed to determine if subsurface soil sampling was necessary. The survey data was recorded on Static Gamma Radiation Survey

Forms, which are included in Appendix A. The collimated detector measurements were converted to soil Ra-226 concentrations using the correlation equation for the collimated detector. The static gamma survey results are summarized in Table 2.

4.2 Soil Sampling and Ex-Situ Gamma Radiation Soil Screening

Soil sampling and on-site ex-situ gamma radiation soil screening were performed during October 2024 to January 2025 to estimate the subsurface soil Ra-226 contamination exceeding the IL. Surface (0 to 6 inches) soil samples were not collected at the data points during this characterization. The estimated surface soil Ra-226 level was determined from one-minute collimated detector static gamma radiation surveys. A one-minute collimated detector static gamma radiation survey provides a significantly higher certainty for a surface soil Ra-226 estimate than a two second integration gamma radiation scan survey provides. The use of a collimated detector mitigates any lateral gamma radiation shine from any nearby elevated concentration areas

Ex-situ gamma radiation soil screening was conducted to provide a real-time estimate of Ra-226 concentrations in soil samples to determine depth of subsurface soil sampling. This method is more reliable than in-situ direct gamma radiation level measurements and allows for a more reliable real-time Ra-226 concentration assessment. The on-site ex-situ soil screening method consists of selectively measuring the 609 KeV region gamma radiation of Bi-214, a decay product of Ra-226. A single channel analyzer (Ludlum L2221 or Ludlum 3003) integrated with a Ludlum 44-20 3x3 NaI scintillation detector was used to measure the 609 keV energy peak region of Bi-214. The soil sample was placed around the plastic lined detector in a heavily lead shielded counting chamber. The heavily shielded counting chamber lowers the system background counts thus, improving the system's minimum detectable concentration (MDC). A reference soil with the Ra-226 concentration of 6.6 pCi/g, comparable to the 6.8 pCi/g IL, was prepared and was used for soil screening during this characterization. The 6.6 pCi/g reference soil provides a conservative estimate of Ra-226 concentration in samples below the IL.

Subsurface soil samples were collected from each of the 47 data point (TP & INV) locations. The number and depth of the samples at each data point location varied depending upon location and soil screening results. A backhoe was used to excavate a trench for subsurface soil sample collection at each selected data point location, except for the subsurface soil samples collected from the Ore Retention Pond Bottom (TP-21 and TP-26), the North Diversion Channel Bed (TP-32 and TP-34), the Marquez Arroyo (TP-30), and the area between the Marquez Arroyo and the northern NCA boundary fence (TP-17, TP-25 and TP-33). At these locations, a hand auger was used to collect the subsurface soil samples since backhoe access was not practical. The trenches were excavated in approximately 6 to 12 inches depth intervals, depending on soil type and visual observations. At each interval, a subsurface soil sample was collected from the base of the excavation for ex-situ gamma radiation soil screening. Stainless steel sampling trowels, bowls and sieves were used to collect the soil samples. The excavation continued until on-site ex-situ gamma radiation soil screening indicated that Ra-226 concentrations were below the 6.8 pCi/g IL. The soil sample

logs and the field soil screening forms are included in Appendix A. The ex-situ gamma radiation screening data is summarized in Table 3, which includes estimated Ra-226 concentrations of the samples relative to the 6.8 pCi/g IL.

At 34 of the 47 data point locations, a 6-12 inch below ground surface (bgs) subsurface soil sample was collected, and ex-situ soil gamma screened. Furthermore, at five of those 37 data point locations, a subsurface soil sample at a depth of 1-2 feet bgs was collected and ex-situ soil screened since the 6–12-inch bgs subsurface sample soil screening result was above the IL. The subsurface soil samples from the two data point locations on the bottom of the Ore Retention Pond were collected at a depth of 3-4 feet below ground surface (bgs) since the shallow subsurface sample screening result was above the IL. At location TP-19, a subsurface soil sample was collected at a depth of 4.5 to 5.0 feet bgs since waste rock was observed from the ground surface to a depth of 4.5 feet bgs. An additional subsurface soil sample was collected at TP-19 at 5.0-5.5 feet bgs to confirm that the soil below 4.5 feet bgs is below the 6.8 pCi/g IL.

Although the primary objective of the ex-situ gamma radiation soil screening was to determine the Ra-226 concentrations above or below the 6.8 pCi/g IL, Ra-226 concentrations were estimated in all soil samples collected and screened. A calibration/correlation of the ex-situ soil screening system was performed using a 6.6 pCi/g, a 25 pCi/g and a 50 pCi/g reference soil. This correlation is included in Appendix B. The estimated Ra-226 concentrations of the subsurface soil samples are included in Tables 3 and 4.

A total of twelve, including one field quality assurance/quality check (QA/QC) duplicate, of the soil samples that were ex-situ gamma radiation soil screened on-site were sent to an offsite vendor laboratory for analysis, Energy Laboratories, in Casper, WY. These soil samples were analyzed for Ra-226 using EPA Method 901.1 (modified for soil matrix) for confirmation of the on-site ex-situ soil screening results. The laboratory results report is included in Appendix C and are summarized in Table 3. As shown in the table, the estimated Ra-226 levels determined by the on-site ex-situ soil screening are comparable with the vendor laboratory Ra-226 results, specifically in regards to determining that the Ra-226 levels are above or below the IL.

4.3 NCA Characterization Summary

As described previously, this NCA SRC included the areas shown in Figure 1. The entire NCA SRC area consists of approximately 46 acres. The soil in approximately a 23 acre area is below the 6.8 pCi/g Ra-226 IL. In the remaining 23 acre area, the soil exceeds the IL and ranges from the ground surface to a depth of 4.5 feet bgs. The depth of soil exceeding the IL at each data point (TP and INV) are summarized in Table 4 and shown in Figure 4. Figure 5 shows areas within the characterization area with soil exceeding the IL at various contamination depths. The areas and estimated volume of in-situ soil exceeding the IL within this characterization are summarized in Table 5. The excavated volume of soil exceeding the IL may be higher than the estimated in-situ volume due to the swell factor and the excavation equipment and technique used.

4.3.1 Mine Water Treatment Area Characterization Summary

The Mine Water Treatment Area consists of approximately 31 acres. Included in this area is the area between the Marquez Arroyo and the NCA fence. As shown in Figure 2, the gamma scan survey showed that the soil in the area generally west of the Treatment Ponds 4, 5, 6, and 7 is below the 6.8 pCi/g Ra-226 IL, except for a few isolated small areas. In these small isolated areas, the soil exceeding the IL ranges from 0.5 feet to 3.5 feet. The depth of soil exceeding the IL in the middle of the Mine Water Treatment Area, the area surrounding the Treatment and Active Ponds, generally ranged from 0.5 feet to 1.5 feet. The depth of soil exceeding the IL in the eastern section of the area, the areas near the Ore Pad and Ore Retention Pond, generally ranged from 0.5 feet to 4.5 feet.

4.3.2 Marquez Arroyo Bed Characterization Summary

A gamma scan survey of the Marquez Arroyo bed surface was conducted using a 0.5-inch lead collimated detector to mitigate any gamma radiation shine from the walls of the arroyo. As shown in Figure 2, there are only a few isolated locations that showed Ra-226 levels just above the IL. As shown in Table 2, the collimated detector gamma static survey at those isolated spots showed the bed surface soils well below the IL. A subsurface soil sample at a depth of 0.5 to 1.0 foot bgs was collected using a hand auger at the highest static gamma survey result location, TP-30. The gamma soil screening of the subsurface soil sample showed Ra-226 levels well below the IL. The Marquez Arroyo bed soil is below the Ra-226 IL.

4.3.3 Ore Retention Pond Characterization Summary

A gamma scan survey within the Ore Pad Retention Pond was not conducted because the 2020 gamma scan showed that the pond bottom surface soil has significantly elevated levels of Ra-226 above the IL. The two locations (TP-21 & TP-26) from the bottom of the pond were selected for subsurface characterization. The collimated detector static gamma survey at these two locations confirmed that the surface soil Ra-226 levels are significantly above the IL. Because of practical concerns for backhoe access into the Ore Retention Pond, subsurface soil samples were collected using a hand auger. As shown in Table 4 and Figure 4, the pond bottom subsurface soil sample gamma screening results show the Ra-226 level exceeding the IL range from two feet bgs at TP-21 to three feet at TP-26 bgs. The ground surface elevation at TP-26 is about one foot higher than at TP-21. The Ore Retention Pond crest and the outside slopes of the dikes are covered by an approximate one-foot layer of soil which is slightly above the IL. Waste rock was observed under the approximately one-foot soil layer. Waste rock is visible on the inside slope of the dikes from the crest to the base. It is likely that the entire dike profile and approximately one foot bgs under the dike base are likely to exceed the Ra-226 IL. Table 5 does not include the approximate volume of the Ore Retention Pond dikes impacted soil.

4.3.4 North Diversion Channel Characterization Summary

A lead collimated detector gamma scan survey of the banks and bed of the North Diversion Channel was conducted and showed the surface soil Ra-226 levels are above the IL. The western berm of the channel is adjacent the Ore Pad and exceeds the Ra-226 IL through its entire depth profile. The depth of Ra-226 levels above the IL in the eastern berm ranges from 0.5 to 1.0 foot bgs. As shown in Figures 4 and 5, the depth of Ra-226 levels exceeding the IL in the North Diversion Channel bed ranges from one to two feet bgs.

4.3.5 Borrow Area A Characterization Summary

As shown in Figure 2, the collimated detector gamma scan survey of Borrow Area A showed surface soil that exceeds the Ra-226 IL along the western, northern and southern perimeter areas. The subsurface soil samples and ex-situ gamma soil screening results show that the soil exceeding the Ra-226 IL is generally limited to 0.5-foot bgs, except for a small area near the southeast corner of the Borrow Area A, where the Ra-226 level exceeds the IL at a depth of about one-foot bgs. During the gamma scan of the Borrow Area A, scattered debris was observed on the surface and some debris such as cables and pipes were protruding out of the ground surface along the perimeter of the area. Additionally, at data point location TP-38, a subsurface soil sample was not collected due to the presence of metal debris restricting excavation past approximately 8 inches bgs. It is likely that the soil around buried debris may have soil Ra-226 levels above the IL. A magnetometer survey of the area may be necessary to locate any buried debris.

5.0 Soil Sampling and Analysis

Soil samples from the NCA collected for on-site ex-situ gamma radiation soil screening were collected consistent with the Work Plan. Field QA/QC duplicate samples were ex-situ gamma radiation soil screened at a frequency of 10% of the total number of soil samples screened. A total of 70 surface and subsurface soil samples were collected for the NCA characterization. Field sampling equipment used for soil sampling included: stainless steel scoops, hand auger, bowls, sieve, and spoons that were decontaminated between sample locations. The soil sampling equipment decontamination was conducted by brushing off loose visible soil and when necessary was rinsed with distilled water, then wiped with clean towels. The rinsed water was disposed of in Active Pond No. 2. Excavator buckets were cleaned by removing any loose, visible soil. Any soils excavated from the test pits were returned to the test pit excavations from which the soil came. Personal protection equipment (PPE), such as gloves, were brushed off and scanned for residual contamination and were disposed of.

Subsurface soil samples were analyzed by on-site ex-situ gamma radiation soil screening to estimate Ra-226 concentrations. Twelve QA/QC confirmatory soil samples were placed in labeled Ziploc bags and packaged along with a completed chain of custody in a cooler with a custody sealed lid and shipped to Energy Laboratories, Inc for Ra-226 analysis. The soil samples were analyzed for Ra-226 with a reporting limit of

0.5 pCi/g, using EPA Method 901.1 (modified for soil matrix). The completed chain of custody and the analytical results are included in Appendix C.

6. 0 Quality Assurance and Quality Control Measures

QA/QC measures were implemented during this characterization to ensure that decisions were made based on data of acceptable quality. All radiologic survey instruments have been calibrated at least annually. Additionally, operational functions checks were performed on all radiologic instruments daily prior to use. The calibration and function check documents are included in Appendix B. During this characterization, no instruments were found to be out of calibration or inoperable as indicated by the operational function checks. The instrument background measurements for bare 2x2 NaI detectors during daily operational function checks were less than 10,000 cpm as shown in Appendix B. The bare detector field of view (FOV) at 12 inches above the ground surface is conservatively assumed at an area of six feet diameter. The 2x2 NaI detector response factor is determined to be 0.0005 pCi/g/cpm from the linear regression for the Site-specific correlation included in Appendix B. Based on the above detector parameters, the Ra-226 minimum detectable concentrations (MDCs) for a scan survey at a scan speed of three feet per second, calculated using MARSSIM guidance, were less than 1.0 pCi/g, which is significantly below 50% of the 6.8 pCi/g IL. The instrument background measurements for the 0.5 inch thick lead collimated 2x2 NaI detectors during daily operational function checks were less than 3,200 cpm, as shown in Appendix B. The collimated detector field of view (FOV) at 12 inches above the ground surface is conservatively assumed at an area of 1.5 feet diameter. The collimated 2x2 NaI detector response factor is determined to be 625 cpm/pCi/g from the linear regression for the Site-specific correlation included in Appendix B. Based on the above collimated detector parameters, the Ra-226 minimum detectable concentrations (MDCs) for a one minute static survey, calculated using MARSSIM guidance, was less than 0.5 pCi/g, which is significantly below 50% of the 6.8 pCi/g IL. The ex-situ soil gamma radiation screening system was calibrated prior to mobilization in the field and daily operational function checks were performed prior to use. The calibration and function check documentation are included in Appendix B. Based on the highest system background (blank) measurements from daily operational function checks and efficiency (pCi/g/cpm), the highest Ra-226 MDC for the screening system calculated was less than 1.0 pCi/g, significantly less than the 6.8 pCi/g IL. The MDCs during the supplemental characterization met the QA objective.

The QA/QC measures also included twelve field QA/QC duplicate soil samples out of the 58 soil samples collected sent to the off-site vendor laboratory for analysis to confirm contamination relative to the IL levels estimated by the field ex-situ gamma radiation soil screening. The QA/QC duplicate vendor laboratory results are included in Table 3. All QA/QC sample results confirm Ra-226 concentration levels relative to the IL level determined by the field ex-situ gamma radiation soil screening. The Ra-226 concentration in QA/QC duplicate samples estimated by on-sit ex-situ gamma radiation soil screening are comparable to the off-site vendor laboratory analytical results.

Tables

Table 1
Mt. Taylor Mine Site - North Controlled Area Soil Radiological Characterization
Typical Gamma Scan Data Exported from the Scan System Data Logger

ID	Time	Northing[(1)] (feet)	Easting[(1)] (feet)	MSL Elevation (feet)	CPM 2x2 Bare NaI Detector	Ra-226 pCi/g[(2)]	Zone_ID
1	7/15/2024 9:44	1579480.37	2781608.42	7313	18924	2.14	North_Control_Area
2	7/15/2024 9:44	1579481.43	2781608.84	7313	17734	1.55	North_Control_Area
3	7/15/2024 9:44	1579482.53	2781611.48	7313	17983	1.67	North_Control_Area
4	7/15/2024 9:44	1579482.66	2781614.68	7313	18419	1.89	North_Control_Area
5	7/15/2024 9:45	1579480.86	2781617.51	7313	15123	0.60	North_Control_Area
6	7/15/2024 9:45	1579480.45	2781620.08	7313	17737	1.55	North_Control_Area
7	7/15/2024 9:45	1579480.19	2781620.09	7313	17526	1.44	North_Control_Area
8	7/15/2024 9:45	1579480.18	2781621.42	7313	17508	1.43	North_Control_Area
9	7/15/2024 9:45	1579480.46	2781624.34	7313	17811	1.59	North_Control_Area
10	7/15/2024 9:45	1579481.46	2781626.49	7313	17170	1.27	North_Control_Area
11	7/15/2024 9:45	1579482.91	2781628.77	7313	18518	1.94	North_Control_Area
12	7/15/2024 9:45	1579483.80	2781631.28	7313	17297	1.33	North_Control_Area
13	7/15/2024 9:45	1579483.15	2781634.57	7313	18091	1.73	North_Control_Area
14	7/15/2024 9:45	1579482.23	2781637.63	7313	17840	1.60	North_Control_Area
15	7/15/2024 9:45	1579480.18	2781638.20	7313	21050	3.21	North_Control_Area
16	7/15/2024 9:45	1579477.12	2781637.47	7313	17418	1.39	North_Control_Area
17	7/15/2024 9:45	1579474.30	2781641.18	7314	17603	1.48	North_Control_Area
18	7/15/2024 9:45	1579474.52	2781645.76	7314	16122	0.74	North_Control_Area
19	7/15/2024 9:45	1579476.86	2781649.32	7314	17957	1.66	North_Control_Area
20	7/15/2024 9:45	1579479.59	2781651.61	7314	17082	1.22	North_Control_Area
21	7/15/2024 9:45	1579483.79	2781652.22	7314	18520	1.94	North_Control_Area
22	7/15/2024 9:45	1579485.62	2781655.27	7314	19757	2.56	North_Control_Area
23	7/15/2024 9:45	1579486.09	2781659.48	7314	22257	3.81	North_Control_Area
24	7/15/2024 9:46	1579485.52	2781665.29	7314	17688	1.52	North_Control_Area
25	7/15/2024 9:46	1579484.31	2781666.71	7315	17440	1.40	North_Control_Area
26	7/15/2024 9:46	1579483.20	2781672.84	7315	16720	1.04	North_Control_Area
27	7/15/2024 9:46	1579482.38	2781677.17	7315	18212	1.79	North_Control_Area
28	7/15/2024 9:46	1579482.68	2781681.44	7315	19918	2.64	North_Control_Area
29	7/15/2024 9:46	1579483.18	2781685.24	7315	18825	2.09	North_Control_Area
30	7/15/2024 9:46	1579482.84	2781689.59	7315	18951	2.16	North_Control_Area
31	7/15/2024 9:46	1579481.31	2781693.89	7315	19597	2.48	North_Control_Area
32	7/15/2024 9:46	1579481.72	2781698.27	7315	18782	2.07	North_Control_Area
33	7/15/2024 9:46	1579483.49	2781702.34	7315	18723	2.04	North_Control_Area
34	7/15/2024 9:46	1579485.29	2781706.70	7315	18615	1.99	North_Control_Area
35	7/15/2024 9:46	1579485.28	2781711.19	7315	18751	2.06	North_Control_Area
36	7/15/2024 9:46	1579483.10	2781715.08	7315	20342	2.85	North_Control_Area
37	7/15/2024 9:46	1579483.94	2781719.09	7315	18866	2.11	North_Control_Area
38	7/15/2024 9:46	1579483.31	2781722.44	7316	19876	2.62	North_Control_Area
39	7/15/2024 9:46	1579483.93	2781726.44	7316	20314	2.84	North_Control_Area
40	7/15/2024 9:46	1579485.57	2781730.70	7316	19959	2.66	North_Control_Area

(1) projection: StatePlane NAD 1983 NM West - Feet

(2) Ra-226 pCi/g determined from surface soil gamma radiation scan using 2x2 NaI detector and Site-specific gamma radiation level (cpm) correlation

Table 2
Mt. Taylor Mine Site - North Controlled Area Soil Radiological Characterization
Static Gamma Radiation Survey at Data Point/Soil Sample Locations

Data Point ID	Survey Date	Data Point Coordinate NAD83 StatePlane NM West, Feet		Static Gamma Radiation Survey Collimated (0.5" PB) 2x2 Detector	
		Northing	Easting	Static Gamma CPM	Surface Soil Static Gamma Estimated Ra-226 pCi/g
TP-01	9/19/2024	1580186.76	2781641.72	74549	111.8
TP-02	9/19/2024	1581347.96	2781655.87	23242	29.7
TP-03	9/19/2024	1581200.16	2781928.52	12217	12.0
TP-04	9/19/2024	1580830.01	2781918.97	11677	11.2
TP-05	9/19/2024	1580644.14	2781961.31	7643	4.7
TP-06	9/19/2024	1579534.44	2782004.83	28795	38.6
TP-07	9/19/2024	1580612.66	2782033.15	7755	4.9
TP-08	9/19/2024	1580712.40	2782055.84	9500	7.7
TP-09	11/25/2024	1579887.40	2782299.57	26878	35.5
TP-10	9/19/2024	1580089.57	2782156.92	10215	8.8
TP-11	9/19/2024	1580893.36	2782211.56	17075	19.8
TP-12	9/19/2024	1580498.58	2782193.94	7687	4.8
TP-13	9/19/2024	1581025.34	2782214.93	25917	34.0
TP-14	9/19/2024	1581007.22	2782310.10	31693	43.2
TP-15	9/19/2024	1580839.32	2782323.98	10771	9.7
TP-16	9/19/2024	1580514.25	2782350.77	20877	25.9
TP-17	11/22/2024	1581231.06	2782360.91	9788	8.2
TP-18	9/19/2024	1580678.19	2782412.82	23920	30.8
TP-19	9/19/2024	1581111.05	2782512.59	108929	166.8
TP-20	9/19/2024	1580575.91	2782540.15	42042	59.8
TP-21	1/27/2025	1580826.78	2782605.83	189626	295.9
TP-22	9/19/2024	1580005.97	2782577.72	27679	36.8
TP-23	10/28/2024	1580933.72	2782615.38	11721	11.3
TP-24	9/19/2024	1580664.84	2782653.22	184511	287.7
TP-25	11/22/2024	1581176.90	2782660.86	15304	17.0
TP-26	12/12/2024	1580859.02	2782663.51	154801	240.2
TP-27	9/19/2024	1580481.71	2782702.25	116173	178.4
TP-28	9/19/2024	1581078.62	2782722.31	69269	103.3
TP-29	9/19/2024	1580104.95	2782715.01	37349	52.3
TP-30	12/2/2024	1581088.55	2782875.42	7362	4.3
TP-31	11/25/2024	1580996.95	2783152.31	76057	114.2
TP-32	12/12/2024	1580437.62	2783254.26	11869	11.5
TP-33	11/25/2024	1581081.58	2783299.76	11765	11.3
TP-34	12/12/2024	1580838.74	2783312.73	18951	22.8
TP-35	10/23/2024	1580623.09	2783328.09	31729	43.3
TP-36	10/23/2024	1580793.59	2783353.65	12576	12.6
TP-37	10/23/2024	1580494.41	2783389.94	9058	7.0
TP-38	10/23/2024	1581073.21	2783415.97	13769	14.5
TP-39	10/23/2024	1580478.54	2783504.44	9606	7.9
TP-40	10/23/2024	1581112.23	2783628.43	13072	13.4
Inv-01	9/19/2024	1580780.75	2781697.35	14304	15.4
Inv-02	9/19/2024	1579936.57	2781697.29	9200	7.2
Inv-03	9/19/2024	1581223.91	2781793.57	13157	13.6
Inv-04	9/19/2024	1580827.72	2782178.60	36695	51.2
Inv-05	10/23/2024	1580653.58	2783716.79	7441	4.4
Inv-06	10/23/2024	1581080.53	2783861.07	19774	24.1
Inv-07	9/19/2024	1580754.28	2781792.25	10142	8.7

Table 3

North Controlled Area Radiological Characterization Soil Sample Field Ex-Situ Screening and Vendor Laboratory Results Summary

Sample Data					Field Soil Screening Data						Laboratory Data			
Sample ID	Sample Depth	Sample Date	Sample Time	Description	Screen Date	Sample Weight grams	609 (559-669) Kev Gross Counts CP5M	CPM	Soil Gamma Screening Estimated Ra-226 pCi/g	Soil IL (< or >)	Sample Sent to Lab	Ra-226 pCi/g	Error Estimate pCi/g	MDC pCi/g
TP-01	6"-12"	10/8/2024	930	Brown silt/sand compacted	10/8/2024	3000	1437	287	3.1	<	yes	1.2	0.2	0.2
TP-01	1'-2'	10/8/2024	940	Light brown sand/silt hardpack	10/8/2024	3000	1363	273	2.9	<	-	-	-	-
TP-02	3.5'-4'	10/8/2024	1000	Dark brown loam/slit W/ clay	10/8/2024	3000	1194	239	2.4	<	-	-	-	-
TP-02	4.5'-5'	10/8/2024	1020	Brown silt/sand compacted	10/8/2024	3000	1245	249	2.5	<	-	-	-	-
TP-03	6"-12"	10/9/2024	810	Light brown sand/silt hardpack w/ grey soil	10/9/2024	3000	1241	248	2.5	<	-	-	-	-
TP-03	1'-2'	10/9/2024	820	Brown slit/sand - clay	10/9/2024	3000	1208	242	2.4	<	-	-	-	-
TP-04	6"-12"	10/15/2024	1020	Gravel & brown slit/sand - clay	10/15/2024	3000	1424	285	3.0	<	-	-	-	-
TP-05	6"-12"	10/9/2024	940	Light brown sand/silt hardpack	10/9/2024	3000	1395	279	2.9	<	-	-	-	-
TP-06	6"-12"	10/8/2024	846	Light brown sand/silt hardpack	10/8/2024	3000	1306	261	2.7	<	-	-	-	-
TP-06	1'-2'	10/8/2024	856	Light brown sand/silt hardpack	10/8/2024	3000	1256	251	2.6	<	-	-	-	-
TP-07	6"-12"	10/9/2024	925	Light brown sand/silt hardpack	10/9/2024	3000	1524	305	3.3	<	-	-	-	-
TP-08	6"-12"	10/9/2024	910	Light brown sand/silt hardpack	10/9/2024	3000	1375	275	2.9	<	-	-	-	-
TP-09	6"-12"	11/25/2024	1250	Light brown sandy, silt	11/26/2024	3000	1185	237	2.4	<	-	-	-	-
TP-09	1'-1.5'	11/25/2024	1305	Light brown sandy, silt	11/26/2024	3000	1131	226	2.2	<	-	-	-	-
TP-09	2'-2.5'	11/25/2024	1315	Light brown sandy, silt	11/26/2024	3000	1225	245	2.5	<	-	-	-	-
TP-10	6"-12"	10/8/2024	910	Light brown sand/silt hardpack	10/8/2024	3000	1840	368	4.2	<	-	-	-	-
TP-11	6"-12"	10/9/2024	850	Brown slit/sand - clay	10/9/2024	3000	7653	1531	20.5	>	-	-	-	-
TP-11	1'-1.5'	10/9/2024	900	Dark brown slit/sand - clay	10/9/2024	3000	2076	415	4.9	<	-	-	-	-
TP-12	6"-12"	10/9/2024	1000	Brown slit/sand - clay	10/9/2024	3000	1353	271	2.8	<	-	-	-	-
TP-13	6"-12"	10/9/2024	840	Dark brown slit/sand - clay	10/9/2024	3000	2745	549	6.7	≈	yes	7.2	0.4	0.3
TP-13	1'-1.5'	10/15/2024	815	Light brown sand/silt hardpack	10/15/2024	3000	1397	279	3.0	<	-	-	-	-
TP-14	6"-12"	10/15/2024	1040	Brown slit/sand - clay	10/15/2024	3000	1915	383	4.4	<	-	-	-	-
TP-15	6"-12"	10/9/2024	1050	Light brown sand/silt hardpack	10/9/2024	3000	1274	255	2.6	<	-	-	-	-
TP-16	6"-12"	10/9/2024	1010	Brown slit/sand - clay	10/9/2024	3000	1376	275	2.9	<	-	-	-	-
TP-16	1'-1.5'	10/9/2024	1020	Brown slit/sand - clay	10/9/2024	3000	1250	250	2.5	<	-	-	-	-
TP-17	6"-12"	11/22/2024	1040	Brown slit/loam	11/26/2024	3000	1475	295	3.2	<	-	-	-	-
TP-18	6"-12"	10/9/2024	1030	Light brown sand/silt hardpack	10/9/2024	3000	5468	1094	14.3	>	-	-	-	-
TP-18	1'-1.5'	10/15/2024	825	Light brown sand/silt hardpack	10/15/2024	3000	1977	395	4.6	<	-	-	-	-
TP-18	1.5'-2'	10/15/2024	836	Brown slit/sand - clay	10/15/2024	3000	1323	265	2.7	<	-	-	-	-
TP-19	6"-4.5'	10/28/2024	1140	Sandy grey waste rock	10/29/2024	3000	38495	7699	106.8	>	-	-	-	-
TP-19	4.5'-5'	10/16/2024	845	Interface waste rock-dark brown clay	10/16/2024	3000	1297	259	2.7	<	yes	1.1	0.2	0.2
TP-19	5'-5.5'	10/16/2024	900	Dark brown slit/sand - clay	10/16/2024	3000	1334	267	2.8	<	-	-	-	-

Table 3 (cont.)

North Controlled Area Radiological Characterization Soil Sample Field Ex-Situ Screening and Vendor Laboratory Results Summary

Sample Data					Field Soil Screening Data						Laboratory Data			
Sample ID	Sample Depth	Sample Date	Sample Time	Description	Screen Date	Sample Weight grams	609 (559-669) Kev Gross Counts CP5M	CPM	Soil Gamma Screening Estimated Ra-226 pCi/g	Soil IL (< or >)	Sample Sent to Lab	Ra-226 pCi/g	Error Estimate pCi/g	MDC pCi/g
TP-20	1'-1.5'	10/15/2024	1055	Light brown sand/silt hardpack	10/15/2024	3000	1243	249	2.5	<	-	-	-	-
TP-21	0-2.0'	1/27/2025	1056	Dark grey compacted sandy silty clay with metal debris	1/30/2025	3000	41183	8237	114.4	>	-	-	-	-
TP-21	2.0'-3.0'	1/27/2025	1105	Dark grey compacted sandy silty clay	1/30/2025	3000	1938	388	4.5	<	-	-	-	-
TP-21	3.0'-4.0	1/27/2025	1113	Dark brown clay	1/30/2025	3000	1712	342	3.8	<	-	-	-	-
TP-22	1'-1.5'	10/16/2024	1115	Dark brown slit/sand - clay	10/16/2024	3000	9053	1811	24.4	>	-	-	-	-
TP-22	1.5'-2'	10/28/2024	1120	Light brown sand/silt hardpack	10/29/2024	3000	1213	243	2.4	<	yes	1.1	0.2	0.3
TP-23	6"-12"	10/28/2024	1300	Brown slit/loam - clay	10/29/2024	3000	1512	302	3.3	<	-	-	-	-
TP-24	6"-12"	10/16/2024	1020	Light brown sand/silt hardpack	10/16/2024	3000	2377	475	5.7	<	yes	3.8	0.3	0.2
TP-25	6"-12"	11/22/2024	1055	Brown slit/loam - clay	11/26/2024	3000	1164	233	2.3	<	-	-	-	-
TP-26	2'-2.5'	12/11/2024	1000	Dark grey compacted sandy silty	12/11/2024	3000	10464	2093	28.3	>	-	-	-	-
TP-26	2.5'-3.0'	1/27/2025	1028	Dark grey compacted sandy silty clay	1/30/2025	3000	1900	380	4.4	<	-	-	-	-
TP-26	3.0'-4.0'	1/27/2025	1037	Dark grey compacted sandy silty clay	1/30/2025	3000	2198	440	5.2	<				
TP-27	8"-12"	10/16/2024	1000	Brown slit/sand - clay	10/16/2024	3000	1323	265	2.7	<	-	-	-	-
TP-28	10"-12"	10/16/2024	930	Interface waste rock-light brown clay	10/16/2024	3000	1506	301	3.3	<	-	-	-	-
TP-29	1'-1.5'	10/16/2024	1056	Brown slit/sand - clay	10/16/2024	3000	1214	243	2.4	<	-	-	-	-
TP-30	6"-12"	12/4/2024	830	Light brown sandy, cobble, silty clay	12/9/2024	3000	1258	252	2.6	<	yes	1.6	0.2	0.2
TP-31	6"-12"	11/25/2024	1020	Dark brown slit/sand - clay	11/26/2024	3000	3849	770	9.8	>	-	-	-	-
TP-31	1'-1.5'	11/25/2024	1040	Light brown sandy, silt	11/26/2024	3000	1704	341	3.8	<	-	-	-	-
TP-32	6"-12"	12/5/2024	845	Dark brown silty clay	12/9/2024	3000	2619	524	6.4	≈	-	-	-	-
TP-32	1'-1.5'	12/9/2024	950	Brown slit/loam - clay	12/11/2024	3000	1229	246	2.5	<	yes	1.4	0.2	0.3
TP-33	6"-12"	11/25/2024	1100	Brown slit/loam - clay and sand	11/26/2024	3000	1203	241	2.4	<	yes	1.1	0.2	0.2
TP-34	6"-12"	12/5/2024	930	Dark brown silty clay	12/9/2024	3000	6878	1376	18.3	>	-	-	-	-
TP-34	1'-2'	12/9/2024	1030	Brown sandy/silty clay	12/11/2024	3000	3976	795	10.2	>	-	-	-	-
TP-34	2'-3'	12/11/2024	915	Brown silty clay/sandy with cobble	12/11/2024	3000	1547	309	3.4	<	yes	1.3	0.2	0.2
TP-35	6"-12"	10/28/2024	840	Brown slit/sand - clay	10/29/2024	3000	3081	616	7.7	>	-	-	-	-
TP-35	1'-1.5'	10/28/2024	850	Interface waste rock-dark brown clay	10/29/2024	3000	1502	300	3.2	<	-	-	-	-
TP-36	6"-12"	10/28/2024	810	Brown slit/loam - clay	10/29/2024	3000	1345	269	2.8	<	-	-	-	-
TP-36	1'-2'	10/28/2024	825	Brown slit/loam - clay	10/29/2024	3000	1279	256	2.6	<	-	-	-	-
TP-37	6"-12"	10/28/2024	910	Dark brown slit/sand - clay	10/29/2024	3000	1273	255	2.6	<	-	-	-	-
TP-39	6"-12"	10/28/2024	930	Brown slit/loam - clay	10/29/2024	3000	1285	257	2.6	<	-	-	-	-
TP-40	6"-12"	10/28/2024	1035	Light brown sandy, silt	10/29/2024	3000	1177	235	2.3	<	yes	1.1	0.3	0.3
Inv-01	2'-2.5'	10/15/2024	940	Light brown sand/silt hardpack w/ grey soil	10/15/2024	3000	1337	267	2.8	<	-	-	-	-

Table 3 (cont.)

North Controlled Area Radiological Characterization Soil Sample Field Ex-Situ Screening and Vendor Laboratory Results Summary

Sample Data					Field Soil Screening Data						Laboratory Data			
Sample ID	Sample Depth	Sample Date	Sample Time	Description	Screen Date	Sample Weight grams	609 (559-669) Kev Gross Counts CP5M	CPM	Soil Gamma Screening Estimated Ra-226 pCi/g	Soil IL (< or >)	Sample Sent to Lab	Ra-226 pCi/g	Error Estimate pCi/g	MDC pCi/g
Inv-05	6"-12"	10/28/2024	945	Light brown sandy, silt	10/29/2024	3000	2442	488	5.9	<	-	-	-	-
Inv-05	1'-1.5'	10/28/2024	1000	Brown slit/sand - clay	10/29/2024	3000	1553	311	3.4	<	-	-	-	-
Inv-06	6"-12"	10/28/2024	1015	Light brown sandy, silt/loam	10/29/2024	3000	1337	267	2.8	<	-	-	-	-
Inv-07	6"-12"	10/8/2024	1045	Grey silt/sand w/ debris	10/8/2024	3000	2945	589	7.3	>	-	-	-	-
Inv-07	1.5'-2'	10/8/2024	1055	Grey silt/sand w/ debris	10/8/2024	3000	3131	626	7.8	>	yes	8.6	0.4	0.3
Inv-07	2'-3'	10/8/2024	1105	Dark brown slit/sand - clay	10/8/2024	3000	1125	225	2.2	<	-	-	-	-

Note: Soil samples were not collected at locations Inv-02, Inv-03, and Inv-04.

Table 4
North Controlled Area Surface and Subsurface Soil Ra-226 Level Summary

Data Point ID	Static Gamma CPM	Static Gamma Estimated Ra-226 pCi/g 0-6" (surface) Soil	Static Gamma & Ex-Situ Soil Screening Estimated Ra-226 pCi/g									
			6"-12" Soil	1'-1.5' Soil	1.5' - 2' Soil	2'-2.5' Soil	2.5'-3' Soil	3'-3.5' Soil	3.5'-4' Soil	4'-4.5' Soil	4.5'-5' Soil	5'-5.5' Soil
TP-1	74549	111.8	3.1	2.9	2.9	-	-	-	-	-	-	-
TP-2	23242	29.7	20.0						2.4	2.5	2.5	-
TP-3	12217	12.0	2.5	2.4		-	-	-	-	-	-	-
TP-4	11677	11.2	3.0	-	-	-	-	-	-	-	-	-
TP-5	7643	4.7	2.9	-	-	-	-	-	-	-	-	-
TP-6	28795	38.6	2.7	2.6	2.6	-	-	-	-	-	-	-
TP-7	7755	4.9	3.3	-	-	-	-	-	-	-	-	-
TP-8	9500	7.7	2.9	-	-	-	-	-	-	-	-	-
TP-9	26878	35.5	2.4	2.2	-	2.5	-	-	-	-	-	-
TP-10	10215	8.8	4.2	-	-	-	-	-	-	-	-	-
TP-11	17075	19.8	20.5	4.9	-	-	-	-	-	-	-	-
TP-12	7687	4.8	2.8	-	-	-	-	-	-	-	-	-
TP-13	25917	34.0	6.7	3	-	-	-	-	-	-	-	-
TP-14	31693	43.2	4.4	-	-	-	-	-	-	-	-	-
TP-15	10771	9.7	2.6	-	-	-	-	-	-	-	-	-
TP-16	20877	25.9	2.9	2.5	-	-	-	-	-	-	-	-
TP-17	9788	8.2	3.2	-	-	-	-	-	-	-	-	-
TP-18	23920	30.8	14.3	4.6	2.7	-	-	-	-	-	-	-
TP-19	108929	166.8	106.8								2.7	2.8
TP-20	42042	59.8	59.8	2.5	-	-	-	-	-	-	-	-
TP-21	189626	295.9	114.4			4.5		3.8		-	-	-
TP-22	27679	36.8	36.8	24.4	-	-	-	-	-	-	-	-
TP-23	11721	11.3	3.3	-	-	-	-	-	-	-	-	-
TP-24	184511	287.7	5.7	-	-	-	-	-	-	-	-	-
TP-25	15304	17.0	2.3	-	-	-	-	-	-	-	-	-
TP-26	154801	240.2	-	-	-	28.3	4.4	5.2		-	-	-
TP-27	116173	178.4	2.7	-	-	-	-	-	-	-	-	-
TP-28	69269	103.3	3.3	-	-	-	-	-	-	-	-	-
TP-29	37349	52.3	-	2.4	-	-	-	-	-	-	-	-
TP-30	7362	4.3	2.6	-	-	-	-	-	-	-	-	-
TP-31	76057	114.2	9.8	3.8	-	-	-	-	-	-	-	-
TP-32	11869	11.5	6.4	2.5	-	-	-	-	-	-	-	-
TP-33	11765	11.3	2.4	-	-	-	-	-	-	-	-	-
TP-34	18951	22.8	18.3	10.2		3.4		-	-	-	-	-
TP-35	31729	43.3	7.7	3.2	-	-	-	-	-	-	-	-
TP-36	12576	12.6	2.8	2.6		-	-	-	-	-	-	-
TP-37	9058	7.0	2.6	-	-	-	-	-	-	-	-	-
TP-38	13769	14.5	No Subsurface Soil Sample Taken - Metal Debris									
TP-39	9606	7.9	2.6	-	-	-	-	-	-	-	-	-
TP-40	13072	13.4	2.3	-	-	-	-	-	-	-	-	-
Inv-01	14304	15.4	32.8	12.4		2.8	-	-	-	-	-	-
Inv-02	9200	7.2	10.6	5.1	-	-	-	-	-	-	-	-
Inv-03	13157	13.6	Push-up Berm Height of 2.5' from Pond 8 Area				-	-	-	-	-	-
Inv-04	36695	51.2	11.6	6.6	-	-	-	-	-	-	-	-
Inv-05	7441	4.4	5.9	3.4	-	-	-	-	-	-	-	-
Inv-06	19774	24.1	2.8	-	-	-	-	-	-	-	-	-
Inv-07	10142	8.7	7.3	7.8		2.2		-	-	-	-	-

Note: Static Gamma Estimated pCi/g levels were estimated from .5" lead collimated detector static gamma measurements.

Table 5
Mt. Taylor Mine Site - NCA Soil Radiological Characterization
Estimated Volumes of Areas above the 6.8 Ra-226 pCi/g Investigation Level

Estimated Depth of Area > 6.8 Ra-226 pCi/g Investigation Level	Approximate Land Area (acre)	Estimated Volume (cubic yard)
surface to 6" bgs	15	12,100
surface to 1.0' bgs	5.2	8,067
surface to 1.5' bgs	0.1	242
surface to 2.0' bgs	0.6	1,936
surface to 3.0' bgs	1.1	5,330
surface to 3.5' bgs	0.1	565
surface to 4.5' bgs	0.9	6,534
Estimated Total	23	34,773

Note: Does not include volume estimate of the Ore Retnetion Pond dikes. bgs = below ground surface

Figures

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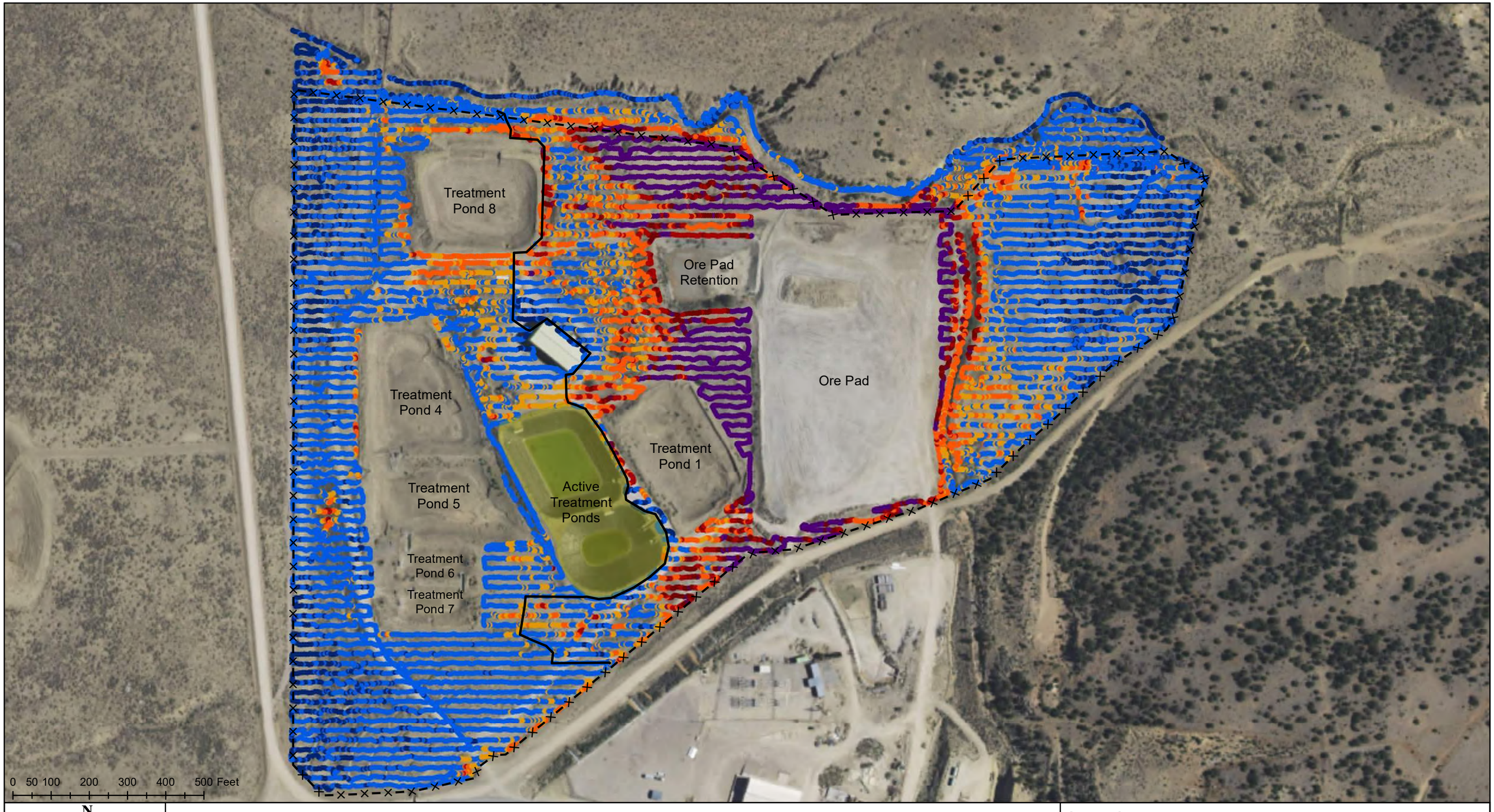
Figure 1
Mt. Taylor Mine Site
North Controlled Area Soil Radiologic Characterization Area

June 2025

Legend

- NCA Soil Radiologic Characterization Area
- Previously Characterized Area
- Active Treatment Ponds
- North Controlled Fence



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Environmental Services, Inc.

Figure 2
Mt. Taylor Mine Site
North Controlled Area - Gamma Scan Survey Data

June 2025

Legend

Estimated Ra-226

- <1.8 pCi/g
- 1.9 - 6.8 pCi/g
- 6.9 - 10.0 pCi/g
- 10.1 - 20.0 pCi/g
- 20.1 - 30.0 pCi/g
- 30.1 - 40.0 pCi/g
- >40.1 pCi/g

Active Treatment Ponds

North Controlled Fence

Bare/Collimated Detector Boundary

Note: Ra-226 pCi/g is determined from surface soil gamma radiation scan and static cpm using 2x2 NaI detector and Site specific gamma radiation level (cpm) correlation.

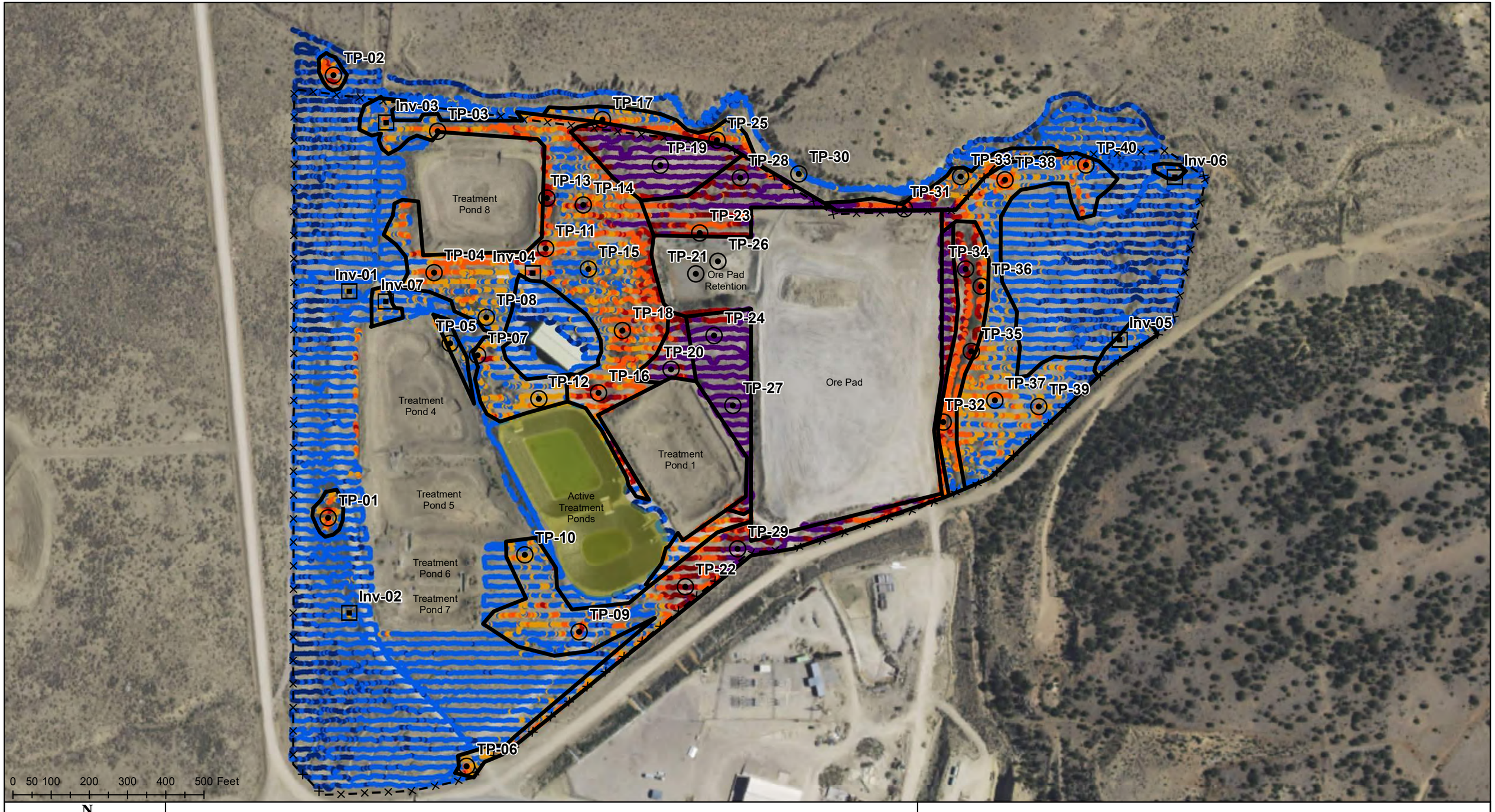


Figure 3
Mt. Taylor Mine Site - North Controlled Area
Gamma Scan Survey Data, Investigation and Test Pit Locations

June 2025

AVM Environmental Services, Inc.

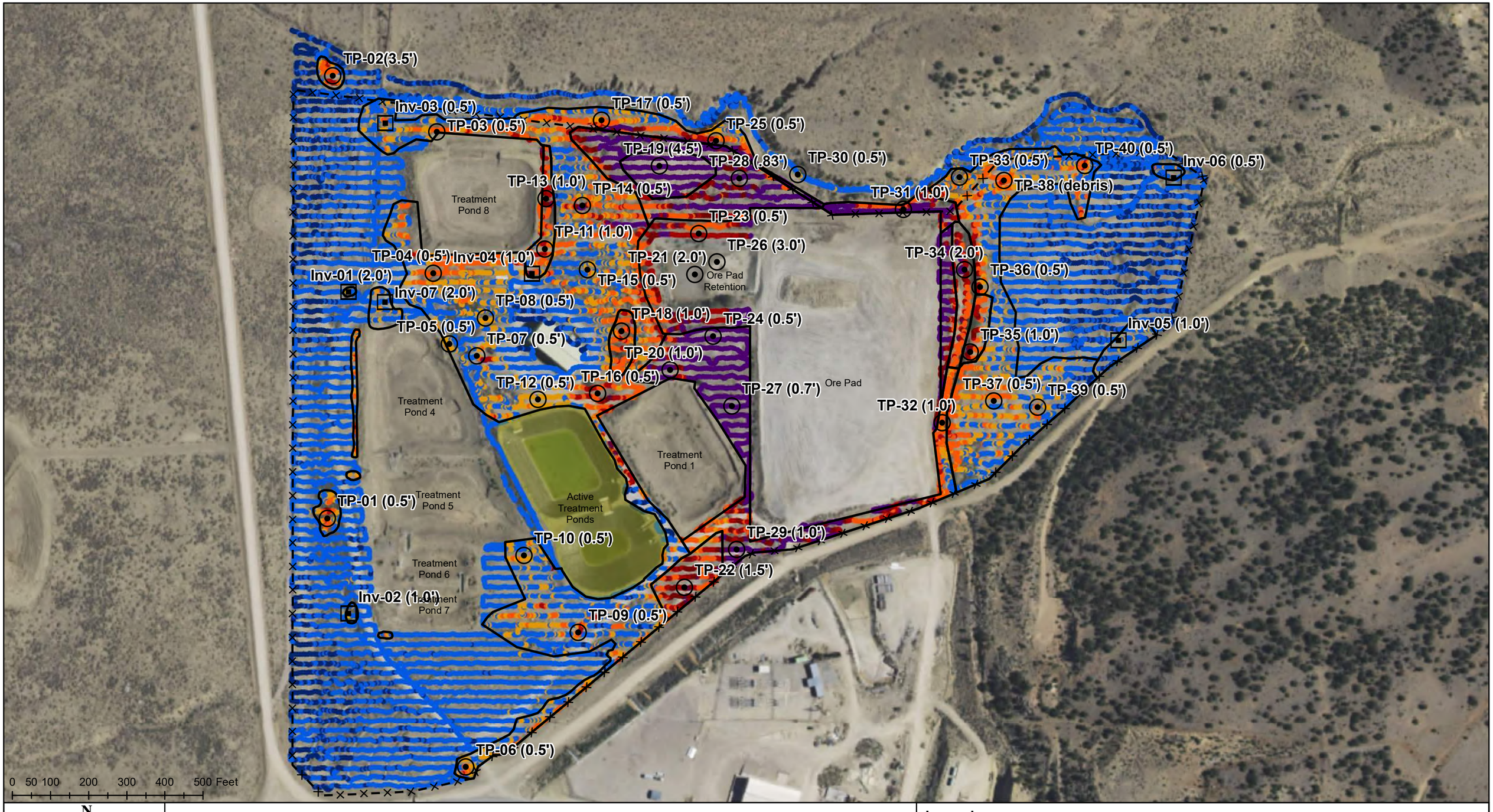
Legend

Estimated Ra-226

- <1.8 pCi/g
- 1.9 - 6.8 pCi/g
- 6.9 - 10.0 pCi/g
- 10.1 - 20.0 pCi/g
- 20.1 - 30.0 pCi/g
- 30.1 - 40.0 pCi/g
- >40.1 pCi/g

- Investigation Sample ID
- Test Pit ID
- Contamination Areas
- Active Treatment Ponds
- North Controlled Fence

Note: Ra-226 pCi/g is determined from surface soil gamma radiation scan and static cpm using 2x2 NaI detector and Site specific gamma radiation level (cpm) correlation.



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Environmental Services, Inc.

Figure 4
Mt. Taylor Mine Site - North Controlled Area
Gamma Scan Survey Data, Investigation and Test Pit Locations

June 2025

Legend

Estimated Ra-226

- <1.8 pCi/g
- 1.9 - 6.8 pCi/g
- 6.9 - 10.0 pCi/g
- 10.1 - 20.0 pCi/g
- 20.1 - 30.0 pCi/g
- 30.1 - 40.0 pCi/g
- >40.1 pCi/g

Investigation Sample ID (6.8 pCi/g IL cont. Depth)

Test Pit ID (6.8 pCi/g IL cont. Depth)

Contamination Area

Active Treatment Ponds

North Controlled Fence

Note: Ra-226 pCi/g is determined from surface soil gamma radiation scan and static cpm using 2x2 NaI detector and Site specific gamma radiation level (cpm) correlation.

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Environmental Services, Inc.

Figure 5
Mt. Taylor Mine Site - North Controlled Area
Estimated Depth of Contamination above the 6.8 Ra-226 pCi/g IL

June 2025

Legend

- 6" Contamination depth above the Ra-226 pCi/g IL
- 1.0' Contamination depth above the Ra-226 pCi/g IL
- 1.5' Contamination depth above the Ra-226 pCi/g IL
- 2.0' Contamination depth above the Ra-226 pCi/g IL
- 3.0' Contamination depth above the Ra-226 pCi/g IL
- 3.5' Contamination depth above the Ra-226 pCi/g IL
- 4.5' Contamination depth above the Ra-226 pCi/g IL
- Ore Pad Retention Pond Dike
- Active Treatment Ponds
- North Controlled Fence

Note: Ra-226 pCi/g is determined from surface soil gamma radiation scan and static cpm using 2x2 NaI detector and Site specific gamma radiation level (cpm) correlation.

Appendix A
Surface and Subsurface Contamination Field Investigation Documentation
(Soil Sample Log Forms, Field Soil Sample Ex-Situ Gamma Radiation Screening Forms)

AVM Environmental Services, Inc.
Gamma Radiation Survey
Static Gamma Radiation Survey Field Form

Instrumentation: Scaler/Ratemeter L2221 SN 290801 Detector SPA-3 #30

Instrument Calibration Date: 2-17-24 Instrument Daily Function Check Performed: Y

2"x2" NaI Detector Collimated: X Yes or ____ No

Survey Area/Unit Decsription Mt. Tobe Mine Site - NCA

Survey Date/Time	Survey Point ID/Description	Survey Point Coordinate		Gamma Radiation Reading - CPM		Exposure Rate µR/hr	Comments/Notes
		Northing	Easting	Bare	Collimated (0.5"Pb)		
9-19-24	TP-01	1580195	2781643		74549		
	TP-02	1581346	2781656		23242		
	TP-03	1581205	2781918		12217		
	TP-04	1580828	2781919		11677		
	TP-05	1580646	2781960		7643		
	TP-06	1579528	2782004		28795		
	TP-07	1580613	2782034		7755		hot Rust pile nearby
	TP-08	1580715	2782055		9500		
11-25-24	TP-09	1579932	2782126		26878		
9-19-24	TP-10	1580081	2782153		10215		
	TP-11	1580894	2782206		17076		
	TP-12	1580505	2782214		7687		
	TP-13	1581025	2782217		25917		
	TP-14	1581016	2782311		31693		
	TP-15	1580840	2782324		10771		
	TP-16	1580519	2782343		20877		
11-22-24	TP-17	1581234	2782355		4788		
9-19-24	TP-18	1580677	2782415		23920		
	TP-19	1581101	2782521		108929		
	TP-20	1580596	2782544		42042		
	TP-21	1580819	2782549		189626		

Technician Signature _____ Reviewed by _____

AVM Environmental Services, Inc.
Gamma Radiation Survey
Static Gamma Radiation Survey Field Form

Instrumentation ; Scaler/Ratemeter L2221 #290301 , Detector SAM-3 #30

Instrument Calibration Date: 2-19-24 , Instrument Daily Function Check Performed: Y

2"x2" NaI Detector Collimated X Yes or ____ No

Survey Area/Unit Decsription Mt. Taylor Mine Site #1 NCA

Survey Date/Time	Survey Point ID/Description	Survey Point Coordinate		Gamma Radiation Reading - CPM		Exposure Rate µR/hr	Comments/Notes
		Northing	Easting	Bare	Collimated (0.5"Pb)		
9-19-24	TP-22	1580005	2782580		27679		
10-28-24	TP-23	1580823	2782622		11721		
9-19-24	TP-24	1580668	2782658		184511		
11-22-24	TP-25	1581189	2782673		15304		
12-11-24	TP-26	1580827	2782704		154801		
9-19-24	TP-27	1580480	2782708		116173		
	TP-28	1581082	2782719		69269		
	TP-29	1580105	2782719		37349		
12-2-24	TP-30	1581091	2782877		7362		
11-25-24	TP-31	1580996	2783202		76057		
12-5-24	TP-32	1580440	2783254		11869		
11-25-24	TP-33	1581070	2783303		11765		
12-5-24	TP-34	1580842	2783312		18951		
10-23-24	TP-35	1580627	2783327		31729		
10-23-24	TP-36	1580794	2783355		12576		
10-23-24	TP-37	1580506	2783378		9058		
10-23-24	TP-38	1581069	2783413		13769		
10-23-24	TP-39	1580480	2783504		9606		
10-23-24	TP-40	1581114	2783628		13072		

Technician Signature _____ Reviewed by _____

AVM Environmental Services, Inc.
Gamma Radiation Survey
Static Gamma Radiation Survey Field Form

Instrumentation: Scaler/Ratemeter L2221 SN 290801 Detector GPA 3 #30

Instrument Calibration Date: 2-19-24 Instrument Daily Function Check Performed: Y

2"x2" NaI Detector Collimated X Yes or _____ No.

Survey Area/Unit Decsription Mt. Taylor Mine site NCA

Survey Date/Time	Survey Point ID/Description	Survey Point Coordinate		Gamma Radiation Reading - CPM		Exposure Rate µR/hr	Comments/Notes
		Northing	Easting	Bare	Collimated (0.5"Pb)		
9-19-24	Investigation 01	1580781	2781697		14304		
	Investigation 02	1579930	2781700		9200		
	Investigation 03	1581206	2781734		13157		Pipeline Berm
	Investigation 04	1580829	2782173		36,695		
10-23-24	Investigation 05	1580655	2783717		7441		
10-23-24	Investigation 06	1581080	2783856		19774		
9-19-24	I-07				10142		

Technician Signature _____ Reviewed by _____

AVM Environmental Services, Inc.
Subsurface Soil Sample Log Form
Mt. Taylor Mine Site

Sample ID	Sample Date/Time	Sample Depth	Sample Description	Comments/Notes
TP-06	10-3-24 846	6-12"	light brown Sand / silt stone Rocks hard Pack	
TP-06	" 856	1'-2'	" " " Rocks hard Pack	
TP-10	" 910	6-12"	" " "	
TP-01	" 930	6-12"	Brown silt/Sand Compacted Rocks	
TP-01	940	1-2'	light brown silt/Sand Compacted	
TP-02	" 1000	3.5-4'	Dark Brown loam - silt Clay	on site - @ peak
TP-02	" 1020	4.5'-5'	Brown Sandy silt	
~~TP-04~~ VP Inv-07	" 1045	6"-12"	light grey plastic debris waste Rock	
~~TP-04~~ VP Inv-07	" 1055	15'-25'	" " "	
~~TP-04~~ VP Inv-07	" 1105	25-3'	Dark brown silty Sand clay	
TP-03	10-9-24 810	6"-12"	light brown silty Rock w/ grey	
TP-03	10-9-24 820	1'-2'	Brown silty Sand w/ clay	
TP-13	10-9-24 840	6"-12"	Dark brown silt clay	
TP-11	10-9-24 850	6"-12"	Brown silty w/ clay	
TP-11	10-9-24 900	1'-1.5'	Dark brown clay silt.	

AVM Environmental Services, Inc.
Subsurface Soil Sample Log Form
Mt. Taylor Mine Site

Sample ID	Sample Date/Time	Sample Depth	Sample Description	Comments/Notes
TP-08	10-9-24 910	6"-12"	light brown Compacted Sand & silt	
TP-07	10-9-24 925	6"-12"	light brown silty Sand Consolidated	
TP-05	10-9-24 940	6"-12"	light brown Sandy Silt consolidated	
TP-12	10-9-24 1000	6"-12"	Brown Silt Packed / Consolidated	
TP-16	10-9-24 1010	6"-12"	Dark brown Silt Clay	
TP-16	10-9-24 1020	1'-1.5'	Brown silty Clay consolidated	
TP-18	10-9-24 1030	6"-12"	light brown Sandy w/ cobble	
TP-15	10-9-24 1050	6"-12"	light brown Sandy Consolidated	
TP-13	10-15-24 815	1'-1.5'	light brown Sand/silt hard pack	
TP-18	10-15-24 825	1'-1.5'	Brown Silty / Sand Clay Compacted	
TP-18	10-15-24 836	1.5'-2'	Brown Clay / silt Compacted	
INV-01	10-15-24 940	2'-2.5'	light brown / light grey Sand hard pack	
TP-04	10-15-24 1020	6"-12"	Top 1" gravel - Brown silt/clay Packed	
TP-14	10-15-24 1040	6"-12"	Brown silty/clay w/ speck of stone	
TP-20	10-15-24 1055	1'-1.5'	light brown Sandy	

AVM Environmental Services, Inc.
Subsurface Soil Sample Log Form
Mt. Taylor Mine Site

Sample ID	Sample Date/Time	Sample Depth	Sample Description	Comments/Notes
TP-19	10-16-24 845	4.5'-5'	Interface waste Rock / Clay-Silt Dark brown	
TP-19	10-16-24 900	5'-5.5'	Dark brown clay	
TP-28	10-16-24 930	10 ~~9~~"-12"	Interface waste Rock / clay light brown	
TP-27	10-16-24 1000	8"-12"	Brown clay/silt hardpacked	
TP-24	10-16-24 1020	6"-12"	light brown Sandy	
TP-29	10-16-24 1056	1'-1.5'	Dark clay hardpack	
TP-22	16-16-24 1115	1'-1.5'	Brown clay hardpack Sand hardpack	
TP-36	10-28-24 810	6"-12"	Silt / loam w/ clay	
TP-36	10-28-24 825	1'-~~1.5~~ 2'	Sandy silt Consolidated	
TP-35	10-28-24 840	6"-12"	Silt / clay Roots Brown	
TP-35	10-28-24 850	1'-1.5'	grey / Brown Silty Sand Clay Packed	
TP-37	10-28-24 910	6"-12"	Dark brown Silt Clay	
TP-39	10-28-24 930	6"-12"	Brown silt loam / light brown Sandy	
Inv-5	10-28-24 945	6"-12"	light brown Sandy silt w/ light clay	
Inv-5	10-29-24 1000	1'-1.5'	Light brown silt clay	

AVM Environmental Services, Inc.
Subsurface Soil Sample Log Form
Mt. Taylor Mine Site

Sample ID	Sample Date/Time	Sample Depth	Sample Description	Comments/Notes
Inv-6	10-28-24 1015	6"-12"	Packed loamy silt Sand	
TP-40	10-28-24 1035	6"-12"	Silty Sand compacted	
TP-38	10-28-24 1050	6"-12"	metal & plaster debris	No Sample
TP-22	10-28-24 1120	1.5'-2.0'	brown Silt Clay compacted	
TP-19	10-28-24 1140	6"-4.5'	grey waste Rock Sandy	
TP-23	10-28-24 1300	6"-12"	Brown loamy Silt	
TP-17	11-22-24 1040	6"-12"	Brown loamy Silt	
TP-25	11-22-24 1055	6"-12"	Brown loamy clay	
TP-31	11-25-24 @ 1020	6"-12"	Dark brown silty Sandy Clay	
TP-31	11-25-24 @ 1040	1'-1.5'	light brown Sandy consolidated	
TP-33	11-25-24 @ 1100	6"-12"	Brown clay / light brown sandy	
TP-09	11-25-24 @1250	6"-12"	light brown silty Sand consolidated	
TP-09	11-25-24 @1305	1'-1.5	light brown Silty Sand Consolidated	
TP-09	11-25-24 @1315	2'-2.5'	light brown Silty Sandy	
TP-30	12-4-24 @830	6"-12"	Sand w/ cobble 6"-8" Clay w/ cobble 8"-13"	

AVM Environmental Services, Inc.
Subsurface Soil Sample Log Form
Mt. Taylor Mine Site

Sample ID	Sample Date/Time	Sample Depth	Sample Description	Comments/Notes
TP-32	@845 12-5-24	6"-12"	Dark brown silt clay	
TP-34	0930 12-5-24	6"-12"	Dark brown silt clay.	
TP-32	12-9-24 @950	1'-1.5'	Brown silty clay	
TP-34	12-9-24 @1030	1'-2'	Brown Sandy / silty clay	
TP-34	12-11-24 @915	2'-3'	2-2.5' Brown silty clay 2.5-3' Sandy w/ cobble.	
TP-26	12-11-24 @1000	2'-2.5'	Dark grey compacted sandy soil Refusal @ 2.5'	

AVM Environmental Services, Inc.
Subsurface Soil Sample Log Form
Mt. Taylor Mine Site

Sample ID	Sample Date/Time	Sample Depth	Sample Description	Comments/Notes
TP-26 2.5-3.0	1-27-25 @1028	2.5-3.0	Dark brown / black clay w/ Sand	
TP-26 3.0-4.0	1-27-25 @1037	3.0-4.0	" " " "	
TP-21	1-27-25 @1056	0-2.0'	Dark brown clay Black. Sandy w/ metal debris + rust	
TP-21	1-27-25 @1105	2.0-3.0	Dark brown w/ grey clay/silt	
TP-21	1-27-25 @1113	3.0-4.0	Dark Brown Clay	

AVM Environmental Services, Inc.
Field Soil Sample Gamma Radiation Screening Form
Mt. Taylor Mine Site

Instrumentation : Scaler/Ratemeter L2221 S/N 68782, Detector 44-20 S/N 295573
Instrument Calibration Date: 2-19-24 / 9-30-24, Instrument Function Check Performed: Y
Survey Area/Unit Decsription MT. Taylor Mine - NCA Test Pit

Area exposure rate:

Date	Soil Sample ID	Sample Weight Grams	609 (559-669) Kev Gross Counts, CPSM	Weight Corrected CPSM	CPM	Reference Soil Compare (< or >)	Comments
10-8-24	Blank	—	310	—	62		
10-8-24	6.6pCi Ref Soil	3000	2338	—	468		
10-8-24	TP-06 6"-12" 10-8-24 @846	3000	1306	—	261		
10-8-24	TP-06 1'-2' 10-8-24 @856	3000	1256	—	251		
10-8-24	TP-10 6"-12" 10-8-24 @910	3000	1840	—	368		
10-8-24	TP-01 6"-12" 10-8-24 @930	3000	1437	—	287		
10-8-24	TP-01 1'-2' 10-8-24 @940	3000	1363	—	273		
10-8-24	TP-02 3.5'-4' 10-8-24 @1000	3000	1194	—	239		
10-8-24	TP-02 4.5'-5' 10-8-24 @1020	3000	1245	—	249		
10-8-24	~~TP-04~~ INV-07 6"-12" 10-8-24 @1045	3000	2945	—	589		
10-8-24	~~TP-04~~ INV-07 1.5'-2' 10-8-24 @1055	3000	3131	—	626		
10-8-24	~~TP-04~~ INV-07 2'-3' 10-8-24 @1105	3000	1125	—	225		QA/QC CPSM 1174
10-9-24	Blank	—	300	—	60		
10-9-24	6.6 pCi Ref Soil	3000	2598	—	520		
10-9-24	TP-03 6"-12" 10-9-24 @810	3000	1241	—	248		

Technician Signature [signature] Reviewed by [signature]

AVM Environmental Services, Inc.
Field Soil Sample Gamma Radiation Screening Form
Mt. Taylor Mine Site

Instrumentation : Scaler/Ratemeter L2221 S#68782, Detector L44-20 S# 295573
Instrument Calibration Date: 2-19-24 / 9-30-24, Instrument Function Check Performed: ✓
Survey Area/Unit Decsription Mt. Taylor Mine Site - NCM Test Pit

Area exposure rate:

Date	Soil Sample ID	Sample Weight Grams	609 (559-669) Kev Gross Counts, CP5M	Weight Corrected CP5M	CPM	Reference Soil Compare (< or >)	Comments
10-9-24	TP-03 1'-2' 10-9-24 @ 820	3000	1208	-	242		
10-9-24	TP-13 6"-12" 10-9-24 @ 840	3000	2745	-	549		
10-9-24	TP-11 6"-12" 10-9-24 @ 850	3000	7653	-	1531		
10-9-24	TP-11 1'-1.5' 10-9-24 @ 900	3000	2076	-	415		
10-9-24	TP-08 6"-12" 10-9-24 @ 910	3000	1375	-	275		
10-9-24	TP-07 6"-12" 10-9-24 @ 925	3000	1524	-	305		
10-9-24	TP-05 6"-12" 10-9-24 @ 940	3000	1395	-	279		
10-9-24	TP-12 6"-12" 10-9-24 @ 1000	3000	1353	-	271		
10-9-24	TP-16 6"-12" 10-9-24 @ 1010	3000	1376	-	275		QA/QC CpSM 1325
10-9-24	TP-16 1'-1.5' 10-9-24 @ 1020	3000	1250	-	250		
10-9-24	TP-18 6"-12" 10-9-24 @ 1030	3000	5468	-	1094		
10-9-24	TP-15 6"-12" 10-9-24 @ 1050	3000	1274	-	255		
10-15-24	Blank	-	343	-	69		
10-15-24	6.6 pCi Ref Soil	3000	2494	-	499		
10-15-24	TP-13 1'-1.5' 10-15-24 @ 815	3000	1397	-	279		

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Field Soil Sample Gamma Radiation Screening Form
Mt. Taylor Mine Site

Instrumentation : Scaler/Ratemeter LZ221 S#68782, Detector LZ44-20 S# 295573
Instrument Calibration Date: 2-19-24/9-30-24, Instrument Function Check Performed: ✓
Survey Area/Unit Description Mt. Taylor Mine Site - NCA test Pit

Area exposure rate:

Date	Soil Sample ID	Sample Weight Grams	609 (559-669) Kev Gross Counts, CPSM	Weight Corrected CPSM	CPM	Reference Soil Compare (< or >)	Comments
10-15-24	TP-18 1'-1.5' 10-15-24 @ 825	3000	1977	-	395		
10-15-24	TP-18 1.5'-2' 10-15-24 @ 836	3000	1323	-	265		
10-15-24	INV-01 2'-2.5' 10-15-24 @ 940	3000	1337	-	267		
10-15-24	TP-04 6"-12" 10-15-24 @ 1020	3000	1424	-	285		
10-15-24	TP-14 6"-12" 10-15-24 @ 1040	3000	1915	-	383		
10-15-24	TP-20 1'-1.5' 10-15-24 @ 1055	3000	1243	-	249		QA/QC CPSM 1310
10-16-24	Blank	-	340	-	68		
10-16-24	6.6 pCi Ref Soil	3000	2465	-	493		
10-16-24	TP-28 10"-12" 10-16-24 @ 430	3000	1506	-	301		
10-16-24	TP-27 8"-12" 10-16-24 @ 1000	3000	1323	-	265		
10-16-24	TP-24 6"-12" 10-16-24 @ 1020	3000	2377	-	475		
10-16-24	TP-29 1'-1.5' 10-16-24 @ 1056	3000	1214	-	243		
10-16-24	TP-22 1'-1.5' 10-16-24 @ 1115	3000	9053	-	1811		
10-16-24	TP-19 4.5'-5' 10-16-24 @ 845	3000	1297	-	259		
10-16-24	TP-19 5'-5.5' 10-16-24 @ 1159	3000	1334	-	267		QA/QC CPSM 1285

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Field Soil Sample Gamma Radiation Screening Form
Mt. Taylor Mine Site

Instrumentation : Scaler/Ratemeter L2221 S# 68782, Detector 44-20 S# 295573
Instrument Calibration Date: 2-19-24 / 9-30-24, Instrument Function Check Performed: V
Survey Area/Unit Decsription Mt. Taylor Mine Site - NCA Test Pit

Area exposure rate:

Date	Soil Sample ID	Sample Weight Grams	609 (559-669) Kev Gross Counts, CP5M	Weight Corrected CP5M	CPM	Reference Soil Compare (< or >)	Comments
10-29-24	Blank	—	328	—	66		
10-29-24	6.6pCi Ref Soil	3000	2321	—	464		
10-29-24	TP-36 6"-12" 10-28-24 @ 810	3000	1345	—	269		
10-29-24	TP-36 1'-2' 10-28-24 @ 825	3000	1279	—	256		
10-29-24	TP-35 6"-12" 10-28-24 @ 840	3000	3081	—	616		
10-29-24	TP-35 1'-1.5' 10-28-24 @ 850	3000	1502	—	300		
10-29-24	TP-37 6"-12" 10-28-24 @ 910	3000	1273	—	255		
10-29-24	TP-39 6"-12" 10-28-24 @ 930	3000	1285	—	257		
10-29-24	Inv-5 6"-12" 10-28-24 @ 945	3000	2442	—	488		
10-29-24	Inv-5 1'-1.5' 10-28-24 @ 1000	3000	1553	—	311		
10-29-24	Inv-6 6"-12" 10-28-24 @ 1015	3000	1337		267		
10-29-24	TP-40 6"-12" 10-28-24 @ 1035	3000	1177		235		QA/QC CP5M 1350
10-29-24	TP-38 6"-12" 10-28-24 @ 1050	—	—	—	—		No Sample
10-29-24	TP-22 1.5'-2.0' 10-28-24 @ 1120	3000	1213	—	243		
10-29-24	TP-19 6"-4.5' 10-28-24 @ 1140	3000	38495	—	7699		

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Field Soil Sample Gamma Radiation Screening Form
Mt. Taylor Mine Site

Instrumentation : Scaler/Ratemeter L2221 S#68782, Detector L44-20 S# 295573
Instrument Calibration Date: 2-19-24 / 9-30-24, Instrument Function Check Performed: ✓
Survey Area/Unit Decsription Mt. Taylor Mine Site NCA Test Pits

Area exposure rate:

Date	Soil Sample ID	Sample Weight Grams	609 (559-669) Kev Gross Counts, CP5M	Weight Corrected CP5M	CPM	Reference Soil Compare (< or >)	Comments
10-29-24	TP-23 6"-12" 10-22-24 @1300	3000	1512	-	302		
11-26-24	Blank	-	292		58		
11-26-24	6.6pCi Ref Soil	3000	2360		472		
11-26-24	TP-17 6"-12" 11-22-24 @1040	3000	1475		295		
11-26-24	TP-25 6"-12" 11-22-24 @1045	3000	1164		233		
11-26-24	TP-31 6"-12" 11-25-24 @1020	3000	3849		770		
11-26-24	TP-31 1'-1.5' 11-25-24 @1040	3000	1704		341		
11-26-24	TP-33 6"-12" 11-25-24 @1100	3000	1203		241		
11-26-24	TP-09 6"-12" 11-25-24 @1250	3000	1185		237		
11-26-24	TP-09 1'-1.5' 11-25-24 @1305	3000	1131		226		
11-26-24	TP-09 2'-2.5' 11-25-24 @1315	3000	1225		245		
12-9-24	Blank	-	333		67		
12-9-24	6.6 pCi Ref Soil	3000	2372		474		
12-9-24	TP-30 6"-12" 12-4-24 @830	3000	1258		252		
12-9-24	TP-32 6"-12" 12-5-24 @845	3000	2619		524		

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Field Soil Sample Gamma Radiation Screening Form
Mt. Taylor Mine Site

Instrumentation : Scaler/Ratemeter L2221 S#68782, Detector L44-20 S# 295573
Instrument Calibration Date: 2-14-24/9-30-24, Instrument Function Check Performed: ✓
Survey Area/Unit Decsription Mt. Taylor Mine Site NCA Task P.2

Area exposure rate:

Date	Soil Sample ID	Sample Weight Grams	609 (559-669) Kev Gross Counts, CP5M	Weight Corrected CP5M	CPM	Reference Soil Compare (< or >)	Comments
12-9-24	TP-34 6'-12' 12-5-24 @ 920	3000	6878		1376		QA/QC CP5M = 6866
12-11-24	Blank	—	329		66		
12-11-24	6.6 pCi/g Ref Soil	3000	2437		487		
12-11-24	TP-32 1'-1.5' 12-9-24 @ 950	3000	1229		246		
12-11-24	TP-34 1'-2' 12-9-24 @ 1030	3000	3976		795		
12-11-24	TP-34 2'-3' 12-11-24 @ 915	3000	1547		309		QA/QC CP5M - 1549
12-11-24	TP-26 2'-2.5 12-11-24 @ 1000	3000	10464		2093		
1-30-25	Blank	—	336		67		
1-30-25	6.6 pCi/g Ref Soil	3000	2327		465		
1-30-25	TP-26 2.5-3.0 1-27-25 @ 1028	3000	1900		380		
1-30-25	TP-26 3.0-4.0 1-27-25 @ 1037	3000	2198		440		
1-30-25	TP-21 0-2.0 1-27-25 @ 1056	3000	41183		8237		
1-30-25	TP-21 2.0-3.0 1-27-25 @ 1105	3000	1938		388		QA/QC CP5M - 1910
1-30-25	TP-21 3.0-4.0 1-27-25 @ 1113	3000	1712		342		

Technician Signature _____, Reviewed by _____

Appendix B
Radiologic Instrument Calibration and Operational Function Check and Collimated Detector Correlation Documentation

CERTIFICATE OF CALIBRATION

LUDLUM MEASUREMENTS, INC.
501 Oak Street
325-235-5494
Sweetwater, TX 79556, U.S.A.
www.ludlums.com

ACCREDITED
CERT # 4084.01

Model No. / Serial No. 500 / 114513

Customer AVM ENVIRONMENTAL SERVICES INC ORDER NO. 20460064/549833

Date 13-Dec-23 Cal Due Date 13-Dec-24 Cal. Interval 1 Year Procedure 500/Rev 8

☐ New Instrument Instrument Received ☑ Within Tolerance ☐ Out of Tol. ☐ Requiring Repair ☐ Other-See Comments

T. 73 °F RH 36 % Alt 714.2 mm Hg ☑ Meter Zeroed ☑ Mechanical Check

PULSE WIDTH Uncertainty within 0.85% of reading

	As Found	As Left	Acceptable Range (µs)
NEG PULSE	1.7	1.7	1.5 - 1.9
POS PULSE	1.7	1.7	< 2.25

PULSE AMPLITUDE (NEGATIVE) Uncertainty within 1.3% of reading

Reference Amplitude	As Found Amplitude Reading	As Left Amplitude Reading	Acceptable Range	Reference Amplitude	As Found Amplitude Reading	As Left Amplitude Reading	Acceptable Range
1 V	1 V	1 V	0.9 - 1.1	4 V	4.1 V	4.1 V	3.6 - 4.4
100 mV	100 mV	100 mV	90 - 110	400 mV	410 mV	410 mV	360 - 440
10 mV	10 mV	10 mV	9 - 11	40 mV	41 mV	41 mV	36 - 44
1 mV	1 mV	1 mV	0.9 - 1.1	4 mV	4.1 mV	4.1 mV	3.6 - 4.4

PULSE AMPLITUDE (POSITIVE) Uncertainty within 1.3% of reading

Reference Amplitude	As Found Amplitude Reading	As Left Amplitude Reading	Acceptable Range
3 V	3 V	3 V	2.7 - 3.3
300 mV	300 mV	300 mV	270 - 330
30 mV	30 mV	30 mV	27 - 33
3 mV	3 mV	3 mV	2.7 - 3.3

PULSE FREQUENCY (PERIOD) Uncertainty within 0.46% of reading

Pulser Range	As Found Period	As Left Period	Acceptable Range
x 10K	6.667	6.667	6.534 - 6.8
x 1K	66.70	66.70	65.34 - 68
x 100	667.2	667.2	653.4 - 680
x 10	6671	6671	6534 - 6800
x 1	66.71	66.71	65.34 - 68
x 0.1	90	90	88.2 - 91.8 Counts

Digital High Voltage Uncertainty within 1.3% of reading

Reference Voltage	As Found Voltage Reading	As Left Voltage Reading	Acceptable Range
500 V			490 - 510
1500 V			1470 - 1530

Analog High Voltage Uncertainty within 1.3% of reading

Reference Voltage	As Found Voltage Reading	As Left Voltage Reading	Acceptable Range
500 V	500	500	475 - 525
2000 V	2000	2000	1900 - 2100

CPM Reading	As Found cpm Reading	As Left cpm Reading	Acceptable Range
MAX	992	992	981 - 999
MIN	0-1	0-1	0 - 1*

* READING OF 0-99 IS ACCEPTABLE FOR INSTRUMENTS WITH A S/N 100000 AND BELOW OR MAIN BOARD = 5208-066

COMMENTS:

CAL'D W/ 39" CABLE.

Ludlum Measurements, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology, or to the calibration facilities of other International Standards Organization members, or have been derived from accepted values of natural physical constants or have been derived by the ratio type of calibration techniques.
All pass/fail determinations are based on the manufacturer's specifications without considering uncertainty factors.
Measurement results represent expanded uncertainties expressed at approximately the 95% level of confidence, using a coverage factor of k=2.
The calibration system conforms to the requirements of ANSI/NCSL Z540-1-1994 and ANSI N323AB-2013

ISO/IEC 17025:2017(E)
State of Texas Calibration License No. LO-1963

Reference Instruments:
Frequency Counter Model BK 1856D S/N 332L14297 Cal Date 17-Feb 2023
Oscilloscope Model Tektronix 72-6820 S/N 1102645 Cal Date 11-Oct 2023
Voltmeter Model Fluke 83 V S/N 94000441 Cal Date 2-Jun 2023

Calibrator William Tinsley William Tinsley Title Calibrator Date 13-December 2023
QC'd By [signature] Title Final QC Date 14 Dec 23

This certificate shall not be reproduced except in full, without the written approval of Ludlum Measurements, Inc.

AC Inst. Only ☑ Passed Dielectric (Hi-Pot) and Continuity Test ☐ Failed:

Designer and Manufacturer of Scientific and Industrial Instruments

www.ludlums.com

CERTIFICATE OF CALIBRATION

LUDLUM MEASUREMENTS, INC.
501 Oak Street
325-235-5494
Sweetwater, TX 79556, U.S.A.

ACCREDITED
CERT # 4084.01

Customer AVM ENVIRONMENTAL SERVICES INC ORDER NO. 20457182/547880

Mfg. Ludlum Measurements, Inc. Model 19 Serial No. 76248

Mfg. _____ Model _____ Serial No. _____

Cal. Date 3-Nov-23 Cal Due Date 3-Nov-24 Cal. Interval 1 Year Meterface 202-1070

Check mark ☑ applies to applicable instr. and/or detector IAW mfg. spec. T. 73 °F RH 37 % Alt 708.1 mm Hg

☐ New Instrument Instrument Received ☐ Within Toler. +-10% ☑ 10-20% ☐ Out of Tol. ☐ Requiring Repair ☐ Other-See comments

☑ Mechanical ck. ☑ Meter Zeroed ☐ Background Subtract ☐ Input Sens. Linearity
☑ F/S Resp. ck ☑ Reset ck. ☐ Window Operation ☑ Geotropism
☑ Audio ck. ☐ Alarm Setting ck. ☑ Batt. ck.

☐ Calibrated in accordance with LMI SOP 14.8 ☑ Calibrated in accordance with LMI SOP 14.9

Instrument Volt Set 800 V Input Sens. 37 mV Det. Oper. 800 V at 37 mV Threshold Dial Ratio _____ = _____ mV

☐ HV Readout (2 points) Ref./Inst. _____ / _____ V Ref./Inst. _____ / _____ V

COMMENTS:

Gamma Calibration: GM detectors positioned perpendicular to source except for M 44-9 in which the front of probe faces source.
Multimeter uncertainty within 1.3% of reading, Gamma uncertainty within 5.0% of reading, Neutron uncertainty within 7.0% of reading, Count rate uncertainty within 5.4% of reading

RANGE/MULTIPLIER	REFERENCE CAL. POINT	INSTRUMENT REC'D "AS FOUND READING"	INSTRUMENT METER READING
5000	4000µR/hr	4200 µR/hr	4000 µR/hr
5000	1000µR/hr	1100	1000
500	400µR/hr = 69800 cpm	410	400
500	100µR/hr	110	100
250	200µR/hr = 33800 cpm	210	200
250	100µR/hr	100	100
50	6980 cpm	42	40
50	1750 cpm	10	10
25	3380 cpm	22	20
25	845 cpm	5	5

Range(s) Calibrated Electronically

Digital Readout	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING

Log Scale	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING

Ludlum Measurements, Inc certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology, or to the calibration facilities of other International Standards Organization members, or have been derived from accepted values of natural physical constants or have been derived by the ratio type of calibration techniques.
All pass/fail determinations are based on the manufacturer's specifications without considering uncertainty factors.
Measurement results represent expanded uncertainties expressed at approximately the 95% level of confidence, using a coverage factor of k=2.
The calibration system conforms to the requirements of ANSI/NCSL Z540-1-1994 and ANSI N323AB-2013

ISO/IEC 17025:2017(E)
State of Texas Calibration License No. LO-1963

Reference Instruments and/or Sources: Cs-137 S/N: ☐ 059 ☐ 2171CP ☐ 2261CP ☐ 720 ☐ 734 ☐ 781 ☐ 1131 ☐ 1616 ☐ 1696 ☐ 1909 ☐ 1916CP ☐ 2324/2521
☐ 5717CO ☐ 5719CO ☐ 60646 ☐ 70897 ☐ 73410 ☐ E552 ☐ G112 ☑ 2168CP ☐ S-394 ☐ S-1054 ☐ T10081 ☐ T10082 Neutron Am-241 Be ☐ T-304 Ra-226 ☐ Y982
☐ E551 ☐ 5105 ☐ CSV280

☐ Alpha S/N _____ ☐ Beta S/N _____ ☐ Other _____

☑ m 500 S/N 114520 ☐ Oscilloscope S/N _____ ☑ Multimeter S/N 53950165

Calibrator Sheba Lee Sheba Lee Title Calibrator Date 3-Nov-23

QC'd By _____ Title Final QC Date 3Nov23

This certificate shall not be reproduced except in full, without the written approval of Ludlum Measurements, Inc.

AC Inst. Only ☐ Passed Dielectric (Hi-Pot) and Continuity Test ☐ Failed: _____

Designer and Manufacturer of Scientific and Industrial Instruments

www.ludlums.com

CERTIFICATE OF CALIBRATION

LUDLUM MEASUREMENTS, INC.
501 Oak Street
325-235-5494
Sweetwater, TX 79556, U.S.A.

ACCREDITED
CERT # 4084.01

Customer AVM ENVIRONMENTAL SERVICES INC ORDER NO. 20479685/ 563226

Mfg. Ludlum Measurements, Inc. Model 19 Serial No. 76248

Mfg. _____ Model _____ Serial No. _____

Cal. Date 4-Oct-24 Cal Due Date 4-Oct-25 Cal. Interval 1 Year Meterface 202-016

Check mark applies to applicable instr. and/or detector IAW mfg. spec. T. 73 °F RH 41 % Alt 708.4 mm Hg

☐ New Instrument Instrument Received ☑ Within Toler. +-10% ☐ 10-20% ☐ Out of Tol. ☐ Requiring Repair ☐ Other-See comments

☑ Mechanical ck. ☑ Meter Zeroed ☐ Background Subtract ☐ Input Sens. Linearity
☑ F/S Resp. ck. ☑ Reset ck. ☐ Window Operation ☑ Geotropism
☑ Audio ck. ☐ Alarm Setting ck. ☑ Batt. ck.

☐ Calibrated in accordance with LMI SOP 14.8 ☑ Calibrated in accordance with LMI SOP 14.9

Instrument Volt Set 800 V Input Sens. 37 mV Det. Oper. _____ V at _____ mV Threshold Dial Ratio _____ = _____ mV

☑ HV Readout (2 points) Ref./Inst. 500 / _____ V Ref./Inst. 1000 / _____ V

COMMENTS:

Gamma Calibration: GM detectors positioned perpendicular to source except for M 44-9 in which the front of probe faces source.
Multimeter uncertainty within 1.3% of reading. Gamma uncertainty within 5.0% of reading. Neutron uncertainty within 7.0% of reading. Count rate uncertainty within 5.4% of reading

RANGE/MULTIPLIER	REFERENCE CAL. POINT	INSTRUMENT REC'D "AS FOUND READING"	INSTRUMENT METER READING
5000	4000µR/hr	4000 µR/hr	4000 µR/hr
5000	1000µR/hr	1000	1000
500	400µR/hr = 68,500	400	400
500	100µR/hr	100	100
250	200µR/hr = 35600	210	200
250	100µR/hr	100	100
50	6850 cpm	40	40
50	1712 cpm	10	10
25	3560 cpm	21	20
25	890 cpm	5	5

50, 25 Range(s) Calibrated Electronically

Digital Readout	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING

Log Scale	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING

Ludlum Measurements, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology, or to the calibration facilities of other International Standards Organization members, or have been derived from accepted values of natural physical constants or have been derived by the ratio type of calibration techniques.
All pass/fail determinations are based on the manufacturer's specifications without considering uncertainty factors.
Measurement results represent expanded uncertainties expressed at approximately the 95% level of confidence, using a coverage factor of k=2.
The calibration system conforms to the requirements of ANSI/NCSL Z540-1-1994 and ANSI N323AB-2013

ISO/IEC 17025:2017(E)
State of Texas Calibration License No. LD-1963

Reference Instruments and/or Sources: Cs-137 S/N: ☐ 059 ☐ 2171CP ☐ 2261CP ☐ 720 ☐ 734 ☐ 781 ☐ 1131 ☐ 1616 ☐ 1696 ☐ 1909 ☐ 1916CP ☐ 2324/2521
☐ 5717CO ☐ 5719CO ☐ 60646 ☐ 70897 ☐ 73410 ☐ E552 ☐ G112 ☑ 2166CP ☐ S-394 ☐ S-1054 ☐ T10081 ☐ T10082 Neutron Am-241 Be ☐ T-304 Ra-226 ☐ Y982
☐ E551 ☐ 5105 ☐ CSV280

☐ Alpha S/N _____ ☐ Beta S/N _____ ☐ Other _____

☑ m 500 S/N 371845 ☐ Oscilloscope S/N _____ ☑ Multimeter S/N 60050420

rator Andrew Fuller Andrew J Fuller Title Calibrator Date 4 OCT 24

QC'd By _____ Title Final QC Date 5 Oct 24

This certificate shall not be reproduced except in full, without the written approval of Ludlum Measurements, Inc.

AC Inst. Only ☐ Passed Dielectric (Hi-Pot) and Continuity Test ☐ Failed: _____

AVM Environmental Services Inc.
Scaler/Ratemeter - Detector Calibration Form

Scaler/Ratemeter: L2221 S# 290801
Detector: SPA-3 S# 408522-30

Source: U308 ore in can S# FC-2 Strength 1%

Scaler/Ratemeter Threshhold set @ 10 mV, Window IN/OUT Out, Window N/A mV

HV	Reading, CPM (Source)	Reading, CPM (Background)
500	17200	470
550	37012	738
600	57214	998
650	71774	1379
700	84865	1633
750	93899	1765
800	95561	1837
850	96093	1895
900	97180	2012
950	97636	2018
1000	100155	2037
1050	113726	2090
1100	133647	2249
1150	161780	2497
1200	199910	3198
1250		
1300		
1350		
1400		

Background reading at designated function check location in AVM office.

Count #	Reading (CPM) Bare	Collimated
1	8139	3129
2	8284	3144
3	8301	3004
4	8107	3170
5	8155	3171
Average	8197	3124

FC Range (6524-9786) (2537-3805)

Count Readings with 1 percent U_3O_8 can directly under collimated detector on designated function check location in AVM office.

Count #	Reading (CPM)
1	96354
2	95928
3	96716
4	96662
5	96241
Average	96380

HV Set @ 900 VDC (Instrument) 900 VDC (DVM Fluke 8020B)

Input Sensitivity (THR), mV 10

Function Check with 1 percent U_3O_8 ore in can. Can Directly under the detector in the collimator.
Acceptable Function check range is 77104 to 115656 CPM

Notes:

Date 2-19-24 By

AVM Environmental Services Inc.
Scaler/Ratemeter - Detector Calibration Form

Scaler/Ratemeter L2221 S# 290801
Detector SPA-3 S# 408522-30

Source U308 ore in con S# EC-2 Strength 1%

Scaler/Ratemeter Threshhold set @ 10 mV, Window IN/OUT out, Window N/A mV

HV Set @ 900 VDC (Instrument) 900 VDC (DVM Fluke 8020B)

Count Readings for Calibration Pad GPB (0.0 ± 0.3 pCi/gm Ra-226)

	Bare (Uncollimated) @ 1'		Collimated @ 1'	
#1	11498	cpm	2766	cpm
#2	11820	cpm	2839	cpm
#3	11614	cpm	2849	cpm
#4	11823	cpm	2883	cpm
#5	11777	cpm	2772	cpm
BKG Average	11706	cpm	2812	cpm

Count Readings for Calibration Pad GPL (87.78 pCi/gm Ra-226)

	Bare (Uncollimated) @ 1'		Collimated @ 1'	
#1	90635	cpm	53328	cpm
#2	90696	cpm	53884	cpm
#3	90626	cpm	53443	cpm
#4	90778	cpm	54004	cpm
#5	91414	cpm	53996	cpm
Gross Average	90830	cpm	53731	cpm
Net Source Pad	79123	cpm	50919	cpm
Eff(net cpm/87.78 pCi/gm	901	cpm/pCi/gm	580	cpm/pCi/gm

µR/hr Reading for Calibration Pad GPL (87.78 pCi/gm Ra-226)

Ludlum Model 19 serial # 76248

Reading @ 1' 115 µR/hr
1.276^{-03} µR/hr/cpm

Date 2-19-24 By

AVM Environmental Services Inc.
L2221 SCA/L44-20 Energy Calibration Form

SCA: L2221, SR #290801 Detector: Ludlum 44-20 (3x3 Nal Scintillator)

Calibration Source: Cs-137 Check Source, 5 uCi (August 2008) For 662 KeV Peak Cal

Threshold (input sensitivity) 652

Window, In/Out IN Window 20

HV Initial 100, At Peak 575

Maximum CPM: 204503 Background CPM: 9

HV Set @ 575 VDC

For Bi-214 609.2 KeV Peak (559 - 659 KeV ROI), Set Threshold @ 559, Window @ 10mV

Calibration Check w 1% U3O8 Ore Check Source: 15656 CPM

BKG = 63 cpm

Date 9-30-24 Calibrated By

AVM Environmental Services, Inc.
Field Soil Sample Gamma Radiation Screening Form
Mt. Taylor Mine Site

Instrumentation : Scaler/Ratemeter L2221 S# 68782 , Detector L44-20 S# 295573
Instrument Calibration Date: 2-14-24 / 9-30-24 , Instrument Function Check Performed: ✓
Survey Area/Unit Description Mt. Taylor Mine Site - Correlation Calibration

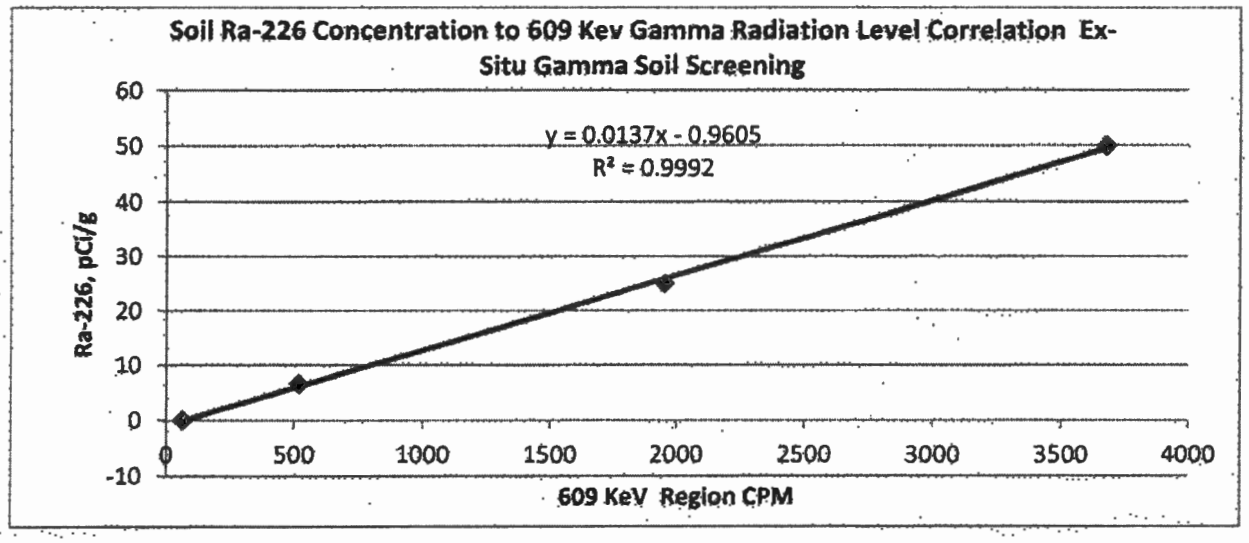
Area exposure rate: 12-14 uR/hr.

Date	Soil Sample ID	Sample Weight Grams	609 (559-669) Kev Gross Counts, CPSM	Weight Corrected CPSM	CPM	Reference Soil Compare (< or >)	Comments
9-30-24	Blank	-	325	-	65		
9-30-24	6.6 pCi/g Ref. Soil	3000	2600	-	520		
9-30-24	25 pCi/g Ref. Soil	3000	9770	-	1954		
9-30-24	50 pCi/g Ref. Soil	3000	18386	-	3677		

Technician Signature _____, Reviewed by _____

AVM Environmental Services
Ex-Situ Soil Screening Gamma Radiation Level to Ra-226 Correlation
Mt. Taylor Mine Site Subsurface Soil Investigation

Reference Soil ID	Date	Ra-226 pCi/g	Wt gms	609 KeV CP5Min Gross (3x3 Nal Detector)	CPM
Blank	9/30/2024	-	-	325	65
6.6 pCi/g Ra-226 Ref Soil	9/30/2024	6.6	3000	2600	520
25 pCi/g Ra-226 Ref Soil	9/30/2024	25	3000	9770	1954
50 pCi/g Ra-226 Ref Soil	9/30/2024	50	3000	18386	3677



AVM Environmental Services, Inc.
Ludlum SCA L2221 - 44-20 3x3 NaI Detector Function Check
559 - 659 KeV Gamma Radiation Soil Screening

L2221 #68782

Ludlum 44-20 3x3 NaI Detector, #PR295573

Function Check Source ID: 1% U_3O_8 Ore in Sealed can

Acceptable background Count (cpm) Range (20%) 50 to 76

Acceptable Source Count (cpm) Range (20%) 12525 to 18787

Date	Physical Check	Cal Date	Battery(1) Volts or OK	HV Volts	Threshhold mV (2)	Window mV	Window In/Out	BKG Counts cpm	Source Counrts cpm	Within Acceptable Range Y or N	MDC pCi/gm	Tech
9-30-24	✓	9-30-24	ok	575	559	10	in	63	15656	y	—	VP
10-8-24	✓	9-30-24	ok	575	559	10	in	65	15453	y	—	VP
10-9-24	✓	9-30-24	ok	583	559	10	in		15588	y	—	VP
10-15-24	✓	9-30-24	ok	575	559	10	in	63	15698	y	—	VP
10-16-24	✓	9-30-24	OK	575	559	10	in	68	15552	y	—	VP
10-29-24	✓	9-30-24	OK	575	559	10	in	63	15524	y	—	VP
11-26-24	✓	9-30-24	OK	578	559	10	in	64	15657	y	—	VP
12-9-24	✓	9-30-24	OK	579	559	10	in	68	15674	y	—	VP
12-11-24	✓	9-30-24	ok	578	559	10	in	66	15841	y	—	VP
1-30-25	✓	9-30-24	ok	580	559	10	in	67	15891	y	—	VP

Note: (1) Battery Voltage for Ludlum 2221 must be >5.3 volts; (2) Threshhold must be at 220 mV; (3) Window @ 440, must be IN

AVM Environmental Services, Inc.
Scaler/Ratemeter - 2" x 2" NaI Detector Function Check

Function Check Source ID: 1% U_3O_8 Ore in Sealed can

2" x 2" NaI Detector ID: SPA-3 S#408522-30

Acceptable background Count (cpm) Range (20%) 6524 to 9786 (Bare)

Acceptable background Count (cpm) Range (20%) 2537 to 3805 (collimated)

Acceptable Source Count (cpm) Range (20%) 77104 to 115656

Date	Scaler/Ratemeter	Physical Check	Cal Due	Battery[1] Volts or OK	HV Volts	THR mV[2]	Window In or OUT[3]	C.C.[4]	BKG Counts cpm	Source Counts cpm	Within Acceptable Range Y or N	MDC pCi/gm	Tech
10-28-24	L2221 S#290801	✓	2-19-24	ok	900	10	out	1	8134 Bare / 3293 Coll.	97448	y	—	VP
11-18-24	L2221 S#290801	✓	2-19-24	ok	900	10	out	1	8439 Bare / 3190 Coll.	98377	y	—	VP
11-22-24	L2221 S#290801	✓	2-19-24	ok	900	10	out	1	8503 Bare / 3273 Coll.	99127	y	—	VP
11-25-24	L2221 S#290801	✓	2-19-24	ok	900	10	out	1	8411 Bare / 3230 Coll.	98897	y	—	VP
12-2-24	L2221 S#290801	✓	2-19-24	ok	900	10	out	1	8316 Bare / 3196 Coll.	97663	y	—	VP
12-4-24	L2221 S#290801	✓	2-19-24	ok	900	10	out	1	8271 Bare / 3240 Coll.	98336	y	—	VP
12-5-24	L2221 S#290801	✓	2-19-24	ok	900	10	out	1	8377 Bare / 3260 Coll.	98162	y	—	VP
12-9-24	L2221 S#290801	✓	2-19-24	ok	900	10	out	1	8413 Bare / 3457 Coll.	98760	y	—	VP
12-11-24	L2221 S#290801	✓	2-19-24	ok	900	10	out	1	8361 Bare / 3241 Coll.	97843	y	—	VP
1-27-25	L2221 S#290801	✓	2-19-24	ok	900	10	out	1	8841 Bare / 3396 Coll.	99501	y	—	VP
2-5-25	L2221 S#290801	✓	2-19-24	ok	900	10	out	1	8508 Bare / 3428 Coll.	98671	y	—	VP
2-6-25	L2221 S#290801	✓	2-19-24	ok	900	10	out	1	8309 Bare / 3293 Coll.	99461	y	—	VP
2-10-25	L2221 S#290801	✓	2-19-24	ok	900	10	out	1	8448 Bare / 3490 Coll.	98099	y	—	VP
2-13-25	L2221 S#290801	✓	2-19-24	ok	900	10	out	1	8308 Bare / 3333 Coll.	98664	y	—	VP
									Bare / Coll.				
									Bare / Coll.				

Note: (1) Battery Voltage for Ludlum 2221 must be >5.3 volts; (2) Threshhold must be at 10.0 mV; (3) Window Position must be OUT; (4) CC on L2241-2 set at 0.001
For L2241-2 Check HV and Threshold using Ludlum 500 pulser.

AVM Environmental Services, Inc.
Scaler/Ratemeter - 2" x 2" NaI Detector Function Check

Function Check Source ID: 1% U_3O_8 Ore in Sealed can

2" x 2" NaI Detector ID: SPA-3 S#408522-20

Acceptable background Count (cpm) Range (20%) 6524 to 9786 (Bare)

Acceptable background Count (cpm) Range (20%) 2537 to 3805 (collimated)

Acceptable Source Count (cpm) Range (20%) 77104 to 115656

Date	Scaler/Ratemeter	Physical Check	Cal Due	Battery[1] Volts or OK	HV Volts	THR mV[2]	Window In or OUT[3]	C.C.[4]	BKG Counts cpm	Source Counts cpm	Within Acceptable Range Y or N	MDC pCi/gm	Tech
8-28-24	L2221 S#290801	✓	2-19-25	OK	900	10	out	1	8180 Bare 3342 Coll.	99633	Y	—	VP
8-30-24	L2221 S#290801	✓	2-19-25	OK	900	10	out	1	8151 Bare 3141 Coll.	94361	Y	—	VP
9-3-24	L2221 S#290801	✓	2-19-25	OK	900	10	out	1	8019 Bare 3008 Coll.	94435	Y	—	VP
9-4-24	L2221 S#290801	✓	2-19-25	OK	900	10	out	1	8269 Bare 3172 Coll.	95972	Y	—	VP
9-9-24	L2221 S#290801	✓	2-19-25	OK	900	10	out	1	8289 Bare 3460 Coll.	96559	Y	—	VP
9-10-24	L2221 S#290801	✓	2-19-25	OK	900	10	out	1	8117 Bare 3234 Coll.	94663	Y	—	VP
9-11-24	L2221 S#290801	✓	2-19-25	OK	900	10	out	1	8529 Bare 3263 Coll.	96573	Y	—	VP
9-17-24	L2221 S#290801	✓	2-19-25	OK	900	10	out	1	8079 Bare 3096 Coll.	97763	Y	—	VP
9-19-24	L2221 S#290801	✓	2-19-25	OK	900	10	out	1	8862 Bare 3380 Coll.	97608	Y	—	VP
10-7-24	L2221 S#290801	✓	2-19-25	OK	900	10	out	1	8805 Bare 3379 Coll.	95735	Y	—	VP
10-8-24	L2221 S#290801	✓	2-19-25	OK	900	10	out	1	8140 Bare 3311 Coll.	97124	Y	—	VP
10-9-24	L2221 S#290801	✓	2-19-25	OK	900	10	out	1	8370 Bare 3145 Coll.	97321	Y	—	VP
10-15-24	L2221 S#290801	✓	2-19-25	OK	900	10	out	1	8242 Bare 3290 Coll.	95964	Y	—	VP
10-16-24	L2221 S#290801	✓	2-19-25	OK	900	10	out	1	8395 Bare 3015 Coll.	95244	Y	—	VP
10-21-24	L2221 S#290801	✓	2-19-25	OK	900	10	out	1	8171 Bare 3070 Coll.	98844	Y	—	VP
10-23-24	L2221 S#290801	✓	2-19-25	OK	900	10	out	1	8167 Bare 3314 Coll.	98553	Y	—	VP

Note: (1) Battery Voltage for Ludlum 2221 must be >5.3 volts; (2) Threshhold must be at 10.0 mV; (3) Window Position must be OUT; (4) CC on L2241-2 set at 0.001
For L2241-2 Check HV and Threshold using Ludlum 500 pulser.

AVM Environmental Services, Inc.
Scaler/Ratemeter - 2" x 2" NaI Detector Function Check

Function Check Source ID: 1% U_3O_8 Ore in Sealed can

2" x 2" NaI Detector ID: SPA-3 S#408522-30

Acceptable background Count (cpm) Range (20%) 6524 to 9786 (Bare)

Acceptable background Count (cpm) Range (20%) 2537 to 3805 (collimated)

Acceptable Source Count (cpm) Range (20%) 77104 to 115656

Date	Scaler/Ratemeter	Physical Check	Cal Due	Battery[1] Volts or OK	HV Volts	THR mV[2]	Window In or OUT[3]	C.C.[4]	BKG Counts cpm	Source Counrts cpm	Within Acceptable Range Y or N	MDC pCi/gm	Tech
2-19-24	L2221 S#290801	✓	2-19-25	ok	900	10	out	1	8351 Bare / 3120 Coll.	96783	y	–	VP
4-7-24	L2221 S#290801	✓	2-19-25	ok	900	10	out	1	8272 Bare / 3110 Coll.	97815	y	–	VP
4-8-24	L2221 S#290801	✓	2-19-25	OK	900	10	out	1	8249 Bare / 3095 Coll.	96288	y	–	VP
4-10-24	L2221 S#290801	✓	2-19-25	Ok	900	10	out	1	8440 Bare / 3065 Coll.	96064	y	–	VP
4-15-24	L2221 S#290801	✓	2-19-25	ok	900	10	out	1	8395 Bare / 3119 Coll.	97475	y	–	VP
4-16-24	L2221 S#290801	✓	2-19-25	ok	900	10	out	1	8411 Bare / 3124 Coll.	96227	y	–	VP
4-17-24	L2221 S#290801	✓	2-19-25	ok	900	10	out	1	8401 Bare / 3193 Coll.	97111	y	–	VP
4-22-24	L2221 S#290801	✓	2-19-25	OK	900	10	out	1	8093 Bare / 3199 Coll.	96431	y	–	VP
4-23-24	L2221 S#290801	✓	2-19-25	ok	900	10	out	1	8205 Bare / 3092 Coll.	95968	y	–	VP
4-30-24	L2221 S#290801	✓	2-19-25	ok	900	10	out	1	8264 Bare / 3263 Coll.	96356	y	–	VP
7-15-24	L2221 S#290801	✓	2-19-25	ok	900	10	out	1	8318 Bare / 3111 Coll.	96914	y	–	VP
7-16-24	L2221 S#290801	✓	2-19-25	ok	900	10	out	1	8211 Bare / 3099 Coll.	97277	y	–	VP
7-17-24	L2221 S#290801	✓	2-19-25	ok	900	10	out	1	8238 Bare / 3221 Coll.	100091	y	–	VP
7-23-24	L2221 S#290801	✓	2-19-25	ok	900	10	out	1	8222 Bare / 3240 Coll.	98144	y	–	VP
8-14-23	L2221 S#290801	✓	2-19-25	ok	900	10	out	1	8120 Bare / 3223 Coll.	98757	y	–	VP
8-22-24	L2221 S#290801	✓	2-19-25	ok	900	10	out	1	8224 Bare / 3204 Coll.	99197	y	–	VP

Note: (1) Battery Voltage for Ludlum 2221 must be >5.3 volts; (2) Threshhold must be at 10.0 mV; (3) Window Position must be OUT; (4) CC on L2241-2 set at 0.001
For L2241-2 Check HV and Threshold using Ludlum 500 pulser.

AVM Environmental Services, Inc.
Micro R Meter Function Check Form

Micro R Meter: Ludlum 19, SR#76248

Function Check Source ID: 1% U_3O_8 Ore in Sealed can

Function Check @ Calibration 135

Acceptable Function Check Reading (uR/hr) Range (20%) 108 to 162

Date	Physical Check	Cal Date	Battery[1] Volts or OK	BKG Reading uR/hr	Source Reading[2] uR/hr	Within Acceptable Range Y or N	Cal Due	Tech
12-16-24	✓	10-4-24	ok	8-10	140	Y	10-4-25	VP
12-18-24	✓	10-4-24	ok	8-10	135	Y	10-4-25	VP
12-19-24	✓	10-4-24	ok	8-10	140	Y	10-4-25	VP
12-23-24	✓	10-4-24	ok	8-10	130	Y	10-4-25	VP
1-7-25	✓	10-4-24	ok	8-10	135	Y	10-4-25	VP
1-16-25	✓	10-4-24	ok	8-10	130	Y	10-4-25	VP
1-17-25	✓	10-4-24	ok	8-10	140	Y	10-4-25	VP
1-23-25	✓	10-4-24	ok	8-10	135	Y	10-4-25	VP
1-27-25	✓	10-4-24	ok	8-10	130	Y	10-4-25	VP
2-5-25	✓	10-4-24	ok	8-10	130	Y	10-4-25	VP
2-6-25	✓	10-4-24	ok	8-10	130	Y	10-4-25	VP
2-10-25	✓	10-4-24	ok	10-12	140	Y	10-4-25	VP
2-13-25	✓	10-4-24	ok	8-10	135	Y	10-4-25	VP
2-19-25	✓	10-4-24	ok	8-10	140	Y	10-4-25	VP
2-20-25	✓	10-4-24	ok	8-10	140	Y	10-4-25	VP

Note: (1) Battery Voltage must be within BAT TEST Range (2) Function Check Source must be placed in the circle on the front side of the meter

AVM Environmental Services, Inc.
Micro R Meter Function Check Form

Micro R Meter: Ludlum 19, SR#76248

Function Check Source ID: 1% U_3O_8 Ore in Sealed can

Function Check @ Calibration 135

Acceptable Function Check Reading (uR/hr) Range (20%) 108 to 162

Date	Physical Check	Cal Date	Battery[1] Volts or OK	BKG Reading uR/hr	Source Reading[2] uR/hr	Within Acceptable Range Y or N	Cal Due	Tech
10-14-24	✓	10-4-24	ok	10-12	130	y	10-4-25	VP
10-15-24	✓	10-4-24	ok	8-10	140	y	10-4-25	VP
10-16-24	✓	10-4-24	ok	8-10	140	y	10-4-25	VP
10-21-24	✓	10-4-24	ok	8-10	130	y	10-4-25	VP
10-23-24	✓	10-4-24	ok	8-10	140	y	10-4-25	VP
10-29-24	✓	10-4-24	ok	8-10	130	y	10-4-25	VP
10-31-24	✓	10-4-24	ok	10-12	130	y	10-4-25	VP
11-11-24	✓	10-4-24	ok	8-10	130	y	10-4-25	VP
11-12-24	✓	10-4-24	ok	8-10	130	y	10-4-25	VP
11-18-24	✓	10-4-24	ok	8-10	140	y	10-4-25	VP
11-20-24	✓	10-4-24	ok	8-10	130	y	10-4-25	VP
11-22-24	✓	10-4-24	ok	8-10	140	y	10-4-25	VP
11-25-24	✓	10-4-24	ok	8-10	140	y	10-4-25	VP
11-26-24	✓	10-4-24	ok	8-10	130	y	10-4-25	VP
12-2-24	✓	10-4-24	ok	8-10	140	y	10-4-25	VP
12-4-24	✓	10-4-24	ok	8-10	130	y	10-4-25	VP
12-11-24	✓	10-4-24	ok	8-10	140	y	10-4-25	VP
12-12-24	✓	10-4-24	ok	8-10	130	y	10-4-25	VP

Note: (1) Battery Voltage must be within BAT TEST Range (2) Function Check Source must be placed in the circle on the front side of the meter

AVM Environmental Services, Inc.
Micro R Meter Function Check Form

Micro R Meter: Ludlum 19, SR#76248

Function Check Source ID: 1% U_3O_8 Ore in Sealed can

Function Check @ Calibration 135

Acceptable Function Check Reading (uR/hr) Range (20%) 108 to 162

Date	Physical Check	Cal Date	Battery(1) Volts or OK	BKG Reading uR/hr	Source Reading (2) uR/hr	Within Acceptable Range Y or N	Cal Due	Tech
9-3-24	✓	11-3-23	OK	8-10	135	Y	11-3-24	VP
9-4-24	✓	11-3-23	OK	8-10	140	Y	11-3-24	VP
9-9-24	✓	11-3-23	OK	8-10	130	Y	11-3-24	VP
9-11-24	✓	11-3-23	ok	8-10	130	Y	11-3-24	VP
9-16-24	✓	11-3-23	ok	8-10	140	Y	11-3-24	VP
9-17-24	✓	11-3-23	ok	10-12	140	Y	11-3-24	VP

Note: (1) Battery Voltage must be within BAT TEST Range (2) Function Check Source must be placed in the circle on the front side of the meter

AVM Environmental Services, Inc.
Micro R Meter Function Check Form

Micro R Meter: Ludlum 19, SR#76248

Function Check Source ID: 1% U_3O_8 Ore in Sealed can

Function Check @ Calibration 135

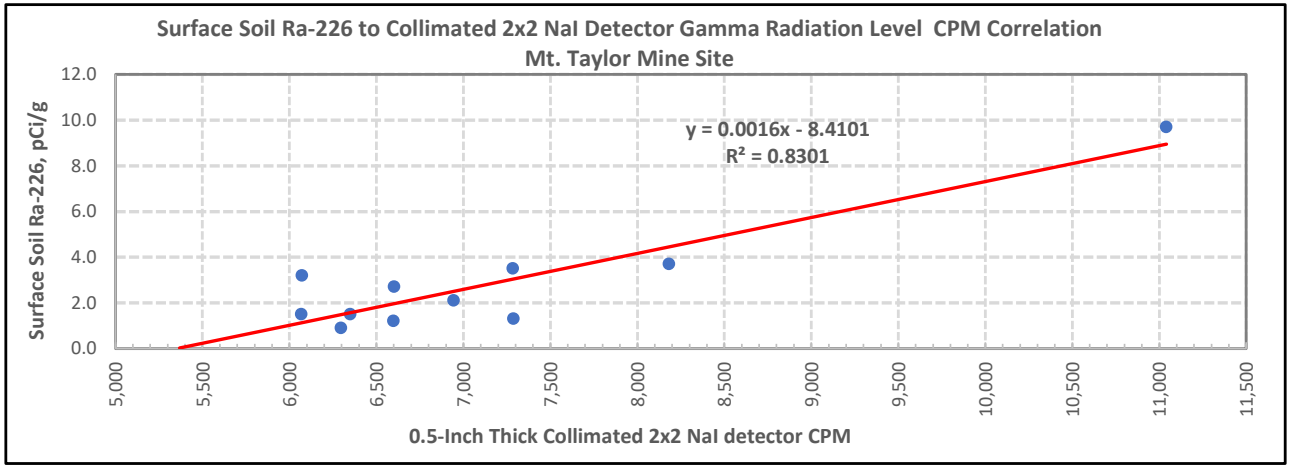
Acceptable Function Check Reading (uR/hr) Range (20%) 108 to 162

Date	Physical Check	Cal Date	Battery[1] Volts or OK	BKG Reading uR/hr	Source Reading[2] uR/hr	Within Acceptable Range Y or N	Cal Due	Tech
11-13-23	✓	11-3-23	ok	10-12	130	y	11-3-24	VP
4-7-24	✓	11-3-23	ok	10-12	140	y	11-3-24	VP
4-8-24	✓	11-3-23	ok	10-12	140	y	11-3-24	VP
4-10-24	✓	11-3-23	ok	10-12	130	y	11-3-24	VP
4-15-24	✓	11-3-23	ok	10-12	130	y	11-3-24	VP
4-16-24	✓	11-3-23	ok	10-12	140	y	11-3-24	VP
4-17-24	✓	11-3-23	ok	10-12	140	y	11-3-24	VP
4-22-24	✓	11-3-23	ok	10-12	130	y	11-3-24	VP
4-23-24	✓	11-3-23	ok	10-12	130	y	11-3-24	VP
4-30-24	✓	11-3-23	ok	10-12	140	y	11-3-24	VP
6-25-24	✓	11-3-23	ok	10-12	140	y	11-3-24	VP
6-26-24	✓	11-3-23	ok	10-12	140	y	11-3-24	VP
7-2-24	✓	11-3-23	ok	10-12	130	y	11-3-24	VP
7-9-24	✓	11-3-23	ok	10-12	140	y	11-3-24	VP
8-14-24	✓	11-3-23	ok	10-12	130	y	11-3-24	VP
8-22-24	✓	11-3-23	ok	10-12	130	y	11-3-24	VP
8-28-24	✓	11-3-23	ok	8-10	140	y	11-3-24	VP
8-30-24	✓	11-3-23	ok	10-12	130	y	11-3-24	VP

Note: (1) Battery Voltage must be within BAT TEST Range (2) Function Check Source must be placed in the circle on the front side of the meter

Surface Soil Ra-226 to Gamma Radiation Level Correlation
Mount Taylor Mine Site

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD83 StatePlane NM West, Feet		Static Gamma Radiation Survey		Sample Laboratory Analysis	Gamma Exposure Rate µR/hr
		Northing	Easting	Bare 2x2 NaI Detector CPM	Collimated (0.5" Pb) 2x2 NaI Detector CPM	Ra-226 pCi/g	
05/17/23	WBSB-01	1,581,413	2,782,866	26,897	6,297	**0.9**	33
05/17/23	WBSB-02	1,581,390	2,782,444	26,749	6,350	**1.5**	33
05/17/23	WBSB-03	1,581,356	2,783,329	24,529	6,073	**3.2**	31
05/17/23	WBSB-04	1,581,339	2,782,706	30,064	6,069	**1.5**	37
05/17/23	WBSB-05	1,581,329	2,783,062	31,828	6,945	**2.1**	41
05/17/23	WBSB-06	1,581,271	2,782,942	35,410	7,288	**1.3**	47
05/17/23	WBSB-07	1,581,187	2,783,253	37,965	8,183	**3.7**	47
05/17/23	WBSB-08	1,581,164	2,782,988	55,849	11,042	**9.7**	70
05/31/23	WBSB-09	1,581,254	2,782,870	36,491	6,599	**1.2**	44
05/31/23	WBSB-10	1,581,263	2,783,140	34,898	7,286	**3.5**	48
05/31/23	WBSB-11	1,581,277	2,783,335	29,002	6,602	**2.7**	34



SUMMARY OUTPUT

Regression Statistics

Multiple R	0.91
R Square	0.83
Adjusted R Square	0.81
Standard Error	1.08
Observations	11

ANOVA

	df	SS	MS	F	Significance F
Regression	1	50.92	50.92	43.97	9.58E-05
Residual	9	10.42	1.16		
Total	10	61.35			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	-8.41	1.73	-4.87	0.00089	-12.32	-4.50	-12.32	-4.50
X Variable 1	0.00	0.00	6.63	0.00010	0.00104	0.00211	0.00104	0.00211

Appendix C
Soil Sample COC and Laboratory Analytical Results Report

ENERGY LABORATORIES
Trust our People. Trust our Data.
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Billings, MT 406.252.6325 • Casper, WY 307.235.0515
Gillette, WY 307.686.7175 • Helena, MT 406.442.0711

ANALYTICAL SUMMARY REPORT

January 31, 2025

Rio Grande Resources Corporation
PO Box 1150
Grants, NM 87020-1150

Work Order: C24120480 Quote ID: C16056

AUM - North Control Area Sampling

Project Name: MTM NCA Characterization

Energy Laboratories, Inc. Casper WY received the following 12 samples for Rio Grande Resources Corporation on 12/18/2024 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C24120480-001	TP-01 [6-12]Inches	10/08/24 9:30	12/18/24	Soil	Gamma Sample Preparation Drying/Grinding, Radiochemistry Gross Gamma
C24120480-002	Inv-07 [1.5-2]Feet	10/08/24 10:55	12/18/24	Soil	Same As Above
C24120480-003	TP-13 [6-12]Inches	10/09/24 8:40	12/18/24	Soil	Same As Above
C24120480-004	TP-19 [4.5-5]Feet	10/16/24 8:45	12/18/24	Soil	Same As Above
C24120480-005	TP-24 [6-12]Inches	10/16/24 10:20	12/18/24	Soil	Same As Above
C24120480-006	TP-40 [6-12]Inches	10/28/24 10:35	12/18/24	Soil	Same As Above
C24120480-007	TP-22 [1.5-2]Feet	10/28/24 11:20	12/18/24	Soil	Same As Above
C24120480-008	TP-33 [6-12]Inches	11/25/24 11:00	12/18/24	Soil	Same As Above
C24120480-009	TP-30 [6-12]Inches	12/04/24 8:30	12/18/24	Soil	Same As Above
C24120480-010	TP-32 [1-1.5]Feet	12/09/24 9:50	12/18/24	Soil	Same As Above
C24120480-011	TP-34 [2-3]Feet	12/11/24 9:15	12/18/24	Soil	Same As Above
C24120480-012	DS-NCA-01 [6-12]Inches	12/11/24 10:00	12/18/24	Soil	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 2393 Salt Creek Hwy, Casper, WY 82601-9601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

Energy Laboratories, Inc. verifies the reported results for the analysis has been technically reviewed and approved for release.

If you have any questions regarding these test results, please contact your Project Manager.

Ashley Wilson
Project Manager

Digitally signed by
Ashley L. Wilson
Date: 2025.01.31 08:26:17 -07:00

CLIENT: Rio Grande Resources Corporation
Project: MTM NCA Characterization
Work Order: C24120480

Report Date: 01/31/25

CASE NARRATIVE

ORIGINAL SAMPLE SUBMITTAL(S)
All original sample submittals have been returned with the data package.

SAMPLE TEMPERATURE COMPLIANCE: 4°C (±2°C)
Temperature of samples received may not be considered properly preserved by accepted standards. Samples that are hand delivered immediately after collection shall be considered acceptable if there is evidence that the chilling process has begun.

GROSS ALPHA ANALYSIS
Method 900.0 for gross alpha and gross beta is intended as a drinking water method for low TDS waters. Data provided by this method for non potable waters should be viewed as inconsistent.

RADON IN AIR ANALYSIS
The desired exposure time is 48 hours (2 days). The time delay in returning the canister to the laboratory for processing should be as short as possible to avoid excessive decay. Maximum recommended delay between end of exposure to beginning of counting should not exceed 8 days.

SOIL/SOLID SAMPLES
All samples reported on an as received basis unless otherwise indicated.

ATRAZINE, SIMAZINE AND PCB ANALYSIS
Data for PCBs, Atrazine and Simazine are reported from EPA 525.2. PCB data reported by ELI reflects the results for seven individual Aroclors. When the results for all seven are ND (not detected), the sample meets EPA compliance criteria for PCB monitoring.

SUBCONTRACTING ANALYSIS
Subcontracting of sample analyses to an outside laboratory may be required. If so, ENERGY LABORATORIES will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

BRANCH LABORATORY LOCATIONS
eli-b - Energy Laboratories, Inc. - Billings, MT
eli-g - Energy Laboratories, Inc. - Gillette, WY
eli-h - Energy Laboratories, Inc. - Helena, MT

ISO 17025 DISCLAIMER:
The results of this Analytical Report relate only to the items submitted for analysis.

ENERGY LABORATORIES, INC. - CASPER,WY certifies that certain method selections contained in this report meet requirements as set forth by the above accrediting authorities. Some results requested by the client may not be covered under these certifications. All analysis data to be submitted for regulatory enforcement should be certified in the sample state of origin. Please verify ELI's certification coverage by visiting www.energylab.com

ELI appreciates the opportunity to provide you with this analytical service. For additional information and services visit our web page www.energylab.com.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM NCA Characterization
Lab ID: C24120480-001
Client Sample ID: TP-01 [6-12]

Report Date: 01/31/25
Collection Date: 10/08/24 09:30
DateReceived: 12/18/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	-0.6	pCi/g-dry	U			E901.1M	01/21/25 09:56 / haw
Radium 224 precision (±)	2.2	pCi/g-dry				E901.1M	01/21/25 09:56 / haw
Radium 224 MDC	3.6	pCi/g-dry				E901.1M	01/21/25 09:56 / haw
Radium 226	1.2	pCi/g-dry				E901.1M	01/21/25 09:56 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	01/21/25 09:56 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	01/21/25 09:56 / haw
Radium 228	1.7	pCi/g-dry				E901.1M	01/21/25 09:56 / haw
Radium 228 precision (±)	0.4	pCi/g-dry				E901.1M	01/21/25 09:56 / haw
Radium 228 MDC	0.4	pCi/g-dry				E901.1M	01/21/25 09:56 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM NCA Characterization
Lab ID: C24120480-002
Client Sample ID: Inv-07 [1.5-2]

Report Date: 01/31/25
Collection Date: 10/08/24 10:55
DateReceived: 12/18/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1.0	pCi/g-dry	U			E901.1M	01/21/25 11:59 / haw
Radium 224 precision (±)	2.5	pCi/g-dry				E901.1M	01/21/25 11:59 / haw
Radium 224 MDC	4.2	pCi/g-dry				E901.1M	01/21/25 11:59 / haw
Radium 226	8.6	pCi/g-dry				E901.1M	01/21/25 11:59 / haw
Radium 226 precision (±)	0.4	pCi/g-dry				E901.1M	01/21/25 11:59 / haw
Radium 226 MDC	0.3	pCi/g-dry				E901.1M	01/21/25 11:59 / haw
Radium 228	0.3	pCi/g-dry	U			E901.1M	01/21/25 11:59 / haw
Radium 228 precision (±)	0.4	pCi/g-dry				E901.1M	01/21/25 11:59 / haw
Radium 228 MDC	0.6	pCi/g-dry				E901.1M	01/21/25 11:59 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM NCA Characterization
Lab ID: C24120480-003
Client Sample ID: TP-13 [6-12]

Report Date: 01/31/25
Collection Date: 10/09/24 08:40
DateReceived: 12/18/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1.1	pCi/g-dry	U			E901.1M	01/21/25 14:11 / haw
Radium 224 precision (±)	2.7	pCi/g-dry				E901.1M	01/21/25 14:11 / haw
Radium 224 MDC	4.4	pCi/g-dry				E901.1M	01/21/25 14:11 / haw
Radium 226	7.2	pCi/g-dry				E901.1M	01/21/25 14:11 / haw
Radium 226 precision (±)	0.4	pCi/g-dry				E901.1M	01/21/25 14:11 / haw
Radium 226 MDC	0.3	pCi/g-dry				E901.1M	01/21/25 14:11 / haw
Radium 228	1.5	pCi/g-dry				E901.1M	01/21/25 14:11 / haw
Radium 228 precision (±)	0.4	pCi/g-dry				E901.1M	01/21/25 14:11 / haw
Radium 228 MDC	0.5	pCi/g-dry				E901.1M	01/21/25 14:11 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM NCA Characterization
Lab ID: C24120480-004
Client Sample ID: TP-19 [4.5-5]

Report Date: 01/31/25
Collection Date: 10/16/24 08:45
DateReceived: 12/18/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.8	pCi/g-dry	U			E901.1M	01/21/25 17:35 / haw
Radium 224 precision (±)	2.0	pCi/g-dry				E901.1M	01/21/25 17:35 / haw
Radium 224 MDC	3.3	pCi/g-dry				E901.1M	01/21/25 17:35 / haw
Radium 226	1.1	pCi/g-dry				E901.1M	01/21/25 17:35 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	01/21/25 17:35 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	01/21/25 17:35 / haw
Radium 228	1.2	pCi/g-dry				E901.1M	01/21/25 17:35 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	01/21/25 17:35 / haw
Radium 228 MDC	0.4	pCi/g-dry				E901.1M	01/21/25 17:35 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM NCA Characterization
Lab ID: C24120480-005
Client Sample ID: TP-24 [6-12]

Report Date: 01/31/25
Collection Date: 10/16/24 10:20
DateReceived: 12/18/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	-0.8	pCi/g-dry	U			E901.1M	01/22/25 09:54 / haw
Radium 224 precision (±)	2.5	pCi/g-dry				E901.1M	01/22/25 09:54 / haw
Radium 224 MDC	4.1	pCi/g-dry				E901.1M	01/22/25 09:54 / haw
Radium 226	3.8	pCi/g-dry				E901.1M	01/22/25 09:54 / haw
Radium 226 precision (±)	0.3	pCi/g-dry				E901.1M	01/22/25 09:54 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	01/22/25 09:54 / haw
Radium 228	1.4	pCi/g-dry				E901.1M	01/22/25 09:54 / haw
Radium 228 precision (±)	0.4	pCi/g-dry				E901.1M	01/22/25 09:54 / haw
Radium 228 MDC	0.4	pCi/g-dry				E901.1M	01/22/25 09:54 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM NCA Characterization
Lab ID: C24120480-006
Client Sample ID: TP-40 [6-12]

Report Date: 01/31/25
Collection Date: 10/28/24 10:35
DateReceived: 12/18/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	-0.4	pCi/g-dry	U			E901.1M	01/22/25 14:26 / haw
Radium 224 precision (±)	2.4	pCi/g-dry				E901.1M	01/22/25 14:26 / haw
Radium 224 MDC	4.0	pCi/g-dry				E901.1M	01/22/25 14:26 / haw
Radium 226	1.1	pCi/g-dry				E901.1M	01/22/25 14:26 / haw
Radium 226 precision (±)	0.3	pCi/g-dry				E901.1M	01/22/25 14:26 / haw
Radium 226 MDC	0.3	pCi/g-dry				E901.1M	01/22/25 14:26 / haw
Radium 228	1.7	pCi/g-dry				E901.1M	01/22/25 14:26 / haw
Radium 228 precision (±)	0.4	pCi/g-dry				E901.1M	01/22/25 14:26 / haw
Radium 228 MDC	0.4	pCi/g-dry				E901.1M	01/22/25 14:26 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM NCA Characterization
Lab ID: C24120480-007
Client Sample ID: TP-22 [1.5-2]

Report Date: 01/31/25
Collection Date: 10/28/24 11:20
DateReceived: 12/18/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.9	pCi/g-dry	U			E901.1M	01/22/25 16:28 / haw
Radium 224 precision (±)	2.3	pCi/g-dry				E901.1M	01/22/25 16:28 / haw
Radium 224 MDC	3.9	pCi/g-dry				E901.1M	01/22/25 16:28 / haw
Radium 226	1.1	pCi/g-dry				E901.1M	01/22/25 16:28 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	01/22/25 16:28 / haw
Radium 226 MDC	0.3	pCi/g-dry				E901.1M	01/22/25 16:28 / haw
Radium 228	2.0	pCi/g-dry				E901.1M	01/22/25 16:28 / haw
Radium 228 precision (±)	0.4	pCi/g-dry				E901.1M	01/22/25 16:28 / haw
Radium 228 MDC	0.5	pCi/g-dry				E901.1M	01/22/25 16:28 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM NCA Characterization
Lab ID: C24120480-008
Client Sample ID: TP-33 [6-12]

Report Date: 01/31/25
Collection Date: 11/25/24 11:00
DateReceived: 12/18/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.4	pCi/g-dry	U			E901.1M	01/22/25 18:30 / haw
Radium 224 precision (±)	2.3	pCi/g-dry				E901.1M	01/22/25 18:30 / haw
Radium 224 MDC	3.8	pCi/g-dry				E901.1M	01/22/25 18:30 / haw
Radium 226	1.1	pCi/g-dry				E901.1M	01/22/25 18:30 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	01/22/25 18:30 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	01/22/25 18:30 / haw
Radium 228	1.7	pCi/g-dry				E901.1M	01/22/25 18:30 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	01/22/25 18:30 / haw
Radium 228 MDC	0.4	pCi/g-dry				E901.1M	01/22/25 18:30 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM NCA Characterization
Lab ID: C24120480-009
Client Sample ID: TP-30 [6-12]

Report Date: 01/31/25
Collection Date: 12/04/24 08:30
DateReceived: 12/18/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.8	pCi/g-dry	U			E901.1M	01/23/25 09:57 / haw
Radium 224 precision (±)	2.2	pCi/g-dry				E901.1M	01/23/25 09:57 / haw
Radium 224 MDC	3.6	pCi/g-dry				E901.1M	01/23/25 09:57 / haw
Radium 226	1.6	pCi/g-dry				E901.1M	01/23/25 09:57 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	01/23/25 09:57 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	01/23/25 09:57 / haw
Radium 228	1.5	pCi/g-dry				E901.1M	01/23/25 09:57 / haw
Radium 228 precision (±)	0.4	pCi/g-dry				E901.1M	01/23/25 09:57 / haw
Radium 228 MDC	0.4	pCi/g-dry				E901.1M	01/23/25 09:57 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM NCA Characterization
Lab ID: C24120480-010
Client Sample ID: TP-32 [1-1.5]

Report Date: 01/31/25
Collection Date: 12/09/24 09:50
DateReceived: 12/18/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1	pCi/g-dry	U			E901.1M	01/23/25 12:14 / haw
Radium 224 precision (±)	2.3	pCi/g-dry				E901.1M	01/23/25 12:14 / haw
Radium 224 MDC	3.8	pCi/g-dry				E901.1M	01/23/25 12:14 / haw
Radium 226	1.4	pCi/g-dry				E901.1M	01/23/25 12:14 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	01/23/25 12:14 / haw
Radium 226 MDC	0.3	pCi/g-dry				E901.1M	01/23/25 12:14 / haw
Radium 228	1.9	pCi/g-dry				E901.1M	01/23/25 12:14 / haw
Radium 228 precision (±)	0.4	pCi/g-dry				E901.1M	01/23/25 12:14 / haw
Radium 228 MDC	0.4	pCi/g-dry				E901.1M	01/23/25 12:14 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM NCA Characterization
Lab ID: C24120480-011
Client Sample ID: TP-34 [2-3]

Report Date: 01/31/25
Collection Date: 12/11/24 09:15
DateReceived: 12/18/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.9	pCi/g-dry	U			E901.1M	01/23/25 14:16 / haw
Radium 224 precision (±)	2.2	pCi/g-dry				E901.1M	01/23/25 14:16 / haw
Radium 224 MDC	3.6	pCi/g-dry				E901.1M	01/23/25 14:16 / haw
Radium 226	1.3	pCi/g-dry				E901.1M	01/23/25 14:16 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	01/23/25 14:16 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	01/23/25 14:16 / haw
Radium 228	1.8	pCi/g-dry				E901.1M	01/23/25 14:16 / haw
Radium 228 precision (±)	0.4	pCi/g-dry				E901.1M	01/23/25 14:16 / haw
Radium 228 MDC	0.4	pCi/g-dry				E901.1M	01/23/25 14:16 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM NCA Characterization
Lab ID: C24120480-012
Client Sample ID: DS-NCA-01 [6-12]

Report Date: 01/31/25
Collection Date: 12/11/24 10:00
DateReceived: 12/18/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1.0	pCi/g-dry	U			E901.1M	01/23/25 16:36 / haw
Radium 224 precision (±)	2.7	pCi/g-dry				E901.1M	01/23/25 16:36 / haw
Radium 224 MDC	4.5	pCi/g-dry				E901.1M	01/23/25 16:36 / haw
Radium 226	7.1	pCi/g-dry				E901.1M	01/23/25 16:36 / haw
Radium 226 precision (±)	0.4	pCi/g-dry				E901.1M	01/23/25 16:36 / haw
Radium 226 MDC	0.3	pCi/g-dry				E901.1M	01/23/25 16:36 / haw
Radium 228	1.6	pCi/g-dry				E901.1M	01/23/25 16:36 / haw
Radium 228 precision (±)	0.4	pCi/g-dry				E901.1M	01/23/25 16:36 / haw
Radium 228 MDC	0.4	pCi/g-dry				E901.1M	01/23/25 16:36 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Casper, WY Branch

Work Order: C24120480 **Report Date:** 01/24/25

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E901.1M										Batch: R313846
Lab ID: MB-313846	9	Method Blank				Run: GAM-HPGE 2_250116A			01/16/25 10:01	
Radium 224		1	pCi/g-dry							
Radium 224 precision (±)		0.7	pCi/g-dry							
Radium 224 MDC		1	pCi/g-dry							
Radium 226		0.07	pCi/g-dry							U
Radium 226 precision (±)		0.1	pCi/g-dry							
Radium 226 MDC		0.2	pCi/g-dry							
Radium 228		0.1	pCi/g-dry							U
Radium 228 precision (±)		0.2	pCi/g-dry							
Radium 228 MDC		0.2	pCi/g-dry							
Lab ID: LCS-313846	6	Laboratory Control Sample				Run: GAM-HPGE 2_250116A			01/16/25 11:06	
Cobalt 60		340	pCi/g-dry		108	70	130			
Cobalt 60 precision (±)		3.8	pCi/g-dry							
Cobalt 60 MDC		1.1	pCi/g-dry							
Lead 210		1900	pCi/g-dry		109	70	130			
Lead 210 precision (±)		19	pCi/g-dry							
Lead 210 MDC		18	pCi/g-dry							
Lab ID: C24120480-005ADUP	9	Sample Duplicate				Run: GAM-HPGE 2_250116A			01/22/25 11:56	
Radium 224		0.59	pCi/g-dry					1300	30	UR
Radium 224 precision (±)		2.4	pCi/g-dry							
Radium 224 MDC		4.1	pCi/g-dry							
Radium 226		3.7	pCi/g-dry					2.3	30	
Radium 226 precision (±)		0.30	pCi/g-dry							
Radium 226 MDC		0.28	pCi/g-dry							
Radium 228		1.2	pCi/g-dry					14	30	
Radium 228 precision (±)		0.41	pCi/g-dry							
Radium 228 MDC		0.55	pCi/g-dry							

- Duplicate RPD for Ra224 is outside of the acceptance range for this analysis. However, the RER is less than or equal to the limit of 3. The RER result is 0.41.
- The RER result for Ra226 is 0.22 and Ra228 is 0.34.

Qualifiers:

RL - Analyte Reporting Limit

R - Relative Percent Difference (RPD) exceeds advisory limit

ND - Not detected at the Reporting Limit (RL)

U - Not detected

Work Order Receipt Checklist

Rio Grande Resources Corporation C24120480

Login completed by: Cristen C. Smith
Date Received: 12/18/2024
Reviewed by: lquezada
Received by: SLR
Reviewed Date: 12/19/2024
Carrier name: Return UPS Ground

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	4.0°C No Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

For methods that require zero headspace or require preservation check at the time of analysis due to potential interference, the pH is verified at analysis. Nonconforming sample pH is documented as part of the analysis and included in the sample analysis comments.

Trip Blanks and/or Blind Duplicate samples are assigned the earliest collection time for the associated requested analysis in order to evaluate the holding time unless specifically indicated.

Contact and Corrective Action Comments:

None

Laboratory Certifications and Accreditations

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	Agency	Number
Billings, MT	Alaska	17-023
	California	3087
	Colorado	MT00005
	Department of Defense (DoD)/ISO17025	ADE-2588
	Florida (Primary NELAP)	E87668
	Idaho	MT00005
	Louisiana	05079
	Montana	CERT0044
	Nebraska	NE-OS-13-04
	Nevada	NV-C24-00250
	North Dakota	R-007
	National Radon Proficiency	109383-RMP
	Oregon	4184
	South Dakota	ARSD 74:04:07
	Texas	TX-C24-00302
	US EPA Region VIII	Reciprocal
	USDA Soil Permit	P330-20-00170
	Washington	C1039
Casper, WY	Alaska	20-006
	California	3021
	Colorado	WY00002
	Florida (Primary NELAP)	E87641
	Idaho	WY00002
	Louisiana	05083
	Montana	CERT0002
	Nebraska	NE-OS-08-04
	Nevada	NV-C24-00245
	North Dakota	R-125
	Oregon	WY200001
	South Dakota	WY00002
	Texas	T104704181-23-21
	US EPA Region VIII	WY00002
	USNRC License	49-26846-01
	Washington	C1012
Gillette, WY	US EPA Region VIII	WY00006
Helena, MT	Colorado	MT00945
	Montana	CERT0079
	Nevada	NV-C24-00119
	US EPA Region VIII	Reciprocal
	USDA Soil Permit	P330-20-00090

Chain of Custody & Analytical Request Record

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Account Information (Billing information)

Company/Name	Rio Grande Resources Corporation
Contact	Anita Willcox
Phone	505-287-7971
Mailing Address	PO Box 1150
City, State, Zip	Grants, NM 87020
Email	anita.willcox@ga.com
Receive Invoice	☐Hard Copy ☒Email
Receive Report	☐Hard Copy ☒Email
Purchase Order	MT11820
Quote	
Bottle Order	

Report Information (if different than Account Information)

Company/Name	AVM Environmental Services, Inc.
Contact	Victor Patel
Phone	505-287-4593
Mailing Address	1717 Del Norte Blvd
City, State, Zip	Grants, NM 87020
Email	vpatelavm@outlook.com
Receive Report	☐Hard Copy ☒Email

Special Report/Formats: ☐ LEVEL IV ☐NELAC ☐ EDD/EDT (contact laboratory) ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	MTM NCA Characterization
Sampler Name	Victor Patel
Sampler Phone	505-287-4593
Sample Origin State	New Mexico
EPA/State Compliance	☐Yes ☒No

URANIUM MINING CLIENTS MUST Indicate sample type
☒ Unprocessed Ore
☐ Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11(e)2 Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Oil
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	EPA 901.1 Modified for soil	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	TP-01 6"-12"	10/08/2024	9:30 am	1	S	✓			C24120480
2	Inv-07 1.5'-2'	10/08/2024	10:55 am	1	S	✓			
3	TP-13 6"-12"	10/09/2024	8:40 am	1	S	✓			
4	TP-19 4.5'-5'	10/16/2024	8:45 am	1	S	✓			
5	TP-24 6"-12"	10/16/2024	10:20 am	1	S	✓			
6	TP-40 6"-12"	10/28/2024	10:35 am	1	S	✓			
7	TP-22 1.5'-2'	10/28/2024	11:20 am	1	S	✓			
8	TP-33 6"-12"	11/25/2024	11:00 am	1	S	✓			
9	TP-30 6"-12"	12/04/2024	8:30 am	1	S	✓			

ELI is REQUIRED to provide preservative traceability. If the preservatives supplied with the bottle order were NOT used, please attach your preservative information with this COC.

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Victor Patel	12-10-24 / 10:00			1030	
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Shelby Richins	12/19/24	

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ELI-COC-01/21 v.4

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Account Information (Billing information)

Company/Name	Rio Grande Resources Corporation
Contact	Anita Willcox
Phone	505-287-7971
Mailing Address	PO Box 1150
City, State, Zip	Grants, NM 87020
Email	anita.willcox@ga.com
Receive Invoice	☐Hard Copy ☒Email
Receive Report	☐Hard Copy ☒Email
Purchase Order	MT11820
Quote	
Bottle Order	

Report Information (if different than Account Information)

Company/Name	AVM Environmental Services, Inc.
Contact	Victor Patel
Phone	505-287-4593
Mailing Address	1717 Del Norte Blvd
City, State, Zip	Grants, NM 87020
Email	vpatelavm@outlook.com
Receive Report	☐Hard Copy ☒Email

Special Report/Formats: ☐ LEVEL IV ☐NELAC ☐ EDD/EDT (contact laboratory) ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	MTM NCA Characterization
Sampler Name	Victor Patel
Sampler Phone	505-287-4593
Sample Origin State	New Mexico
EPA/State Compliance	☐ Yes ☒ No

URANIUM MINING CLIENTS MUST indicate sample type
☒ Unprocessed Ore
☐ Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11(e)2 Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes

A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Oil
DW - Drinking Water

Analysis Requested

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	EPA 901.1 Modified for soil	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	TP-32 1'-1.5'	12/09/2024	9:50 am	1	S	✓			C24120480
2	TP-34 2'-3'	12/11/2024	9:15 am	1	S	✓			
3	DS-NCA-01 6"-12"	12/11/2024	10:00 am	1	S	✓			
4									
5									
6									
7									
8									
9									

ELI is REQUIRED to provide preservative traceability. If the preservatives supplied with the bottle order were **NOT** used, please attach your preservative information with this COC.

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Victor Patel	12-16-24 / 1000			1030	
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Sheila R. Childs	12/18/24	

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In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

South Controlled Area Soil Radiologic Characterization

Mt. Taylor Mine Site
San Mateo, NM

Prepared by:
AVM Environmental Services, Inc.
1717 Del Norte Blvd.
Grants, NM 87020

Prepared for:
Rio Grande Resource Corporation
PO Box 1150
Grants, NM 87020

February 2026

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Appendices

Appendix A Surface and Subsurface Contamination Field Investigation Documentation (Soil Sample Log Forms, Field Soil Sample Ex-Situ Gamma Radiation Screening Forms)
Appendix B Radiologic Instrument Calibration, Operational Function Check, and Gamma Survey Detector Correlation Documentation
Appendix C Soil Sample COC and Laboratory Analytical Results Report

1.0 Introduction and Background

This report provides the results of the South Controlled Area (SCA) Soil Radiologic Characterization (SRC) that was conducted at the Mt. Taylor Mine (Site) in Cibola County, near San Mateo, New Mexico. This SRC was performed to check the status and estimate radiologic contamination in soil that exceeds the Site Radiation Cleanup Criteria (RCC) of 6.8 pCi/g Radium (Ra)-226, which is also used as the Site Investigation Level (IL). The SCA SRC area includes the Borrow Area C, County Road 334, the Service and Support Area, West Offsite Area and the Recognized Data Gap Area, as shown in Figure 1. The Mine Compound Area within the Services and Support Area was previously characterized and was not included in this SRC. The methods and procedures used during this SRC were consistent with the agency approved June 2020 Work Plan for Post-Mining Radiological Surveys of Permit Area and Impacted Lands (Work Plan), and applicable survey methods described in the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM, EPA 2000a). The RCC specified in the March 2016 *Joint Guidance for the Cleanup and Reclamation of Existing Uranium Mining Operations in New Mexico* (EMNRD, 2016) (2016 Guidance) by the Energy, Minerals & Natural Resources Department (EMNRD) and the New Mexico Environment Department (NMED) was used for the SCA SRC investigation level (IL). The Ra-226 cleanup criteria of 5.0 pCi/g above the background level in land averaged over 100 square meters in surface soil (top six inches) specified in the Joint Guidance is taken from the UMTRCA (40 CFR 192) regulation, which is based on an unrestricted land use exposure scenario. Thus, a 6.8 pCi/g Ra-226 IL (5.0 pCi/g plus 1.8 pCi/g background level) has been established for the Site.

The Site was an underground uranium mine located in Cibola County, near San Mateo, New Mexico. The mine was developed by Gulf Mineral Resources Company (Gulf) in the 1970s, and ore production occurred from 1979 to 1982. Following the transfer of the Site to Chevron Resources Company in 1985, the ore production resumed and continued until 1990. Rio Grande Resources (RGR) acquired the Site in 1991. In 1999 the Site entered standby status under Mine Permit C1002RE with EMNRD. On December 29, 2017, the permit changed to an active status, and on December 3, 2019, RGR notified EMNRD of its intentions to begin the Site closeout/closure process.

The following sections describe the strategy, methods and procedures that were used and the results of the SCA SRC conducted at the Site.

2.0 Previous Radiologic Characterizations

Surface gamma radiation surveys were performed periodically within operationally controlled areas of the Site, including within the SCA, to monitor changes in radiological conditions during a period of remedial excavations in the Mine Water Treatment Ponds, the construction of the disposal cell, placement of contaminated mine materials, and the gradual removal of ore from the Ore Pad stockpile. The most recent gamma survey conducted in the SCA SRC area prior to this characterization was conducted in March 2020

and showed gamma radiation levels exceeding the 6.8 pCi/g Ra-226 IL in numerous areas within the SCA. The 2020 gamma survey results are summarized in the Work Plan.

3.0 Objective of the Soil Radiological Characterization

The Site is a former uranium mine, therefore the surface and subsurface soil is expected to be impacted by radionuclides associated with the uranium decay series, with Ra-226 being the primary Constituent of Concern (COC). The objective of this characterization is to evaluate Ra-226 contamination exceeding the 6.8 pCi/g Ra-226 IL in surface and subsurface soils to facilitate the estimation of the volume of radiologic impacted soil within the SCA SRC area.

4.0 Field Investigation

Field investigations for this SCA SRC were conducted consistent with the Work Plan and were performed during the period of April 2025 through September 30, 2025. The field investigation included both 0.5-inch thick lead collimated and bare (uncollimated) 2x2 sodium iodide (NaI) detector Differential Global Positioning System (DGPS) based gamma radiation scan surveys, and measurements. Additionally, static gamma radiation surveys, soil sampling, ex-situ soil screening, and offsite vendor laboratory confirmatory sample analysis were utilized during this SRC. The DGPS based gamma scan surveys were conducted to provide lateral Ra-226 concentration level estimates in surface soils. To assess subsurface radiological contamination, areas of potentially similar vertical extent of contamination were selected based on the DGPS gamma scan surveys data point (DP) locations for static gamma surveys and subsurface soil samples were selected to provide for an areal contamination depth profile estimation. Ex-situ gamma radiation soil screening was performed on the soil samples collected to provide real-time information to estimate surface and subsurface Ra-226 contamination levels. Offsite vender laboratory soil sample analysis was utilized to confirm the contamination levels assessed by the onsite real time ex-situ soil screening.

4.1 Surface Gamma Radiation Scan and Static Surveys

The instrument configuration used for direct gamma radiation level measurements during this characterization consisted of 0.5 inch thick lead collimated and bare 2x2 NaI scintillation detectors (Eberline SPA-3 or Ludlum 44-10) coupled to a scaler/rate meter, such as a Ludlum 2221, Ludlum 2241 or Ludlum 3000. This instrument configuration is widely used for this type of survey and is recommended by the MARSSIM. The scaler/rate meters were interfaced with a sub-meter accurate DGPS with surveying software and a data logger/controller for electronically recording the gamma radiation levels to the corresponding geo-location coordinates. The coordinate system used for this work was the State Plane Coordinate System (NAD83, New Mexico West, US Feet) system. The direct gamma radiation surveys using a NaI scintillation detector provides radiation levels in counts per minute (cpm).

During this characterization, systematic gamma radiation scan surveys using bare 2x2 NaI detectors were performed to estimate the level of Ra-226 in surface soil within the characterization areas. Although bare detectors do not avoid lateral gamma radiation shine, bare detectors have a large field of view and provide a large scan coverage area for an efficient and conservative lateral extent of contamination assessment. To better characterize the surface soil and to assist in the selection of data point locations, the surface gamma scan survey was performed at a higher density, 25-feet transect spacing, compared to the March 2020 scan density of about 60-ft transect spacing. Based on a conservative field of view (FOV) of about ten feet diameter for a bare 2x2 NaI detector for Ra-226 gamma radiation, scanning transects spacing of 25 feet would provide at least a 40% scan coverage, which is sufficient to identify and characterize any surface soil contamination. Twenty-five feet spaced geo-projected transects within the SCA were digitally created using a mapping software and loaded on the field data logger/controller. The gamma scan survey was performed by scanning along these transects with the detector at 12 inches above the ground surface at a scan rate of about three feet per second, with a data collection time interval of two seconds. A Bare detector gamma scan survey was performed in areas away from the Ore Pad, which could result in lateral gamma radiation shine. In areas located near the Ore Pad, a 0.5 inch thick lead collimated detector was used to mitigate lateral gamma radiation shine. The bare/collimated detector gamma scan boundary is shown in Figure 2.

The geo-located gamma scan data includes the gamma scan point ID number, date and time, location coordinates, and detector cpm. The scan data was exported from the data logger and the bare detector cpm were converted to equivalent Ra-226 estimate using the Site-specific correlation (Ra-226 pCi/g = 0.0005 x CPM)-7.32 R^2 = 0.97). The collimated detector cpm data was converted to equivalent Ra-226 pCi/g estimate using the Site-specific correlation (Ra-226 pCi/g = 0.0016 x CPM)-7.5 R^2 = 0.83). The 20,357 discrete gamma scan points collected during the gamma scan survey were exported from the scan system and the detector cpm data was converted into the equivalent estimated surface soil Ra-226 pCi/g concentration using the appropriate Site-specific correlation. The data was then plotted using a mapping software, shown in Figure 2, and arranged in graduated color ranges, then reviewed to identify areas that exceeded the Ra-226 IL. A typical gamma scan data export table from the scan system data logger and estimated Ra-226 concentration calculated using the correlation equation is shown in Table 1. Gamma scan survey data collected during this characterization are provided in an electronic file.

As previously discussed, areas of potentially similar vertical extent of contamination were selected based on the DGPS gamma scan surveys. A total of 49 data point locations (shown in Figure 3) were selected within these areas for the estimation of the vertical extent of Ra-226 contamination above the Site IL. A one-minute collimated detector static gamma radiation survey was performed at each data point location to estimate the surface soil Ra-226 levels prior to test pit excavation or collecting of any soil samples.

4.2 Soil Sampling and Ex-Situ Gamma Radiation Soil Screening

Two data point locations (DP-01 and DP-02) were selected on the southeast edge of Borrow Area C to verify surface soil Ra-226 levels where the gamma scan survey data showed Ra-226 concentrations slightly above

the IL, which was suspected to be due to lateral gamma shine from the nearby Ore Pad Area. Subsurface soil sampling was performed at these two locations. Additionally, data point locations DP-3 and DP-14 were selected at locations where the gamma scan survey data showed an isolated area with Ra-226 levels slightly above the IL. The locations were visually inspected and a one-minute collimated detector static gamma measurement was performed at each location to determine if subsurface soil sampling was necessary. The survey data was recorded on Static Gamma Radiation Survey Forms, which are included in Appendix A. The collimated detector measurements were converted to soil Ra-226 concentrations using the correlation equation for the collimated detector. The static gamma survey results are summarized in Table 2.

Soil sampling and on-Site ex-situ gamma radiation soil screening were performed during July 2025 to September 2025 to estimate the subsurface soil Ra-226 contamination exceeding the IL. Surface (0 to 6 inches) soil samples were not collected at every data point location during this characterization. The estimated surface soil Ra-226 level was determined from one-minute collimated detector static gamma radiation surveys. A one-minute collimated detector static gamma radiation survey provides a significantly higher certainty for a surface soil Ra-226 estimate than a two second integration gamma radiation scan survey provides. Additionally, the use of a collimated detector mitigates any lateral gamma radiation shine interference from any nearby elevated concentration areas.

Ex-situ gamma radiation soil screening was conducted to provide a real-time estimate of Ra-226 concentrations in soil samples to determine the depth at which subsurface soil sampling is no longer necessary. This method is more reliable than in-situ direct gamma radiation level measurements and allows for a more reliable real-time Ra-226 concentration assessment. The on-site ex-situ soil screening method consists of selectively measuring the 609 KeV region gamma radiation of Bi-214, a decay product of Ra-226. A single channel analyzer (Ludlum L2221 or Ludlum 3003) integrated with a Ludlum 44-20 3x3 NaI scintillation detector was used to measure the 609 keV energy peak region of Bi-214. A homogenized soil sample was placed around the plastic lined detector in a heavily lead shielded counting chamber. The use of a heavily shielded counting chamber lowers the system background counts, thus, improving the system's minimum detectable concentration (MDC). A reference soil with aRa-226 concentration of 6.6 pCi/g, comparable to the 6.8 pCi/g IL, was prepared and was used for soil screening during this SRC. The 6.6 pCi/g reference soil provides a conservative estimate of the Ra-226 concentration in samples below the IL.

Subsurface soil samples were collected from each of the 49 data point locations. The number and depth of the samples at each data point location varied depending upon location and soil screening results. A backhoe was used to excavate a test pit trench for subsurface soil sample collection at data point location where subsurface soil samples were necessary for depth characterization. The test pit trenches were excavated using a backhoe in approximately 6 to 12 inches depth intervals, depending on the soil type/consistency, visual observations, and/or gamma radiation level measurements. At each interval, a subsurface soil sample was collected from the base of the excavation for ex-situ gamma radiation soil screening. Stainless steel sampling trowels, bowls and #25 sieve as needed were used to collect the soil samples. The excavation continued until on-site ex-situ gamma radiation soil screening indicated that Ra-

226 concentrations were below the 6.8 pCi/g IL. At an isolated data point location DP-40, a surface static gamma measurement showed Ra-226 levels at approximately 25 pCi/g. Upon inspection, a single mine waste rock was observed partially buried at the data point location. The mine waste rock was removed and the subsequent surface static gamma remeasurement showed Ra-226 levels below the IL. Therefore, test pit trench excavation and subsurface soil sampling was not necessary at this data point location. The soil sample logs and the field soil screening forms are included in Appendix A. The ex-situ gamma radiation screening data is summarized in Table 3, and includes estimated Ra-226 concentrations of the samples relative to the 6.8 pCi/g IL. The surface and subsurface soil sampling Ra-226 levels above the IL depth results are summarized in Table 4.

At 39 of the 49 data point locations, a 6-12 inch below ground surface (bgs) subsurface soil sample was collected and ex-situ soil gamma screened. Furthermore, at 18 of those 39 data point locations, a subsurface soil sample at a depth of 1-2 feet bgs was collected and ex-situ soil screened since the 6–12-inch bgs subsurface sample soil screening result was above the IL. Subsurface soil samples from 15 data point locations were collected at a depth of 2-3 feet bgs since the shallower subsurface sample screening result was above the IL. Subsurface soil samples from eight data point locations were collected at a depth of 3-4 feet bgs since the shallower subsurface sample screening result was above the IL. At three data point location within the Service and Support Area, DP-30, DP-31, and DP-32, subsurface soil samples were collected at a depth greater than four feet since the shallower subsurface sample screening result was above the IL.

At data point location DP-41 which is located along the SCA fence and the Southern Diversion Channel at the southwest corner of the Services and Support Area, subsurface soil sampling was halted as the soil had low cohesion causing continual trench collapse past four feet bgs, even though the Ra-226 level at this depth was above the IL. Observations of the area made during excavation indicate that backfilling in this small area is likely to be as deep as ten feet bgs. At data point DP-29, a concrete slab was encountered at 3.7 feet bgs. Surface static gamma measurements and sample screening of the subsurface soil determined that the soil from the surface to 3.7 feet contained Ra-226 levels above the IL. An additional test pit trench was excavated approximately 10 feet east of DP-29 and the concrete slab was encountered at the same depth. Upon further discussion with Site staff, DP-29 was in an area where there was a Services and Support Area building that was decommissioned and the concrete slab foundation was left in place. At data point DP-32, located just east of the repository, soil screening determined that the subsurface soil sample from 10 feet bgs was above the IL. However, test pit trench excavation was halted due to backhoe excavation depth limitations. Discussions with Site staff indicated that the waste rock material and debris backfill in this area could be as deep as 25 to 30 feet bgs as this was the historic location of a pond. The exact dimensions of the historic pond are not known. At data point DP-31 in the Services and Support Area, test pit trench excavation continued past 5.5 feet bgs even though the 5.0 to 5.5 feet depth subsurface sample screening showed Ra-226 levels below the IL due to the presence of mine waste debris (timber, loose wires, metal parts/debris, etc.) to about ten feet bgs.

Although the primary objective of the ex-situ gamma radiation soil screening was to determine the Ra-226 concentrations above or below the 6.8 pCi/g IL, Ra-226 concentrations were estimated in all soil samples collected and screened. A correlation calibration of the ex-situ soil screening system was performed using a 6.6 pCi/g, a 25 pCi/g, and a 50 pCi/g reference soil. This correlation was updated with offsite vendor laboratory soil sample results for the samples that were screened onsite and sent to the laboratory for QA/QC confirmation. This updated correlation is included in Appendix B. The estimated Ra-226 concentrations calculated using the updated correlation regression equation [Ra-226 pCi/g = (CPM x 0.0144) – 2.55, R^2 = 0.995] of the subsurface soil samples are included in Tables 3 and 4.

A total of 45, which included five field quality assurance/quality check (QA/QC) duplicates, of the soil samples that were ex-situ gamma radiation soil screened on-site were sent to an offsite vendor laboratory for analysis (Energy Laboratories, in Casper, WY). These soil samples were analyzed for Ra-226 using EPA Method 901.1 (modified for soil matrix) for confirmation of the on-site ex-situ soil screening results. The laboratory results report is included in Appendix C and are summarized in Table 3. As shown in Table 3, the estimated Ra-226 levels determined by the on-site ex-situ soil screening are comparable with the vendor laboratory Ra-226 results, specifically in regards to determining that the Ra-226 levels are above or below the IL.

4.3 South Controlled Area Characterization Summary

As described previously, this SCA SRC included the areas shown in Figure 1. The entire SCA SRC area consists of approximately 111 acres. The Borrow Area C, in which only surface soil was characterized by scan gamma survey during this SRC, consists of approximately 12 acres. The SCA soil in approximately a 91 acres area is below the 6.8 pCi/g Ra-226 IL. In the remaining approximately 20 acre SCA area, the soil exceeds the IL and ranges from the ground surface to a depth of ten feet bgs. The depth of soil exceeding the IL at each data point is summarized in Table 4 and shown in Figure 4. Figure 5 shows areas within the SCA SRC with soil exceeding the IL at various contamination depths. The areas and conservative planning-level estimated volume of in-situ soil exceeding the IL within this characterization area are summarized in Table 5. The excavated volume of soil exceeding the IL may be higher than the estimated in-situ volume due to soil swell factor and the excavation equipment and technique used.

4.3.1 Borrow Area C Surface Soil Characterization Summary

Borrow Area C consists of approximately 12 acres and is located north of the SCA, as shown in Figure 1. The initial SRC in Borrow Area C consisted of a gamma scan survey to confirm whether the borrow material is near the Ra-226 background level. As shown in Figure 2, the gamma scan survey showed Ra-226 levels below the IL in Borrow Area C, except for a small area in the southeast corner where the gamma scan survey showed Ra-226 levels just above the IL, likely due to lateral gamma radiation shine from the nearby North Control Area/Ore Pad Area. Static gamma measurements with a collimated detector and surface soil samples were collected at two data point locations (DP-01 and DP-02) in this area to confirm if the elevated

gamma readings are a result of lateral gamma radiation shine influence. The static gamma measurements data, the on-Site soil screening results and the offsite vendor laboratory soil sample result, shown in Table 2 and Table 3 respectively, confirm that the elevated gamma scan measurements were due to the influence of lateral gamma radiation shine, and that Ra-226 levels in the surface soil in Borrow Area C is well below the IL.

4.3.2 County Road 334 Area Characterization Summary

The County Road 334 Area, shown in Figure 1, was included in this SRC due to the results of the 2020 gamma scan showing elevated gamma radiation levels throughout the area. As part of this SRC, a gamma scan survey within the County Road 334 Area was conducted using a 0.5-inch lead collimated detector to mitigate any gamma radiation shine from the adjacent SCA and NCA areas that have significantly elevated gamma radiation levels. As shown in Figure 2, approximately 4 acres of the County Road 334 area is above the IL, which is a significant portion of the total area (≈7 acres) of the County Road 334 Area. As shown in Table 4 and Figure 5, the depth of soil exceeding the IL ranged from 0.5 feet to 2 feet in this area.

4.3.3 West Data Gap Area Characterization Summary

A gamma scan survey at 25 feet transect spacing was conducted in the West Gap Area, shown in Figure 1, during this SRC since the 2020 gamma survey showed several small and one larger sized isolated area with gamma levels potentially exceeding the IL. The West Gap Area consists of approximately 16 acres. Data points DP-14, DP-15 and DP16 were located on three small isolated areas along the northern boundary of the area that potentially exceeded the IL. Data point DP-18, which is located on an isolated area exceeding the IL along the eastern edge of the area. Each of these four small isolated areas were less than 800 square feet. One data point, DP-17, was located within a larger sized area (approximately 6000 square feet) discussed above. After investigation, gamma measurements, subsurface soil sampling and onsite soil screening, data point locations DP-14 and DP-15 were determined to be surface contamination from loose mine waste rock piles, while data point locations DP-16, DP-17 and DP-18 have soil that exceeds the IL at a depth of 0.5 feet bgs.

4.3.4 Service and Support (Mine Compound) Area Characterization Summary

The Service and Support Area, as shown in Figure 1, consists of approximately 36.55 acres. A portion of the Services and Support Area designated as the Mine Compound Area was previously characterized in 2023. The Service and Support Area include the Chiller Bench Area and the areas around the hoist house, the service building, the core storage building, the south stock tank, and the carpenter shop, among others The SRC gamma scan survey identified approximately 15 acres of impacted soils above the IL in the Service and Support SRC Area. Impacted soils exceeding the Ra-226 were identified ranging in depths bgs from surface to greater than 10 feet bgs. In the area near and around DP-29, DP-30 and DP-31 impacted soils exceeding the IL depth were observed at approximately 5 feet bgs. At data point location DP-32, soil exceeding the IL

is greater than 10 feet bgs, as discussed in section 4.2. In the area near DP-26 and DP-27 near the Guard House just west of the large-scale soil exceeding the IL was observed up to a one-foot bgs. In the northern portion of the Service and Support Area, most of the soil exceeding the IL is approximately 0.5 feet bgs, except for a low area with constructed berms near the historic Ore Storage area. The soil impacted above the IL in this pond area was assessed to be up to one-foot bgs. Soil exceeding the Ra-226 IL in the Chiller Bench Area ranged from 0.5 to one-foot bgs. On the Chiller Bench Area is a concrete pad with perimeter walls approximately 8 inches tall that served as a foundation/apparent spill catch basin for the mine water chilling process. Gamma radiation levels measured on this concrete pad were extremely elevated (up to 800,000 cpm). It is not known whether soils below this concrete pad exceeds the IL. An earthen berm with a height varying of one to two feet along the western edge of the Chiller Bench Area is mostly comprised of soil exceeding the IL, as shown in Figure 2.

4.3.5 East Data Gap Area Characterization Summary

The East Gap Area shown in Figure 1 consists of approximately 40 acres of which most of the area was not expected to contain soils that exceeded the IL as historic mining operations were not conducted throughout the entire area. For this SRC, a gamma scan survey was performed on roads, road shoulders, and berms, around infrastructures, on visibly disturbed areas and on areas that were discovered to have historic mining activities to assess surface soil contamination and potential impacted subsurface soils exceeding the Ra-226 IL. The gamma scan survey identified approximately 0.5 acres of impacted soils exceeding the IL. Most locations where soil exceeding the IL was observed, the depth of soil above the IL was at 6 inches bgs. At data point location DP-49, the depth bgs was observed at 6 inches, however this location was located on a 2.5 feet tall earthen berm. A portion of this 2.5 feet tall berm approximately 10 feet in length had soil exceeding the IL. The depth of soil exceeding the IL at data point location DP-47, which was located within a low area with constructed berms, was observed at greater than 4 feet bgs and includes the entire northern portion of the pond floor and berm. Test Pit trench excavation at this location was halted as the surrounding soil had low cohesion causing the trench to continually cave-in. Mine waste rock and debris were observed at all depths of excavation.

5.0 Soil Sampling and Analysis

Soil samples collected during the SCA SRC for on-site ex-situ gamma radiation soil screening were collected consistent with the Work Plan. Field QA/QC duplicate samples were ex-situ gamma radiation soil screened at a frequency of 10% of the total number of soil samples screened. A total of 98 surface and subsurface soil samples were collected for the SCA characterization. The test pit trenches were excavated using a backhoe at approximately 6 to 12 inches depth intervals depending on soil type and visual observations. At each interval, a subsurface soil sample was collected if deemed necessary from the base of the excavation for ex-situ gamma radiation soil screening. Field sampling equipment used for soil sampling included: stainless steel scoops, hand auger, bowls, sieve, and spoons that were decontaminated between sample locations. The soil sampling equipment decontamination was conducted by brushing off loose

visible soil and when necessary was rinsed with distilled water, then wiped with clean towels. The rinsed water was disposed of in Active Pond No. 2. Excavator buckets were cleaned by removing any loose, visible soil. Any soils excavated from the test pits were returned to the test pit excavations from which the soil came. Personal protection equipment (PPE), such as gloves, were brushed off and scanned for residual contamination and were disposed of.

Subsurface soil samples were analyzed by on-site ex-situ gamma radiation soil screening to provide real time assessment of Ra-226 level above or below the IL. A QA/QC confirmatory subsurface soil sample from each test pit from at the depth which screened below the IL was sent to an offsite Vendor laboratory. A total of thirty-nine QA/QC confirmatory soil samples, plus five QA/QC field duplicate samples were placed in labeled Ziploc bags and packaged along with a completed chain of custody in a cooler with a custody sealed lid and shipped to Energy Laboratories, Inc for Ra-226 analysis. The soil samples were analyzed for Ra-226 with a reporting limit of 0.5 pCi/g, using EPA Method 901.1 (modified for soil matrix). The completed chain of custody and the analytical results are included in Appendix C.

6. 0 Quality Assurance and Quality Control Measures

QA/QC measures were implemented during this characterization to ensure that decisions were made based on data of acceptable quality. All radiologic survey instruments have been calibrated at least annually. Additionally, operational functions checks were performed on all radiologic instruments daily prior to use. The calibration and function check documents are included in Appendix B. During this characterization, no instruments were found to be out of calibration or inoperable as indicated by the operational function checks. The instrument background measurements for bare 2x2 NaI detectors during daily operational function checks were less than 10,000 cpm as shown in Appendix B. The bare detector field of view (FOV) at 12 inches above the ground surface is conservatively assumed at an area of at least six feet diameter. The 2x2 NaI detector response factor is determined to be 0.0005 pCi/g/cpm from the linear regression for the Site-specific correlation included in Appendix B. Based on the above detector parameters, the Ra-226 minimum detectable concentrations (MDCs) for a scan survey at a scan speed of three feet per second, calculated using MARSSIM guidance, were less than 1.0 pCi/g, which is significantly below 50% of the 6.8 pCi/g IL. The instrument background measurements for the 0.5 inch thick lead collimated 2x2 NaI detectors during daily operational function checks were less than 3,200 cpm, as shown in Appendix B. The collimated detector field of view (FOV) at 12 inches above the ground surface is conservatively assumed at an area of approximately 1.5 feet diameter. The collimated 2x2 NaI detector response factor is determined to be 0.0016 pCi/g/CPM from the linear regression for the Site-specific correlation included in Appendix B. Based on the above collimated detector parameters, the Ra-226 minimum detectable concentrations (MDCs) for a one minute static survey, calculated using MARSSIM guidance, was less than 0.5 pCi/g, which is significantly below 50% of the 6.8 pCi/g IL. The ex-situ soil gamma radiation screening system was calibrated prior to mobilization in the field and daily operational function checks were performed prior to use. The calibration and function check documentation are included in Appendix B. Based on the highest system background (blank) measurements from daily operational function checks and efficiency (pCi/g/cpm), the

highest Ra-226 MDC for the screening system calculated was less than 1.0 pCi/g, significantly less than the 6.8 pCi/g IL. The MDCs during the supplemental characterization met the QA objective.

The QA/QC measures also included five field QA/QC duplicate soil samples out of the 45 soil samples collected sent to the off-site vendor laboratory for analysis to confirm contamination relative to the IL levels estimated by the field ex-situ gamma radiation soil screening. The QA/QC duplicate vendor laboratory results are included in Table 3. All QA/QC sample results confirm Ra-226 concentration levels relative to the IL level determined by the field ex-situ gamma radiation soil screening. The Ra-226 concentration in QA/QC duplicate samples estimated by on-sit ex-situ gamma radiation soil screening are comparable to the off-site vendor laboratory analytical results.

Tables

Table 1
Mt. Taylor Mine Site - South Controlled Area Soil Radiological Characterization
Typical Gamma Scan Data Exported from the Scan System Data Logger

ID	Time	Northing[(1)] (feet)	Easting[(1)] (feet)	MSL Elevation (feet)	CPM 2x2 Bare NaI Detector	Ra-226 pCi/g[(2)]	Zone_ID
1	7/2/2025 8:05	1578506.15	2783401.73	7450	15726	1.36	South_Control_Area
2	7/2/2025 8:05	1578504.80	2783399.21	7450	16378	1.69	South_Control_Area
3	7/2/2025 8:05	1578503.16	2783395.53	7450	14673	0.84	South_Control_Area
4	7/2/2025 8:05	1578503.35	2783391.12	7450	14537	0.77	South_Control_Area
5	7/2/2025 8:05	1578504.17	2783387.21	7451	15248	1.12	South_Control_Area
6	7/2/2025 8:05	1578504.39	2783382.33	7451	17955	2.48	South_Control_Area
7	7/2/2025 8:05	1578505.06	2783377.62	7451	17779	2.39	South_Control_Area
8	7/2/2025 8:05	1578505.64	2783373.23	7452	16936	1.97	South_Control_Area
9	7/2/2025 8:05	1578506.21	2783368.42	7452	15946	1.47	South_Control_Area
10	7/2/2025 8:05	1578506.35	2783363.51	7452	15156	1.08	South_Control_Area
11	7/2/2025 8:05	1578506.00	2783358.53	7452	14642	0.82	South_Control_Area
12	7/2/2025 8:05	1578504.93	2783353.55	7452	14520	0.76	South_Control_Area
13	7/2/2025 8:05	1578504.45	2783348.80	7453	17602	2.30	South_Control_Area
14	7/2/2025 8:05	1578504.29	2783344.50	7453	15492	1.25	South_Control_Area
15	7/2/2025 8:05	1578505.33	2783339.45	7452	16905	1.95	South_Control_Area
16	7/2/2025 8:05	1578504.98	2783334.31	7452	16056	1.53	South_Control_Area
17	7/2/2025 8:05	1578505.82	2783329.09	7452	16851	1.93	South_Control_Area
18	7/2/2025 8:05	1578506.40	2783324.12	7452	15213	1.11	South_Control_Area
19	7/2/2025 8:06	1578505.74	2783319.23	7452	16631	1.82	South_Control_Area
20	7/2/2025 8:06	1578505.57	2783314.23	7452	15497	1.25	South_Control_Area
21	7/2/2025 8:06	1578507.11	2783309.82	7452	16137	1.57	South_Control_Area
22	7/2/2025 8:06	1578507.50	2783304.87	7452	16631	1.82	South_Control_Area
23	7/2/2025 8:06	1578506.57	2783297.05	7452	16039	1.52	South_Control_Area
24	7/2/2025 8:06	1578505.38	2783291.84	7452	17367	2.18	South_Control_Area
25	7/2/2025 8:06	1578504.51	2783286.50	7452	17413	2.21	South_Control_Area
26	7/2/2025 8:06	1578504.77	2783282.09	7452	16035	1.52	South_Control_Area
27	7/2/2025 8:06	1578505.51	2783277.24	7451	16144	1.57	South_Control_Area
28	7/2/2025 8:06	1578505.78	2783272.39	7452	16361	1.68	South_Control_Area
29	7/2/2025 8:06	1578505.84	2783267.17	7452	15272	1.14	South_Control_Area
30	7/2/2025 8:06	1578504.40	2783261.75	7452	18212	2.61	South_Control_Area
31	7/2/2025 8:06	1578503.44	2783256.26	7452	16453	1.73	South_Control_Area
32	7/2/2025 8:06	1578504.30	2783250.96	7452	17003	2.00	South_Control_Area
33	7/2/2025 8:06	1578503.76	2783245.83	7452	17637	2.32	South_Control_Area
34	7/2/2025 8:06	1578504.70	2783240.40	7452	17512	2.26	South_Control_Area
35	7/2/2025 8:06	1578505.79	2783235.31	7453	15704	1.35	South_Control_Area
36	7/2/2025 8:06	1578507.14	2783230.22	7453	14504	0.75	South_Control_Area
37	7/2/2025 8:06	1578508.46	2783225.59	7453	16229	1.61	South_Control_Area
38	7/2/2025 8:06	1578508.34	2783221.50	7453	16126	1.56	South_Control_Area
39	7/2/2025 8:06	1578509.11	2783216.88	7453	17350	2.18	South_Control_Area
40	7/2/2025 8:06	1578507.94	2783212.61	7453	16733	1.87	South_Control_Area

(1) projection: StatePlane NAD 1983 NM West - Feet

(2) Ra-226 pCi/g determined from surface soil gamma radiation scan using 2x2 NaI detector and Site-specific gamma radiation level (cpm) correlation

Table 2

Mt. Taylor Mine Site - South Controlled Area Soil Radiological Characterization

Static Gamma Radiation Survey at Data Point/Soil Sample Locations

Data Point ID	Survey Date	Data Point Coordinate NAD83 StatePlane NM West, Feet		Static Gamma Radiation Survey Collimated (0.5" PB) 2x2 Detector	
		Northing	Easting	Static Gamma CPM	Surface Soil Static Gamma Estimated Ra-226 pCi/g
DP-01	9/11/2025	1581456.24	2782657.15	5420	2.2
DP-02	9/11/2025	1581406.97	2782633.38	5690	2.6
DP-03	9/11/2025	1580333.60	2783446.13	7330	5.2
DP-04	9/11/2025	1580218.66	2783225.41	22600	29.7
DP-05	9/11/2025	1580111.25	2783053.07	8600	7.3
DP-06	9/11/2025	1580059.50	2782741.72	51000	75.1
DP-07	9/11/2025	1579926.69	2782701.55	13000	14.3
DP-08	9/11/2025	1579906.01	2782550.68	30500	42.3
DP-09	9/10/2025	1579676.86	2782284.70	18100	22.5
DP-10	9/10/2025	1579580.37	2782155.84	34000	47.9
DP-11	9/10/2025	1579474.67	2781912.50	10600	10.5
DP-12	9/11/2025	1579676.54	2781504.62	17100	20.9
DP-13	9/11/2025	1579650.19	2781481.77	63900	95.7
DP-14	9/11/2025	1579366.41	2781517.09	6430	3.8
DP-15	9/11/2025	1579276.75	2781166.97	16000	19.1
DP-16	9/11/2025	1579206.60	2780988.11	10900	10.9
DP-17	9/11/2025	1579012.72	2781443.25	16800	20.4
DP-18	9/11/2025	1578708.28	2781523.75	11400	11.7
DP-19	8/20/2025	1580005.87	2783183.19	9130	8.1
DP-20	9/8/2025	1579881.85	2782874.49	7050	4.8
DP-21	8/20/2025	1579888.86	2783014.60	41800	60.4
DP-22	8/20/2025	1579698.02	2783114.76	14600	16.9
DP-23	8/20/2025	1579756.79	2782601.56	7830	6.0
DP-24	8/20/2025	1579606.45	2782731.05	16900	20.5
DP-25	8/20/2025	1579502.08	2782431.79	6740	4.3
DP-26	9/8/2025	1579361.45	2782463.26	81700	124.2
DP-27	8/20/2025	1579284.95	2782637.69	11300	11.6
DP-28	8/20/2025	1579267.76	2782512.22	10400	10.1
DP-29	8/20/2025	1578986.20	2782231.30	45000	65.5
DP-30	8/20/2025	1578858.91	2782145.81	26800	36.4
DP-31	8/20/2025	1578784.38	2782043.42	9600	8.9
DP-32	8/20/2025	1578656.58	2782107.47	17500	21.5
DP-33	9/9/2025	1579978.01	2782997.27	17400	21.3
DP-34	9/9/2025	1579300.74	2783201.08	47100	68.9
DP-35	9/9/2025	1579248.03	2783318.89	12900	14.1
DP-36	9/9/2025	1578757.08	2782755.18	8170	6.6
DP-37	9/9/2025	1578558.89	2782985.49	13000	14.3
DP-38	9/9/2025	1578350.60	2783005.53	11700	12.2
DP-39	9/9/2025	1578258.17	2783022.86	28700	39.4

Table 2 (cont.)
Mt. Taylor Mine Site - South Controlled Area Soil Radiological Characterization
Static Gamma Radiation Survey at Data Point/Soil Sample Locations

Data Point ID	Survey Date	Data Point Coordinate NAD83 StatePlane NM West, Feet		Static Gamma Radiation Survey Collimated (0.5" PB) 2x2 Detector	
		Northing	Easting	Static Gamma CPM	Surface Soil Static Gamma Estimated Ra-226 pCi/g
DP-40	9/9/2025	1578235.02	2783135.60	19500	24.7
DP-41	9/18/2025	1578074.78	2781517.19	13700	15.4
DP-42	9/18/2025	1578993.45	2783870.64	24600	32.9
DP-43	9/18/2025	1578870.92	2783750.89	11100	11.3
DP-44	9/18/2025	1578762.92	2783241.97	82200	125.0
DP-45	9/18/2025	1578729.09	2783238.60	28200	38.6
DP-46	9/18/2025	1578655.36	2783604.89	10100	9.7
DP-47	9/18/2025	1578468.72	2783567.11	56600	84.1
DP-48	9/18/2025	1578401.72	2783546.94	13100	14.5
DP-49	9/18/2025	1578456.78	2783274.95	16300	19.6

Table 3

South Controlled Area Radiological Characterization Soil Sample Field Ex-Situ Screening and Vendor Laboratory Results Summary

Sampling Data					Field Soil Screening Data						Laboratory Data			
Sample ID	Sample Depth (ft)	Sample Date	Sample Time	Description	Screen Date	Sample Weight grams	609 (559-669) Kev Gross Counts CP5M	CPM	Soil Gamma Screening Estimated Ra-226 pCi/g	SSL (< or >)	Sample Sent to Lab	Ra-226 pCi/g	Error Estimate pCi/g	MDC pCi/g
DP-01	0.0'-0.5'	9/11/2025	810	Topsoil, sandy silt w/roots	9/15/2025	3000	1606	321	2.1	<	yes	1.9	0.2	0.2
DP-02	0.0'-0.5'	9/11/2025	800	Topsoil, sandy silt w/roots	9/15/2025	3000	1621	324	2.1	<	yes	1.8	0.2	0.2
DP-04	0.5'-1.0	9/15/2025	1000	Compacted silty sand, slight waste rock	9/15/2025	3000	6166	1233	15.2	>	-	-	-	-
DP-04	1.0'-1.5'	9/15/2025	1015	loam clay mixed 3/4" rock	9/15/2025	3000	1521	304	1.8	<	yes	1.6	0.2	0.2
DP-04	2.0'-2.5'	9/15/2025	1030	compacted silt mixed w/ clay	9/15/2025	3000	1636	327	2.2	<	-	-	-	-
DP-05	0.5'-1.0	9/16/2025	810	Light brown compacted sand w/ roots	9/16/2025	3000	1254	251	1.1	<	yes	1.0	0.2	0.2
DP-06	0.5'-1.0	9/15/2025	900	Light brown compacted sand w/ roots	9/15/2025	3000	16175	3235	44.0	>	-	-	-	-
DP-06	1.5'-2.0'	9/15/2025	920	Light brown compacted sand w/ roots	9/15/2025	3000	1779	356	2.6	<	yes	2.2	0.2	0.2
DP-06	2.5'-3.0'	9/15/2025	935	Light brown compacted sand	9/15/2025	3000	1219	244	1.0	<	-	-	-	-
DP-07	0.5'-1.0	9/16/2025	835	compacted silt mixed w/ clay	9/16/2025	3000	4007	801	9.0	>	-	-	-	-
DP-07	1.0'-1.5'	9/16/2025	845		9/16/2025	3000	2439	488	4.5	<	-	-	-	-
DP-07	2.0'-2.5'	9/16/2025	900	Compacted brown silt/clay/gravel	9/16/2025	3000	7448	1490	18.9	>	-	-	-	-
DP-07	3.0'-3.5'	9/16/2025	915	Brown silt/clay	9/16/2025	3000	1269	254	1.1	<	yes	1.0	0.2	0.2
DP-08	0.5'-1.0	9/15/2025	800	Light brown compacted sand w/ roots	9/15/2025	3000	1767	353	2.5	<	yes	2.6	0.2	0.2
DP-08	1.0'-1.5'	9/15/2025	815	Light brown compacted sand w/ roots	9/15/2025	3000	1360	272	1.4	<	-	-	-	-
DP-08	2.0'-2.5'	9/15/2025	830	Light brown compacted sand w/ roots	9/15/2025	3000	1269	254	1.1	<	-	-	-	-
DP-09	0.5'-1.0	9/10/2025	1300	Dark compacted silt/clay	9/10/2025	3000	1269	254	1.1	<	-	-	-	-
DP-09	1.0'-1.5'	9/10/2025	1320	Brown loam/sand mix	9/10/2025	3000	1870	374	2.8	<	yes	0.9	0.2	0.2
DP-10	0.5'-1.0	9/10/2025	1120	Dark compacted silt/clay	9/10/2025	3000	3694	739	8.1	>	-	-	-	-
DP-10	1.0'-1.5'	9/10/2025	1135	Brown loam/sand mix	9/10/2025	3000	1342	268	1.3	<	yes	1.0	0.2	0.2
DP-10	1.5'-2.0'	9/10/2025	1145	Brown loam/sand mix	9/10/2025	3000	1509	302	1.8	<	-	-	-	-
DP-10	2.0'-2.5'	9/10/2025	1155	Brown loam/sand mix	9/10/2025	3000	1446	289	1.6	<	-	-	-	-
DP-11	0.5'-1.0	9/10/2025	1044	Dark compacted silt/clay	9/10/2025	3000	1716	343	2.4	<	yes	1.9	0.2	0.2
DP-11	1.0'-1.5'	9/10/2025	1100	Brown loam/sand mix	9/10/2025	3000	1256	251	1.1	<	-	-	-	-
DP-12	0.5'-1.0	9/16/2025	940	Light brown compacted sand	9/16/2025	3000	1545	309	1.9	<	yes	1.5	0.2	0.2
DP-13	0.5'-1.0	9/16/2025	1000	Compacted brown silt/clay/gravel	9/16/2025	3000	1918	384	3.0	<	yes	2.8	0.2	0.2
DP-15	0.5'-1.0	9/15/2025	1315	Brown silt/clay	9/16/2025	3000	1828	366	2.7	<	yes	2.7	0.2	0.2

Table 3 (cont.)

South Controlled Area Radiological Characterization Soil Sample Field Ex-Situ Screening and Vendor Laboratory Results Summary

Sampling Data					Field Soil Screening Data						Laboratory Data			
Sample ID	Sample Depth (ft)	Sample Date	Sample Time	Description	Screen Date	Sample Weight grams	609 (559-669) Kev Gross Counts CP5M	CPM	Soil Gamma Screening Estimated Ra-226 pCi/g	SSL (< or >)	Sample Sent to Lab	Ra-226 pCi/g	Error Estimate pCi/g	MDC pCi/g
DP-15	1.5'-2.0'	9/15/2025	1330	light brown sandy loam	9/16/2025	3000	1247	249	1.0	<	-	-	-	-
DP-16	0.5'-1.0	9/15/2025	1230	light brown/grey sandy/silt	9/16/2025	3000	1353	271	1.3	<	yes	1.0	0.2	0.2
DP-17	0.0'-0.5'	9/11/2025	840	Topsoil, sandy silt w/roots	9/15/2025	3000	9430	1886	24.6	>	yes	26.6	0.6	0.3
DP-17	0.5'-1.0	9/11/2025	850	Light brown compacted sand w/ roots	9/15/2025	3000	1249	250	1.0	<	yes	1.0	0.2	0.2
DP-18	0.5'-1.0	9/11/2025	900	Light brown compacted sand w/ roots	9/15/2025	3000	1236	247	1.0	<	yes	0.8	0.2	0.2
DP-19	0.5'-1.0'	9/3/2025	1020	Dark brown silty/sand mix	9/3/2025	3000	1248	250	1.0	<	yes	1.2	0.2	0.2
DP-19	1.0'-1.5'	9/3/2025	1030	Dark brown silty/sand mix	9/3/2025	3000	1057	211	1.0	<	-	-	-	-
DP-20	0.5'-1.0'	9/8/2025	900	Dark brown silty/sand mix w/ clay	9/8/2025	3000	1230	246	1.0	<	yes	1.0	0.2	0.2
DP-21	1.0'-1.5'	9/3/2025	930	Dark clay/silt w/ grey mix, debris	9/3/2025	2069	1398	405	3.3	<	-	-	-	-
DP-21	2.0'-2.5'	9/3/2025	940	Dark brown silty/sand mix	9/3/2025	3000	1268	254	1.1	<	yes	1.1	0.2	0.2
DP-22	0.5'-1.0'	9/3/2025	1045	gravel base course-3/4" - 2"	9/3/2025	3000	2113	423	3.5	<	-	-	-	-
DP-22	1.0'-1.5'	9/3/2025	1100	Dark brown silty/sand mix	9/3/2025	3000	1220	244	1.0	<	yes	1.2	0.2	0.2
DP-23	0.5'-1.0	9/3/2025	1215	gravel base course-3/4" - 2"/asphalt	9/3/2025	3000	2633	527	5.0	≈	-	-	-	-
DP-23	1.0'-1.5'	9/3/2025	1230	Brown to dark brown clay/silt	9/3/2025	3000	1730	346	2.4	<	yes	1.9	0.2	0.2
DP-24	0.5'-1.0'	9/3/2025	1300	light brown compacted sand/clay	9/3/2025	3000	1353	271	1.3	<	yes	1.1	0.2	0.2
DP-24	1.0'-1.5'	9/3/2025	1315	light brown compacted sand/clay	9/3/2025	3000	1181	236	1.0	<	-	-	-	-
DP-25	0.5'-1.0	9/8/2025	940	Light brown sandy w/ 3/4" gravel mix	9/8/2025	3000	2144	429	3.6	<	yes	4.8	0.3	0.2
DP-26	1.0'-1.5'	9/8/2025	1020	Gravel 3/4"-2" mix w/ light brown sand/silt	9/8/2025	3000	2875	575	5.7	>	-	-	-	-
DP-26	2.0'-2.5'	9/8/2025	1040	light brown silty/sand mix	9/8/2025	3000	1177	235	1.0	<	yes	0.9	0.2	0.2
DP-26	3.0'-3.5'	9/8/2025	1050	light brown silty/sand mix	9/8/2025	3000	1236	247	1.0	<	-	-	-	-
DP-27	0.5'-1.0'	9/3/2025	830	gravel base course-3/4" - 2"	9/3/2025	3000	5073	1015	12.1	>	-	-	-	-
DP-27	1.0'-2.0'	9/3/2025	840	Brown to dark brown clay/silt, shale	9/3/2025	3000	1136	227	1.0	<	yes	1.1	0.2	0.2
DP-27	2.0'-3.0'	9/3/2025	850	light brown compacted sand	9/3/2025	3000	1086	217	1.0	<	-	-	-	-
DP-28	0.5'-1.0'	9/3/2025	750	Dark brown silty/sand mix	9/3/2025	3000	1047	209	1.0	<	yes	1.0	0.2	0.2
DP-28	1.0'-1.5'	9/3/2025	800	Brown to dark brown clay/silt, shale	9/3/2025	3000	1028	206	1.0	<	-	-	-	-

Table 3 (cont.)

South Controlled Area Radiological Characterization Soil Sample Field Ex-Situ Screening and Vendor Laboratory Results Summary

Sampling Data					Field Soil Screening Data						Laboratory Data			
Sample ID	Sample Depth (ft)	Sample Date	Sample Time	Description	Screen Date	Sample Weight grams	609 (559-669) Kev Gross Counts CP5M	CPM	Soil Gamma Screening Estimated Ra-226 pCi/g	SSL (< or >)	Sample Sent to Lab	Ra-226 pCi/g	Error Estimate pCi/g	MDC pCi/g
DP-29	0.5'-1.0'	8/21/2025	1145	Dark clay/silt w/ grey mix, debris	8/21/2025	3000	14410	2882	38.9	>	-	-	-	-
DP-29	1.0'-3.7'	8/21/2025	1223	Dark clay/silt w/ grey mix, debris	8/21/2025	3000	22920	4584	63.5	>	-	-	-	-
DP-30	0.5'-1.0'	8/21/2025	1006	Grey rocky sandy mix	8/21/2025	3000	18540	3708	50.8	>	-	-	-	-
DP-30	1.0'-4.0'	8/21/2025	1015	Grey rocky sandy mix	8/21/2025	3000	40130	8026	113.0	>	-	-	-	-
DP-30	4.0'-4.5'	8/21/2025	1025	3/4 gravel and sand	8/21/2025	3000	3764	753	8.3	>	-	-	-	-
DP-30	4.5'-6.0'	8/21/2025	1035	Brown/light brown sompacted silt/clay	8/21/2025	3000	1667	333	2.2	<	yes	2.4	0.3	0.3
DP-30	6.0'-6.5'	8/21/2025	1045	Dark compacted clay/silty	8/21/2025	3000	1300	260	1.2	<	-	-	-	-
DP-31	0.5'-1.0'	8/21/2025	845	Brown/light brown sompacted silt/clay, gray mix	8/21/2025	3000	9029	1806	23.5	>	-	-	-	-
DP-31	1.0'-3.0'	8/21/2025	900	Grey silty sandy, debris	8/21/2025	3000	16160	3232	44.0	>	-	-	-	-
DP-31	3.0'-5.0'	8/21/2025	915	Gray rocky sandy mix w/dark clay	8/21/2025	3000	7927	1585	20.3	>	-	-	-	-
DP-31	5.0'-5.5'	8/21/2025	920	Dark clay/silt w/ grey mix	8/21/2025	3000	1215	243	1.0	<	-	-	-	-
DP-31	5.5'-10.0'	8/21/2025	950	Dark clay/silt w/ grey mix, debris	8/21/2025	3000	2810	562	5.5	>	-	-	-	-
DP-31	10'-10.25'	8/21/2025	1245	Dark compacted clay wet	8/21/2025	3000	1464	293	1.7	<	yes	1.5	0.2	0.2
DP-32	0.5'-1.0'	8/21/2025	740	Dark clay/silt w/ grey mix	8/21/2025	3000	16485	3297	44.9	>	-	-	-	-
DP-32	1.5'-2.0'	8/21/2025	745	Dark clay/silt w/ grey mix, debris	8/21/2025	3000	16975	3395	46.3	>	-	-	-	-
DP-32	3.0'-3.5'	8/21/2025	750	Dark clay/silt w/ grey mix, debris	8/21/2025	3000	14725	2945	39.9	>	-	-	-	-
DP-32	4.5'-5.0'	8/21/2025	758	Dark clay/silt w/ grey mix, debris	8/21/2025	3000	13350	2670	35.9	>	-	-	-	-
DP-32	5.0'-10.0'	8/21/2025	830	Grey silty sandy, debris	8/21/2025	3000	12514	2503	33.5	>	-	-	-	-
DP-33	0.5'-1.0	9/9/2025	1250	Brown loam/sand mix	9/9/2025	3000	1472	294	1.7	<	yes	1.4	0.2	0.2
DP-33	1.0'-1.5'	9/9/2025	1305	Brown loose sand	9/9/2025	3000	1150	230	1.0	<	-	-	-	-
DP-34	0.5'-1.0	9/9/2025	1050	Dark compacted silt/clay	9/9/2025	3000	1653	331	2.2	<	yes	2.5	0.2	0.2
DP-34	1.0'-1.5'	9/9/2025	1105	Light brown compacted sand w/ roots	9/9/2025	3000	1049	210	1.0	<	-	-	-	-
DP-34	2.0'-2.5'	9/9/2025	1120	Light brown compacted sand w/ roots	9/9/2025	3000	1158	232	1.0	<	-	-	-	-
DP-35	0.5'-1.0	9/9/2025	1140	Brown silt/clay w/ roots	9/9/2025	2324	1027	265	1.3	<	yes	1.3	0.2	0.2
DP-36	0.5'-1.0	9/9/2025	1320	3/4" gravel mix w/ light brown sand	9/10/2025	3000	2229	446	3.9	<	-	-	-	-

Table 3 (cont.)

South Controlled Area Radiological Characterization Soil Sample Field Ex-Situ Screening and Vendor Laboratory Results Summary

Sampling Data					Field Soil Screening Data						Laboratory Data			
Sample ID	Sample Depth (ft)	Sample Date	Sample Time	Description	Screen Date	Sample Weight grams	609 (559-669) Kev Gross Counts CP5M	CPM	Soil Gamma Screening Estimated Ra-226 pCi/g	SSL (< or >)	Sample Sent to Lab	Ra-226 pCi/g	Error Estimate pCi/g	MDC pCi/g
DP-36	1.0'-1.5'	9/9/2025	1330	Very light brown sand, non firm sandstone	9/10/2025	3000	807	161	1.0	<	yes	0.5	0.1	0.2
DP-37	0.5'-1.0	9/10/2025	830	3/4-2" gravel w/ light brown sand	9/10/2025	3000	9815	1963	25.7	>	-	-	-	-
DP-37	1.0'-1.5'	9/10/2025	845	3/4" gravel mix w/ light brown sand	9/10/2025	3000	1258	252	1.1	<	yes	1.1	0.2	0.2
DP-37	1.5'-2.0'	9/10/2025	850	Brown loam/sand mix	9/10/2025	3000	1123	225	1.0	<	-	-	-	-
DP-38	0.5'-1.0	9/10/2025	910	3/4" gravel mix w/ light brown sand	9/10/2025	3000	1903	381	2.9	<	yes	3.4	0.3	0.2
DP-38	1.0'-1.5'	9/10/2025	920	Light brown compacted sand w/ roots	9/10/2025	3000	1043	209	1.0	<	-	-	-	-
DP-39	0.5'-1.0	9/10/2025	935	Light brown compacted sand w/ roots	9/10/2025	3000	6122	1224	15.1	>	-	-	-	-
DP-39	1.5'-2.0'	9/10/2025	950	Brown loose sand	9/10/2025	3000	957	191	1.0	<	yes	0.5	0.1	0.2
DP-39	2.0'-2.5'	9/10/2025	1000	Very light brown sand, non firm sandstone	9/10/2025	3000	963	193	1.0	<	-	-	-	-
DP-41	0.5'-1.0'	9/22/2025	800	Brown silty sand mix 3/4 base course	9/24/2025	3000	5022	1004	11.9	>	-	-	-	-
DP-41	1.0'-1.5'	9/22/2025	810	Brown silty sand mix 3/4 base course	9/24/2025	3000	3360	672	7.1	>	-	-	-	-
DP-41	2.5'-3.0'	9/24/2025	1010	Grey/brown soil w/ stones and clay	9/24/2025	3000	2385	477	4.3	<	-	-	-	-
DP-41	3.5'-4.0'	9/24/2025	1030	Grey/brown soil w/ stones and clay	9/24/2025	3000	7134	1427	18.0	>	yes	17.2	0.5	0.3
DP-44	1.0'-1.5'	9/22/2025	850	Light brown silty w/ roots mix clay	9/24/2025	3000	1307	261	1.2	<	yes	1.0	0.2	0.2
DP-44	1.5'-2.0'	9/22/2025	940	Brown sandy/silt w/ roots	9/24/2025	3000	1257	251	1.1	<	-	-	-	-
DP-44	2.0'-2.5'	9/22/2025	950	Brown sandy/silt w/ roots	9/24/2025	3000	1197	239	1.0	<	-	-	-	-
DP-46	0.5'-1.0'	9/24/2025	810	Light brown sandy w/ roots	9/24/2025	3000	1401	280	1.5	<	yes	1.0	0.2	0.2
DP-47	0.5'-1.0'	9/24/2025	855	Grey sandy waste rock	9/24/2025	3000	25275	5055	70.2	>	-	-	-	-
DP-47	1.0'-1.5'	9/24/2025	925	Grey sandy waste rock	9/24/2025	3000	23640	4728	65.5	>	-	-	-	-
DP-48	0.5'-1.0'	9/24/2025	830	Brown/grey w/ peebles & roots	9/24/2025	3000	1484	297	1.7	<	yes	2.4	0.2	0.2

Note: Soil samples were not collected at locations DP-03, DP-14, DP-40, DP-42, DP-43, DP-45, and DP-49.

Table 4
South Controlled Area Surface and Subsurface Soil Ra-226 Level Summary

Data Point ID	Static Gamma CPM	Static Gamma Estimated Ra-226 pCi/g 0.0'-0.5' (surface) Soil	Ex-Situ Soil Screening Estimated Ra-226 pCi/g														
			0.0'-0.5' Soil (surface)	0.5'-1.0' Soil	1.0'-1.5' Soil	1.5' - 2.0' Soil	2.0'-2.5' Soil	2.5'-3.0' Soil	3.0'-3.5' Soil	3.5'-4.0' Soil	4.0'-4.5' Soil	4.5'-5.0' Soil	5.0'-5.5' Soil	5.5'-6.0' Soil	6.0'-6.5' Soil	6.5'-10.0' Soil	10.0'-10.5' Soil
DP-01	5420	2.2	2.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DP-02	5690	2.6	2.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DP-03	7330	5.2	-	No Subsurface Soil Sample Taken - Collimated Static Survey Estimated Below Cleanup Level											-	-	-
DP-04	22600	29.7		15.2	1.8		2.2	-	-	-	-	-	-	-	-	-	-
DP-05	8600	7.3	-	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-
DP-06	51000	75.1	-	44.0		2.6		1.0	-	-	-	-	-	-	-	-	-
DP-07	13000	14.3	-	9.0	4.5		18.9		1.1	-	-	-	-	-	-	-	-
DP-08	30500	42.3	-	2.5	1.4		1.1	-	-	-	-	-	-	-	-	-	-
DP-09	18100	22.5	-	1.1	2.8	-	-	-	-	-	-	-	-	-	-	-	-
DP-10	34000	47.9	-	8.1	1.3	1.8	1.6	-	-	-	-	-	-	-	-	-	-
DP-11	10600	10.5	-	2.4	1.1	-	-	-	-	-	-	-	-	-	-	-	-
DP-12	17100	20.9	-	1.9	-	-	-	-	-	-	-	-	-	-	-	-	-
DP-13	63900	95.7	-	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-
DP-14	6430	3.8	-	No Subsurface Soil Sample Taken - Collimated Static Survey Estimated Below Cleanup Level											-	-	-
DP-15	16000	19.1	-	2.7		1.0	-	-	-	-	-	-	-	-	-	-	-
DP-16	10900	10.9	-	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-
DP-17	16800	20.4	24.6	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-
DP-18	11400	11.7	-	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-
DP-19	9130	8.1	-	1.0	1.0	-	-	-	-	-	-	-	-	-	-	-	-
DP-20	7050	4.8	-	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-
DP-21	41800	60.4	-		3.3		1.1	-	-	-	-	-	-	-	-	-	-
DP-22	14600	16.9	-	3.5	1.0	-	-	-	-	-	-	-	-	-	-	-	-
DP-23	7830	6.0	-	5.0	2.4	-	-	-	-	-	-	-	-	-	-	-	-
DP-24	16900	20.5	-	1.3	1	-	-	-	-	-	-	-	-	-	-	-	-
DP-25	6740	4.3	-	3.6	-	-	-	-	-	-	-	-	-	-	-	-	-
DP-26	81700	124.2	-		5.7		1.0		1.0	-	-	-	-	-	-	-	-
DP-27	11300	11.6	-	12.1	1.0		1.0			-	-	-	-	-	-	-	-
DP-28	10400	10.1	-	1.0	1.0	-	-	-	-	-	-	-	-	-	-	-	-
DP-29	45000	65.5	-	38.9	63.5					No Further Sample Taken - Concrete Slab Encountered @ 3.7' bgs							
DP-30	26800	36.4	-	50.8	113				8.3	2.2				1.2	-	-	
DP-31	9600	8.9	-	23.5	44				20.3			0.9	5.5			1.7	
DP-32	17500	21.5	-	44.9		46.3			39.9		35.9	33.5				-	
DP-33	17400	21.3	-	1.7	1.0	-	-	-	-	-	-	-	-	-	-	-	-
DP-34	47100	68.9	-	2.2	1.0		1	-	-	-	-	-	-	-	-	-	-
DP-35	12900	14.1	-	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-
DP-36	8170	6.6	-	3.9	1.0	-	-	-	-	-	-	-	-	-	-	-	-
DP-37	13000	14.3	-	25.7	1.1	1.0	-	-	-	-	-	-	-	-	-	-	-
DP-38	11700	12.2	-	2.9	1.0	-	-	-	-	-	-	-	-	-	-	-	-
DP-39	28700	39.4	-	15.1		1.0	1.0	-	-	-	-	-	-	-	-	-	-
DP-40	19500	24.7	-	Elevated individual rock observed. Removed rock, gamma scan after rock removal below 6,000 cpm collimated													
DP-41	13700	15.4	-	11.9	7.1			4.3		18	Excavation Halted Due to Trench Collapse						
DP-42	24600	32.9	-	After top 6 inches of soil removed, gamma scan below 6,000 cpm collimated													
DP-43	11100	11.3	-	After top 6 inches of soil removed, gamma scan below 6,000 cpm collimated													
DP-44	82200	125.0	-	-	1.2	1.1	1.0	-	-	-	-	-	-	-	-	-	-
DP-45	28200	38.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DP-46	10100	9.7	-	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-
DP-47	56600	84.1	-	70.2	65.5	Excavation Halted Due to Trench Collapse											
DP-48	13100	14.5		1.7	-	-	-	-	-	-	-	-	-	-	-	-	-
DP-49	16300	19.6		-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: Static Gamma Estimated pCi/g levels were estimated from .5" lead collimated detector static gamma measurements.

Table 5
Mt. Taylor Mine Site - SCA Soil Radiological Characterization
Estimated Volumes of Areas above the 6.8 Ra-226 pCi/g Investigation Level

Estimated Depth of Area > 6.8 Ra-226 pCi/g Investigation Level	Approximate Land Area (acre)	Estimated Volume [1] (cubic yard)
surface to 6" bgs	14	11,300
surface to 1.0' bgs	3.0	4,900
surface to 2.0' bgs	0.5	1,620
surface to 2.5' bgs	0.01	40
surface to >4.0' bgs [2]	0.2	1,300
surface to 5.0' bgs	2.0	4,900
surface to >10.0' bgs [2]	1.0	2,500
Estimated Total	21	26,560

Note (1): Estimates are based on area historic Site use, observed waste and debris and excavation depth. Estimated volumes represent planning-level estimates and are not final excavation quantities.
Note (2): For the depths >4.0' and >10.0" bgs the estimated volume is an estimated minimum volume.

Figures

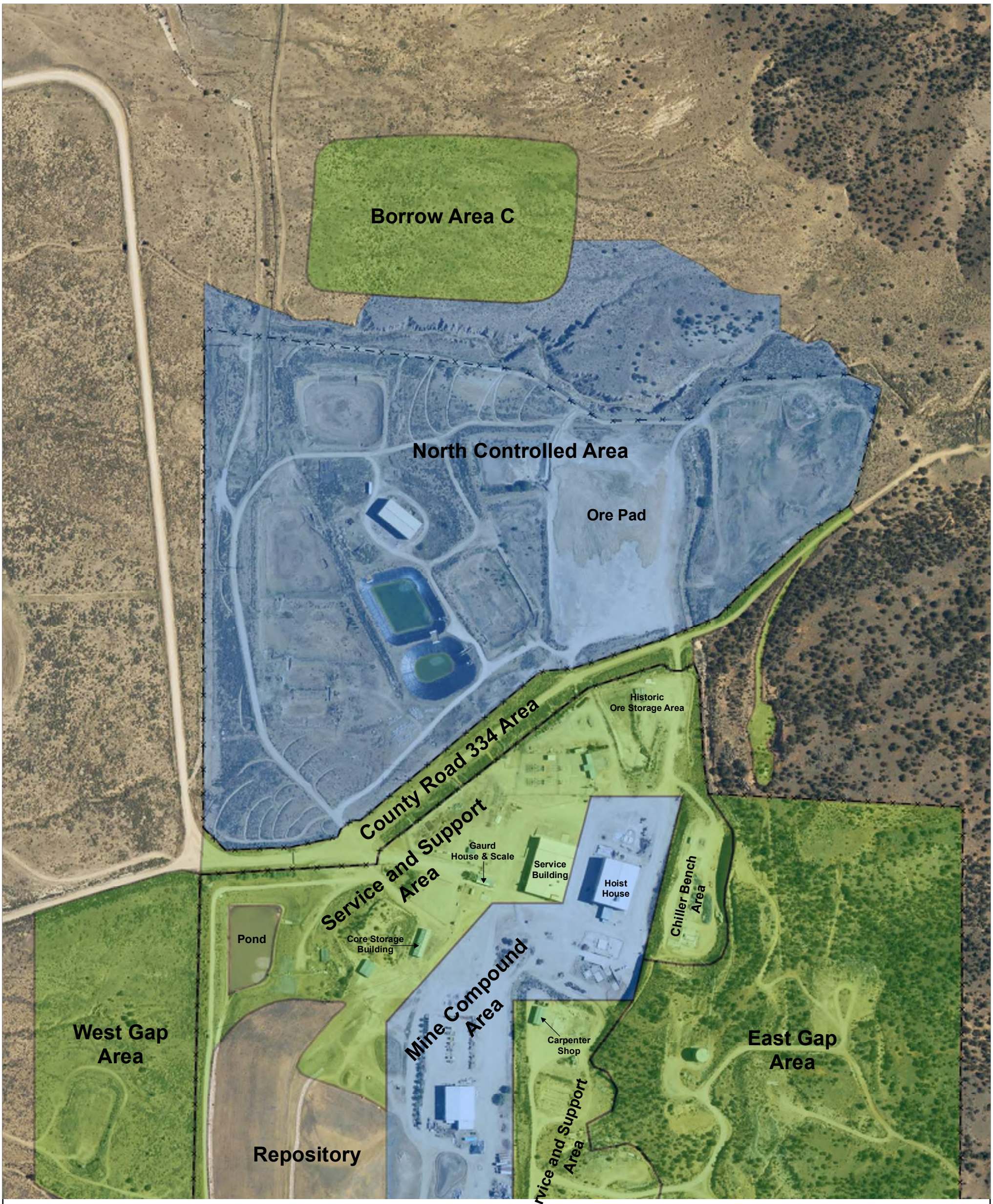


Figure 1
Mt. Taylor Mine Site
South Controlled Area Soil Radiologic Characterization Area

March 2026

Environmental Services, Inc.

0 100 200 400 600 800 Feet

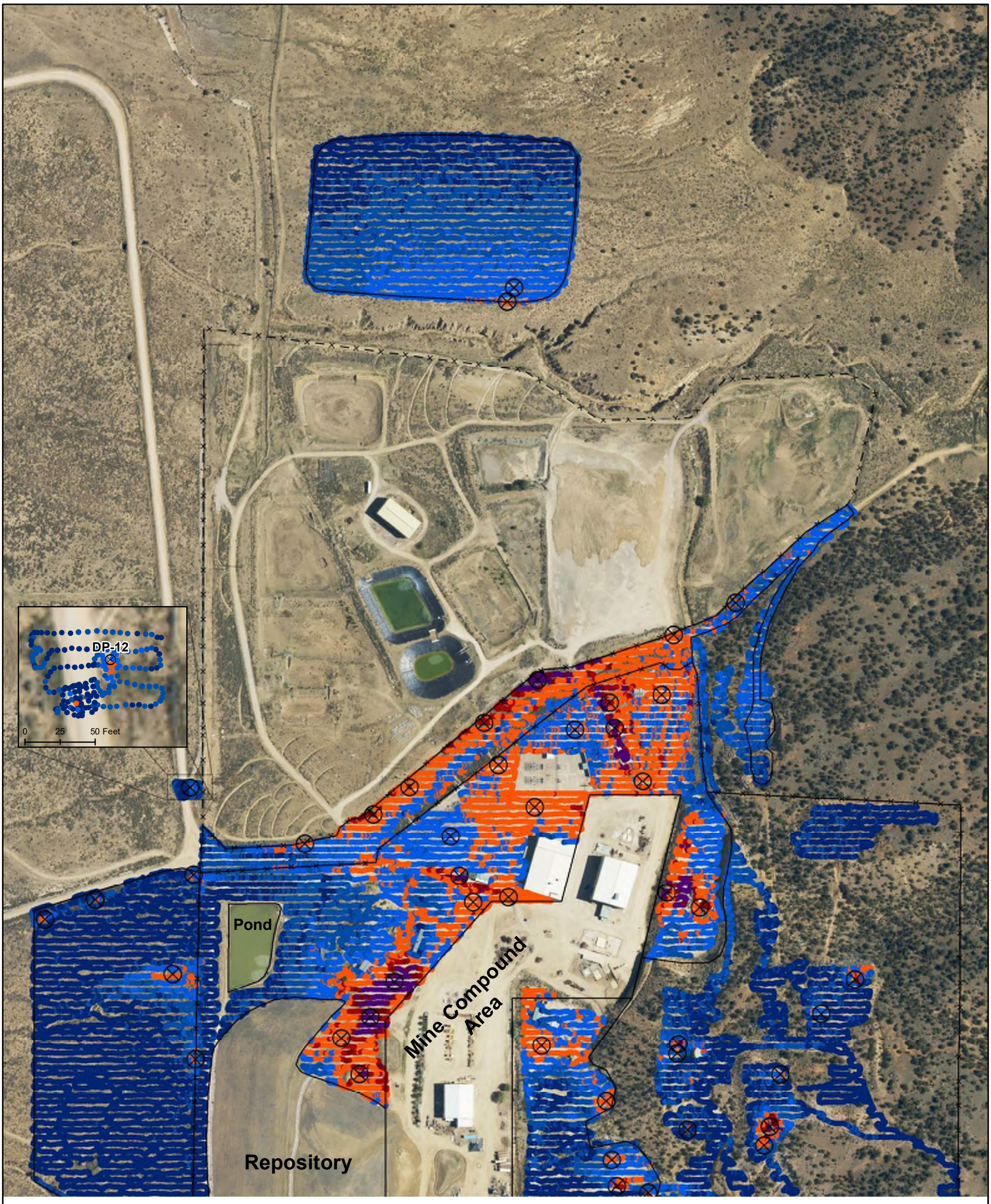
South Controlled Area Radiologic Characterization Area
Previously Characterized Area
Fence

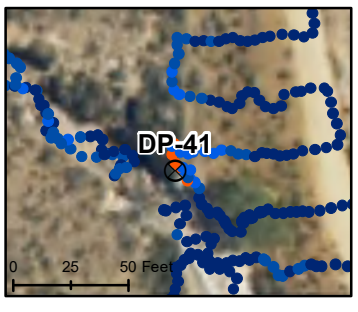
Figure 2
Mt. Taylor Mine Site
South Controlled Area Surface Soil Gamma Scan Survey Data

AVM Environmental Services, Inc.

0 100 200 400 600 800 Feet

Estimated Ra-226 pCi/g
- <1.8 pCi/g
- 1.9 - 3.4 pCi/g
- 3.5 - 6.8 pCi/g
- 6.9 - 20.0 pCi/g
- 20.1 - 30.0 pCi/g
- 30.1 - 40.0 pCi/g
- >40.1 pCi/g
- Area Outline
- Bare/Collimated Detector Boundary
- Fence





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AVM Environmental Services, Inc.

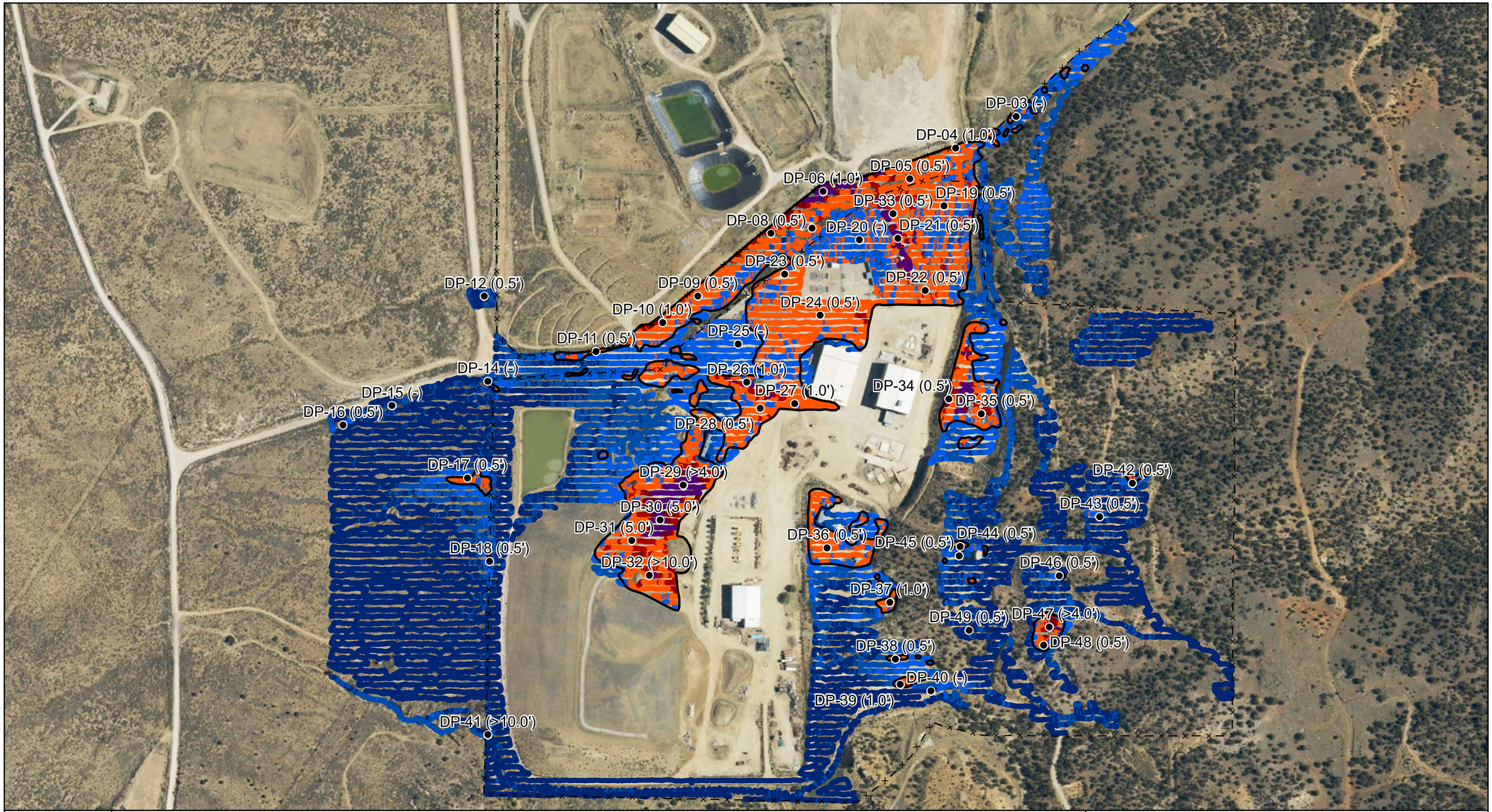
Figure 3
Mt. Taylor Mine Site
South Controlled Area Gamma Scan Survey
Data and Data Point Locations

0 150 300 600 900 1,200 Feet

Legend

Estimated Ra-226 pCi/g

- <1.8 pCi/g
- 1.9 - 3.4 pCi/g
- 3.5 - 6.8 pCi/g
- 6.9 - 20.0 pCi/g
- 20.1 - 30.0 pCi/g
- 30.1 - 40.0 pCi/g
- >40.1 pCi/g
- Data Point
- Characterization Area
- × — × Fence



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Environmental Services, Inc.

Figure 4
Mt. Taylor Mine Site
South Controlled Area Gamma Scan Survey Data and Data Point Locations with Depth Above the 6.8 pCi/g IL

0 150 300 600 900 1,200 Feet

Legend

Estimated Ra-226 pCi/g

- <1.8 pCi/g
- 1.9 - 3.4 pCi/g
- 3.5 - 6.8 pCi/g
- 6.9 - 20.0 pCi/g
- 20.1 - 30.0 pCi/g
- 30.1 - 40.0 pCi/g
- >40.1 pCi/g

Data Point ID (6.8 pCi/g IL cont. Depth)

Contamination Area

Fence

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Environmental Services, Inc.

Figure 5
Mt. Taylor Mine Site
South Controlled Area Estimated Contamination Depths Exceeding the 6.8 Ra-226 pCi/g IL

0 150 300 600 900 1,200 1,500 Feet

Legend

- 0.5' Contamination depth above the Ra-226 pCi/g IL
- 1.0' Contamination depth above the Ra-226 pCi/g IL
- 2.0' Contamination depth above the Ra-226 pCi/g IL
- 2.5' Contamination depth above the Ra-226 pCi/g IL
- >4.0' Contamination depth above the Ra-226 pCi/g IL
- 5.0' Contamination depth above the Ra-226 pCi/g IL
- >10.0' Contamination depth above the Ra-226 pCi/g IL
- Characterization Area
- Fence

Appendix A
Surface and Subsurface Contamination Field Investigation Documentation
(Soil Sample Log Forms, Field Soil Sample Ex-Situ Gamma Radiation Screening Forms)

AVM Environmental Services, Inc.
Gamma Radiation Survey
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter L3003 s#2503683 Detector SPA-3 #30

Instrument Calibration Date: 2-17-25 / 11-25-24 Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ✓ No.

Survey Area/Unit Decsription MTR SCA

Survey Date/Time	Survey Point ID/Description	Survey Point Coordinate		Gamma Radiation Reading - CPM		Exposure Rate µR/hr	Comments/Notes
		Northing	Easting	Bare	Collimated (0.5"Pb)		
9-11-25	DP-01	1581460	2782649	21800	5450		
9-11-25	DP-02	1581403	2782634	24800	5690		
9-11-25	DP-03	1580334	2783446		7330		
9-11-25	DP-04	1580214	2783228		22600		
9-11-25	DP-05	1580105	2783059		8600	55	
9-11-25	DP-06	1580057	2782744		51000		
9-11-25	DP-07	1579926	2782701		13000		
9-11-25	DP-08	1579905	2782554		30500		
9-10-25	DP-09	1579677	2782288		18100	64	
9-10-25	DP-10	1579580	2782156		34000	90	
9-10-25	DP-11	1579476	2781912		10600	40	
9-11-25	DP-12	1579671	2781505		17100		
9-11-25	DP-13	1579649	2781482		63900		
9-11-25	DP-14	1579362	2781514		6430		
9-11-25	DP-15	1579277	2781168		16000		
9-11-25	DP-16	1579207	2780987		10900		
9-11-25	DP-17	1579006	2781444	36200	16800		
9-11-25	DP-18	1578704	2781522		11400		
8-20-25	DP-19	1580006	2783183		9130	38	
9-2-25	DP-20	1579882	2782905		7630	32	
8-20-25	DP-21	1579865	2783018		41800	130	

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Gamma Radiation Survey
Static Gamma Radiation Survey Field Form

Instrumentation.: Scaler/Ratemeter L3003 SN 6830, Detector SPA-3 SN 30

Instrument Calibration Date: 11-25-24 / 2-17-25, Instrument Daily Function Check Performed: Y

2"x2" NaI Detector Collimated ✓ Yes or _____ No.

Survey Area/Unit Decsription MTM SCA

Survey Date/Time	Survey Point ID/Description	Survey Point Coordinate		Gamma Radiation Reading - CPM		Exposure Rate µR/hr	Comments/Notes
		Northing	Easting	Bare	Collimated (0.5"Pb)		
8-20-25	DP-22	1579677	2783113		14600	48	
8-20-25	DP-23	1579757	2782602		7830	31	
8-20-25	DP-24	1579607	2782731		16900	42	
8-20-25	DP-25	1579503	2782431		6740	22	
9-8-25	DP-26	1579355	2782469		59600	150	
8-20-25	DP-27	1579285	2782623		11300	38	
8-20-25	DP-28	1579254	2782503		10400	40	
8-20-25	DP-29	1578981	2782235		45000	145	
8-20-25	DP-30	1578856	2782138		26800	100	
8-20-25	DP-31	1578781	2782026		9600	30	
8-20-25	DP-32	1578652	2782119		17500	59	
9-9-25	DP-33	1579458	2783273		17400	70	
9-9-25	DP-34	1579304	2783207		47100	170	
9-9-25	DP-35	1579249	2783318		12900	55	
9-9-25	DP-36	1578756	2782755		8170	27	
9-9-25	DP-37	1578560	2782985		13000	35	
9-9-25	DP-38	1578351	2783006		11700	30	
9-9-25	DP-39	1578259	2783023		28700	75	
9-9-25	DP-40	1578235	2783136		19500	45	Orig. Route 2x 2' from point. Retrieved.
9-18-25	DP-41	1578077	2781517		13700	40	
9-18-25	DP-42	1578990	2783874		24600	60	

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Gamma Radiation Survey
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter L3003# 6830, Detector SPA-3 # 30

Instrument Calibration Date: 11-25-24 / 2-17-25, Instrument Daily Function Check Performed: Y

2"x2" NaI Detector Collimated ✓ Yes or _____ No.

Survey Area/Unit Decsription MTM SCA

Survey Date/Time	Survey Point ID/Description	Survey Point Coordinate		Gamma Radiation Reading - CPM		Exposure Rate µR/hr	Comments/Notes
		Northing	Easting	Bare	Collimated (0.5"Pb)		
9-18-25	DP-43	1578871	2783751		11100	30	
9-18-25	DP-44	1578764	2783241		82200	150	
9-18-25	DP-45	1578730	2783234		28200	50	
9-18-25	DP-46	1578649	2783608		10100	30	
9-18-25	DP-47	1578470	2783560		56600	160	
9-18-25	DP-48	1578415	2783544		13100	45	
9-18-25	DP-49	1578463	2783277		16300	35	

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Gamma Radiation Survey
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter L3003 & 6830, Detector S/A-3 #30

Instrument Calibration Date: 11-25-24 / 2-17-25, Instrument Daily Function Check Performed: Y

2"x2" NaI Detector Collimated ✓ Yes or _____ No.

Survey Area/Unit Decsription MTM SCA

Survey Date/Time	Survey Point ID/Description	Survey Point Coordinate		Gamma Radiation Reading - CPM		Exposure Rate µR/hr	Comments/Notes
		Northing	Easting	Bare	Collimated (0.5"Pb)		
9-8-25	DP-20	1579881	2782874		7050	34	New Location
9-8-25	DP-26	1579353	2782458		81700	170	New Location

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Subsurface Soil Sample Log Form
Mt. Taylor Mine Site

Sample ID	Sample Date/Time	Sample Depth	Sample Description	Comments/Notes
DP-32	8-21-25 @740	0'-10'	Gray Compacted silt, Sand	
DP-32	8-21-25 @745	15'-20'	" " "	
DP-32	8-21-25 @750	3'-3.5'	" " "	
DP-32	8-21-25 @758	4.5-5.0'	" " " timber	
DP-32	8-21-25 @830	5.0-10.0'	" " " Loose debris trash	
DP-31	8-21-25 @845	.5'-1.0'	Brown silty sandy. bottom gray Rock/sand	
DP-31	8-21-25 @900	1.0'-2.0'	Gray Rock/Sandy debris	
DP-31	8-21-25 @910	2.0-3.5	No-Sample Collected	
DP-31	8-21-25 @915	3.0-5.0'	Gray Rock/sand mix w/ Purple & Dark clay/silt.	
DP-31	8-21-25 @920	5.0 5.5'	Dark clay/silt w gray mix	
DP-31	8-21-25 @930	5.5'-10.0'	Dark Clay/silt w/ gray mix wood debris Lumber	
DP-30	8-21-25 @1006	.5'-1.0'	gray Rock Sand mix	
DP-30	8-21-25 @1015	1.0'-4.0'	" " " "	
DP-30	8-21-25 @1025	4.0-4.5	3/4" base gravel w/ Sand.	
DP-30	8-21-25 @1035	4.5-5.0	Brown/light brown compacted silt w/ clay & light oxide	

AVM Environmental Services, Inc.
Subsurface Soil Sample Log Form
Mt. Taylor Mine Site

Sample ID	Sample Date/Time	Sample Depth	Sample Description	Comments/Notes
DP-30	8-21-25 @ 1045	6-6.5	Dark Clay / Silty	
DP-29	8-21-25 @ 1145	0.5'-1.0'	Grey waste Rock/sand, debris & wires	
DP-29 R	8-21-25 @ 1223	10'-3.7'	" " " "	
DP-31	8-21-25 @ 1245	10'-10.25'	Dark compacted clay, wet	

AVM Environmental Services, Inc.
Subsurface Soil Sample Log Form
Mt. Taylor Mine Site

Sample ID	Sample Date/Time	Sample Depth	Sample Description	Comments/Notes
DP-28	9-3-25 0750	.5-1.0'	Dark brown silty / Sand	
DP-28	9-3-25 800	1.0-1.5'	mix brown to sand shale / Sand clay	
DP-27	9-3-25 830	.5-1.0	gravel Sand mix 3/4 - 2"	
DP-27	9-3-25 840	1.0-2.0	Brown / Dark Brown clay - silt Compacted Shale	
DP-27	9-3-25 850	2.0-3.0	light brown Sand	
DP-21	9-3-25 930	1.0'-1.5'	mix - brown silty & grey waste rock	
DP-21	9-3-25 940	2.0-2.5	Dark brown silty - light clay	

AVM Environmental Services, Inc.
Subsurface Soil Sample Log Form
Mt. Taylor Mine Site

Sample ID	Sample Date/Time	Sample Depth	Sample Description	Comments/Notes
DP-19	9/3/25 10:20	0.5-1.0'	Dark Clay, loomy Brown Soil	
DP-19	9/3/25 10:30	1.0-1.5'	Dark Brown Soil	
DP-22	9/3/25 10:45	0.5'-1.0'	Base Course	Old Rail Road Site
DP-22	9/3/25 11:00	1.0-1.5'	Dark Brown Soil	
DP-23	9/3/25 12:15	0.5-1.0'	Asphalt 4", Base Course, Dark Brown Soil	
DP-23	9/3/25 12:30	1.0-1.5'	Clay, dark brown Soil	Possible Back Fill
DP-24	9/3/25 13:00	0.5-1.0'	Clay Silt, loomy Brown Soil	
DP-24	9/3/25 13:15	1.0-1.5	Clay, light brown soil	

AVM Environmental Services, Inc.
Subsurface Soil Sample Log Form
Mt. Taylor Mine Site

Sample ID	Sample Date/Time	Sample Depth	Sample Description	Comments/Notes
DP-20R	@900 9-8-25	.5-1.0'	Dark brown silty Sand Compact. small amount of clay	
DP-25	9-8-25 @940	.5-1.0'	light Sandy w gravel 1"-2"	
DP-26R	9-8-25 @1020	1.0'-1.5'	gravel w/ light brown silty Sand	
DP-26R	9-8-25 @1040	2.0'-2.5'	light brown silty Sand	
DP-26R	9-8-25 @1050	3.0'-3.5'	light brown silty Sand.	
DP-34	9-9-25 @1050	.5'-1.0'	Dark Compacted silty clay	
DP-34	9-9-25 @1105	1.0'-1.5'	light brown Compacted Sand Roots	
DP-34	9-9-25 @1120	2.0-2.5'	light brown compacted Sand Roots	
DP-35	9-9-25 @1140	0.5'-1.0'	~~light~~ brown Silty Clay VP	
DP-33	9-9-25 @1255	0.5-1.0'	Brown loamy Soil	
DP-33	9-9-25 @1307	1.0-1.5	Brown Sandy Soil	
DP-34	9-9-25 @1320	0.5-1.0	Yellowish Brown Soil/Base Coarse Sands	
DP-36	9-9-25 @1335	1.0-1.5	Yellow brown Sandy (Soft Sandstone)	

AVM Environmental Services, Inc.
Subsurface Soil Sample Log Form
Mt. Taylor Mine Site

Sample ID	Sample Date/Time	Sample Depth	Sample Description	Comments/Notes
DP-37	9-10-25 @830	0.5'-1.0	gravel & Sand 3/4"-2"	
DP-37	9-10-25 @845	1.0'-1.5'	gravel & light brown silty, Sand	
DP-37	9-10-25 @850	1.5'-2.0	light brown Sandy silty	
DP-38	9-10-25 @910	.5'-1.0'	Mix light brown Sandy w/ gravel	
DP-38	9-10-25 @920	1.0-1.5'	light brown Sandy w/ Roots	
DP-39	9-10-25 @935	.5'-1.0	Sandy w/ Roots light brown/gray	
DP-39	9-10-25 @950	1.5'-2.0	Sandy loose	
DP-39	9-10-25 @1000	2.0'-2.5	Sand / Sandstone	
DP-40	9-10-25 @1015		No Sample	
DP-11	9-10-25 @1044	6"-12"	Brown loamy Soil w/ some shale	
DP-11	9-10-25 @1100	1.0'-1.5'	Light brown loamy soil w/ some clay soil	
DP-10	9-10-25 @1120	0.5'-1.0'	Dark brown clayish Soil	
DP-10	9-10-25 @1135	1.0'-1.5'	light brown loamy Soil	
DP-10	9-10-25 @1145	1.5'-2.0'	Light brown Sandy Soil	
DP-10	9-10-25 @1155	2.0'-2.5'	" "	

AVM Environmental Services, Inc.
Subsurface Soil Sample Log Form
Mt. Taylor Mine Site

Sample ID	Sample Date/Time	Sample Depth	Sample Description	Comments/Notes
DP-09	9-10-25 @1300	0.5-1.0'	Light brown loamy/clayish soil	
~~DP~~-09	9-10-25 @1320	1.0'-1.5'	Light brown loamy soil	
DP-02	9-11-25 @900	0.0-0.5'	Topsoil - Sandy w/ roots light brown	
DP-01	9-11-25 @910	0.0-0.5'	" " "	
DP-17	9-11-25 @840	0.0-0.5'	" " " "	
DP-17	9-11-25 @850	.5'-1.0'	light brown Sandy w/ Roots	
DP-18	9-11-25 @920	.5-1.0'	Compacted light brown Sand	
DP-08	9-15-25 @800	.5-1.0'	" " " " Roots	
DP-08	9-15-25 @~~8~~815	1.0-1.5	" " " "	
DP-08	9-15-25 @830	2.0-2.5'	" " " "	
~~DP-06~~ ~~DP-08~~ VP	9-15-25 @~~845~~900	.5-1.0'	light brown Sandy w/ Roots	
~~DP-09-06~~	9-15-25 9:15	1-1.5'	~~brown Silty Clay w/ roots~~	No Sample
DP-~~09~~06	9-15-25 9:20	1.5-2'	" " "	
DP-~~09~~06	9-15-25 9:35	2.5-3'	light brown Compacted sand	

AVM Environmental Services, Inc.
Subsurface Soil Sample Log Form
Mt. Taylor Mine Site

Sample ID	Sample Date/Time	Sample Depth	Sample Description	Comments/Notes
DP-04	09-15-25 10:00	0.5-1.0'	Compact/Silty Sand, Brown Slight waste rock	
DP-04	09-15-25 10:15	1-1.5	~~tome, Co~~ 10cm mixed clay 3/4 rock	
DP-04	09-15-25 10:30	2.0-2.5	Compacted Silt Mixed clay	
DP 16	09-15-25 12:30	0.5-1.0	light brown w/ grey tint Sandy Soil	
DP 15	09-15-25 1:15	0.5-1.0		
DP 15	09-15-25 1:30	1.5-2.0	light brown Sandy ~~Silt~~ loam	

AVM Environmental Services, Inc.
Subsurface Soil Sample Log Form
Mt. Taylor Mine Site

Sample ID	Sample Date/Time	Sample Depth	Sample Description	Comments/Notes
DP05	09-16-25 8:10	0.5-1.0'	light brown Silty Sand w/Roots	
DP07	09-16-25 8:35	0.5-1.0'	Silty brown Clay, Compacted	
DP07	09-16-25 8:45	1.0-1.5'		
DP07	09-16-25 9:00	2.0-2.5'	3/4 Gravel, Compacted brown Silty Sand	
DP07	09-16-25 9:15	3.0-3.5'	Silty Clay brown	
DP12	09-16-25 9:40	0.5-1.0	Compacted Sand, light brown	
DP13	09-16-25 10:00	0.5-1.0	Compacted brown Silt w/ Gravel w/Clay	
DP41	9-22-25 8:00	0.5-1.0	Brown Silty Sand 3/4 Gravel Mix	
DP41	9-22-25 8:10	1.0-1.5	Brown Silty Sand 3/4 Gravel Mix w/Roots	
DP44	9-22-25 8:50	1.0-1.5	light brown Silty With Roots, Clay, Stone	
DP44	9-22-25 9:40	1.5-2.0	Brown Sandy Silt w/Roots	
DP44	9-22-25 9:50	2.0-2.5	Brown Sand Silt w/Roots	

AVM Environmental Services, Inc.
Subsurface Soil Sample Log Form
Mt. Taylor Mine Site

Sample ID	Sample Date/Time	Sample Depth	Sample Description	Comments/Notes
DP16	09-24-25 8:10	0.5-1.0	light brown sandy w/Roots	
DP48	09-24-25 8:30	0.5-1.0	Brown and grey soil w/ Pebbles w/Roots	
DP47	09-24-25 8:55	0.5-1.0	Grey Sandy w/ waste rock	
DP47	09-24-25 9:25	1.0-5.0	Grey Sandy w/ waste rock	
DP41	09-24-25 10:10	2.5-3.0	Grey/Brown soil w/ lime Stone and Clay	
DP41	09-24-25 10:30	3.5-4.0	Grey w/ lime Stone/ Harder Clay rock	

AVM Environmental Services, Inc.
Field Soil Sample Gamma Radiation Screening Form
Mt. Taylor Mine Site

Instrumentation : Scaler/Ratemeter L2221 S#68782, Detector 44-20 S# 295573
Instrument Calibration Date: 2-17-25/9-30-24, Instrument Function Check Performed: y
Survey Area/Unit Decsription MTM SCA Data Points

Area exposure rate:

Date	Soil Sample ID	Sample Weight Grams	609 (559-669) Kev Gross Counts, CP5M	Weight Corrected CP5M	CPM	Reference Soil Compare (< or >)	Comments
8-21-25	Blank	-	320				
8-21-25	6.6 Ref Soil	3000	2280		456		
8-21-25	DP-30 6.0-6.5' 8-21-25 @1045	3000	1300		260		
8-21-25	DP-31 5.5'-10.0' 8-21-25 @950	3000	2810		562		
8-21-25	DP-32 5.0-10.0' 8-21-25 @830	3000	12514		2503		
8-21-25	DP-30 4.5'-6.0 8-21-25 @1035	3000	1667		333		
8-21-25	DP-30 4.0-4.5' 8-21-25 @1025	3000	3764		753		
8-21-25	DP-30 1.0'-4.0' 8-21-25 @1015	3000	40130		8026		
8-21-25	DP-30 .5'-1.0' 8-21-25 @1006	3000	18540		3708		
8-21-25	DP31 5.0-5.5' 8-21-25 @920	3000	1215		243		
8-21-25	DP31 3.0-5.0' 8-21-25 @915	3000	7927		1585		
8-21-25	DP31 1.0-3.0' 8-21-25 @900	3000	16160		3232		QA/QC CP5M 15945
8-21-25	DP31 .5'-1.0' 8-21-25 @845	3000	9029		1806		
8-21-25	DP-32 4.5-5.0 8-21-25 @758	3000	13350		2670		
8-21-25	DP-32 3.0-3.5' 8-21-25 @750	3000	14725		2945		

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Field Soil Sample Gamma Radiation Screening Form
Mt. Taylor Mine Site

Instrumentation : Scaler/Ratemeter L2221 SN 68782, Detector L44-20 SN 295573
Instrument Calibration Date: 2-17-25 / 9-20-24, Instrument Function Check Performed: Y
Survey Area/Unit Decsription MTM SCM Oak Ranch

Area exposure rate:

Date	Soil Sample ID	Sample Weight Grams	609 (559-669) Kev Gross Counts, CP5M	Weight Corrected CP5M	CPM	Reference Soil Compare (< or >)	Comments
8-21-25	DP-32 1.5'-2.0' 8-21-25 @745	3000	16975		3395		
8-21-25	DP-32 .5'-1.0' 8-21-25 @740	3000	16485		3297		
8-21-25	DP-31 10'-10.25' 8-21-25 @1245	3000	1464		293		
8-21-25	DP-29R 1.0'-3.7' 8-21-25 @1223	2000	22920		4584		
8-21-25	DP-29 0.5-1.0' 8-21-25 @1145	3000	14410		2882		
9-3-25	Blank		341		68		
9-3-25	6.6 pc./g Ref Soil	3000	2290		458		
9-3-25	DP-21 2-2.5' 9-3-25 @940	3000	1268		254		
9-3-25	DP-21 1.0-1.5' 9-3-25 @930	2069	1398	2027	405		
9-3-25	DP-27 2.0-2.0' 9-3-25 @850	3000	1086		217		
9-3-25	DP-27 1.0-20' 9-3-25 @840	3000	1136		227		
9-3-25	DP-27 .5'-1.0' 9-3-25 @830	3000	5073		1015		
9-3-25	DP-28 1.0-1.5' 9-3-25 @800	3000	1028		206		
9-3-25	DP-28 .5-1.0 9-3-25 @750	3000	1047		209		
9-3-25	DP-19 1.0-1.5' 9-3-25 @1030	3000	1057		211		

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Field Soil Sample Gamma Radiation Screening Form
Mt. Taylor Mine Site

Instrumentation : Scaler/Ratemeter LZ221 S#08782, Detector L44-20 S#295573
Instrument Calibration Date: 2-17-25 / 9-30-24, Instrument Function Check Performed: ✓
Survey Area/Unit Decsription MTM SCA Rate Points

Area exposure rate:

Date	Soil Sample ID	Sample Weight Grams	609 (559-669) Kev Gross Counts, CP5M	Weight Corrected CP5M	CPM	Reference Soil Compare (< or >)	Comments
9-3-25	DP-14 0.5-1.0' 9-3-25 @1020	3000	1248		250		
9-3-25	DP-22 1.0-1.5' 9-3-25 @1100	3000	1220		244		QA/QC Dup CP5M 1238
9-3-25	DP-22 .5-1.0' 9-3-25 @1045	3000	2113		423		
9-3-25	DP-23 1.0-1.5' 9-3-25 @1230	3000	1730		346		
9-3-25	DP-23 0.5-1.0' VP 9-3-25 @1315	3000	2633		527		
9-3-25	DP 24 1.0-1.5' 9-3-25 @1315	3000	1181		236		
9-3-25	DP 24 0.5-1.0' 9-3-25 @1300	3000	1353		271		
9-8-25	Blank	-	324		65		
9-8-25	6.6 pCi/Rad Soil	3000	2311		462		
9-8-25	DP-26 VP 3.0-2.5' 9-8-25 @1030	3000	1236		247		
9-8-25	DP-26 VP 2.0-2.5' 9-8-25 @1040	3000	1177		235		
9-8-25	DP-26 VP 1.0-1.5' 9-8-25 @1020	3000	2875		575		QA/QC CP5M 2817
9-8-25	DP-20 VP .5-1.0' 9-8-25 @9000	3000	~~277~~ 1230 VP		246		
9-8-25	DP-25 .5'-1.0' 9-8-25 @940	3000	2144		429		

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Field Soil Sample Gamma Radiation Screening Form
Mt. Taylor Mine Site

Instrumentation : Scaler/Ratemeter L2221 S# 68782, Detector 44-20 S# 295573
Instrument Calibration Date: 2-17-25 / 9-30-24, Instrument Function Check Performed: ✓
Survey Area/Unit Decsription MTM SCA Data Points

Area exposure rate:

Date	Soil Sample ID	Sample Weight Grams	609 (559-669) Kev Gross Counts, CP5M	Weight Corrected CP5M	CPM	Reference Soil Compare (< or >)	Comments
9-9-25	Blank		320		64		
9-9-25	6.6 pCi/g Ref Soil	3000	2299		460		
9-9-25	DP 34 2.0-2.5' 9-9-25 @1120	3000	1158		232		
9-9-25	DP-34 1.0-1.5' 9-9-25 @1105	3000	1049		~~333~~ 210 TVP		
9-9-25	DP-34 .5'-1.0' 9-9-25 @1050	3000	1653		331		QA/QC 4 5m 1603
9-9-25	DP-35 0.5'-1.0' 9-9-25 @1140	2324	1027	1325	265		
9-9-25	DP-33 1.0'-1.5' 9-9-25 @1305	3000	1150		230		
9-9-25	DP-33 0.5'-1.0' 9-9-25 @1250	3000	1472		294		
9-10-25	Blank	—	329		66		
9-10-25	6.6 pCi/g Ref Soil	3000	2171		434		
9-10-25	DP36 1.0-1.5' 9-9-25 @1330	3000	807		161		
9-10-25	DP36 0.5'-1.0' 9-9-25 @1320	3000	2229		446		
9-10-25	DP-37 1.5'-2.0' 9-10-25 @850	3000	1123		225		
9-10-25	DP-37 1.0'-1.5' 9-10-25 @845	3000	1258		252		
9-10-25	DP-37 .5'-1.0' 9-10-25 @830	3000	9815		1963		QA/QC cp5m 9548

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Field Soil Sample Gamma Radiation Screening Form
Mt. Taylor Mine Site

Instrumentation : Scaler/Ratemeter L2221 S#68782, Detector L44-20 S#295577
Instrument Calibration Date: 2-17-25/9-30-24, Instrument Function Check Performed: ✓
Survey Area/Unit Decsription MTM SCA Date Points

Area exposure rate:

Date	Soil Sample ID	Sample Weight Grams	609 (559-669) Kev Gross Counts, CP5M	Weight Corrected CP5M	CPM	Reference Soil Compare (< or >)	Comments
9-10-25	DP-38 1.0-1.5' 9-10-25 @920	3000	1043		209		
9-10-25	DP-38 .5-1.0' 9-10-25 @910	3000	1903		381		
9-10-25	DP-39 2.0-2.5' 9-10-25 @1000	3000	963		193		
9-10-25	DP 39 1.5-2.0' 9-10-25 @950	3000	957		191		
9-10-25	DP-39 .5-1.0' 9-10-25 @935	3000	6122		1224		DUP/QC CP5M 6198
9-10-25	DP-10 2.0-2.5' 9-10-25 @1155	3000	1446		289		
9-10-25	DP-10 1.5-2.0' 9-10-25 @1145	3000	1509		302		
9-10-25	DP-10 1.0-1.5' 9-10-25 @1135	3000	1342		268		
9-10-25	DP-10 0.5-1.0' 9-10-25 @1120	3000	3694		739		
9-10-25	DP-11 1.0-1.5' 9-10-25 @1100	3000	1256		251		
9-10-25	DP-11 0.5-1.0' 9-10-25 @1044	3000	1716		343		
9-10-25	DP-09 1.0-1.5' 9-10-25 @1320	3000	1199 ~~1870~~		240 ~~374~~		
9-10-25	DP-09 0.5-1.0' 9-10-25 @1300	3000	1269		254		

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Field Soil Sample Gamma Radiation Screening Form
Mt. Taylor Mine Site

Instrumentation : Scaler/Ratemeter L2221 S#68782, Detector L44-20 S#295573
Instrument Calibration Date: 2-7-25/9-30-25, Instrument Function Check Performed: Y
Survey Area/Unit Decsription MTM SCA Data Points

Area exposure rate:

Date	Soil Sample ID	Sample Weight Grams	609 (559-669) Kev Gross Counts, CPSM	Weight Corrected CPSM	CPM	Reference Soil Compare (< or >)	Comments
9-15-25	Blank	—	360		72		
9-15-25	6.6 Ref Soil	3000	2240		448		
9-15-25	DP-02 0-0.5' 9-11-25 @800	3000	1621		324		
9-15-25	DP-01 0-0.5' 9-11-25 @810	3000	1606		321		
9-15-25	DP-18 0.5-1.0' 9-11-25 @900	3000	1236		247		
9-15-25	DP-17 0-0.5' 9-11-25 @840	3000	9430		1886		
9-15-25	DP-17 0.5-1.0' 9-11-25 @850	3000	1249		250		
9-15-25	DP-04 0.5-1.0' 9-15-25 @1000	3000	6166		1233		
9-15-25	DP-04 1.0-1.5' 9-5-25 @1015	3000	1521		304		
9-15-25	DP-04 2.0-2.5' 9-15-25 @1030	3000	1636		327		
9-15-25	DP-06 .5-1.0' 9-15-25 @900	3000	16175		3235		
9-15-25	DP-06 1.5-2.0 9-15-25 @920	3000	1779		356		QA/QC CPSM 1830
9-15-25	DP-06 2.5-3.0' 9-15-25 @935	3000	1219		244		
9-15-25	DP-08 .5-1.0' 9-15-25 @800	3000	1767		353		
9-15-25	DP-08 1.0-1.5' 9-15-25 @815	3000	1360		272		

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Field Soil Sample Gamma Radiation Screening Form
Mt. Taylor Mine Site

Instrumentation : Scaler/Ratemeter L2221 SN 68782, Detector L44-20 SN 295573
Instrument Calibration Date: 2-17-25/9-20-25, Instrument Function Check Performed: 4
Survey Area/Unit Decsription MTM SCA DP

Area exposure rate:

Date	Soil Sample ID	Sample Weight Grams	609 (559-669) Kev Gross Counts, CP5M	Weight Corrected CP5M	CPM	Reference Soil Compare (< or >)	Comments
9-15-25	DP-08 2.0-2.5 9-15-25 @820	3000	1269		254		
9-16-25	Blank	—	281		56		
9-16-25	6.6 pCi/ Ref Soil	3000	2269		454		
9-16-25	DP-15 0.5-1.0' 9-15-25 @1315	3000	1828		366		
9-16-25	DP-15 1.5-20' 9-15-25 @1330	3000	1247		249		
9-16-25	DP-16 0.5-1.0' 9-15-25 @1270	3000	1353		271		
9-16-25	DP-12 0.5-1.0' 9-16-25 @940	3000	1545		309		
9-16-25	DP-05 0.5-1.0' 9-16-25 @810	3000	1254		251		
9-16-25	DP-13 0.5-1.0' 9-16-25 @1000	3000	1918		384		
9-16-25	DP-07 0.5-1.0' 9-16-25 @835	3000	4007		801		QA/QC CPSM UP 734 3920
9-16-25	DP-07 1.0-1.5' 9-16-25 @845	3000	2439		488		
9-16-25	DP-07 2.0-2.5' 9-16-25 @900	3000	7448		1490		
9-16-25	DP-07 3.0-3.5' 9-16-25 @915	3000	1269		254		

Technician Signature _____, Reviewed by _____

AVM Environmental Services, Inc.
Field Soil Sample Gamma Radiation Screening Form
Mt. Taylor Mine Site

Instrumentation : Scaler/Ratemeter LZ221 S#68782, Detector L44-20 S# 295573
Instrument Calibration Date: 2-17-25/9-30-24, Instrument Function Check Performed: ✓
Survey Area/Unit Decsription MTM SCA Data Points

Area exposure rate:

Date	Soil Sample ID	Sample Weight Grams	609 (559-669) Kev Gross Counts, CP5M	Weight Corrected CP5M	CPM	Reference Soil Compare (< or >)	Comments
9-24-25	Blank	-	284		57		
9-24-25	6.6 pC/g Ref Soil	3000	2215		443		
9-24-25	DP-41 1.0-1.5' 9-22-25 @810	3000	3360		672		
9-24-25	DP-41 0.5-1.0' 9-22-25 @800	3000	5022		1004		
9-24-25	DP-44 1.0-1.5' 9-22-25 @850	3000	1307		261		
9-24-25	DP-44 1.5-2.0' 9-22-25 @940	3000	1257		251		QA/QC CP5M 1205
9-24-25	DP-44 2.0-2.5' 9-22-25 @950	3000	1197		239		
9-24-25	DP-46 0.5-1.0' 9-24-25 @810	3000	1401		280		
9-24-25	DP-48 0.5-1.0' 9-24-25 @830	3000	1484		297		
9-24-25	DP-47 0.5-1.0' 9-24-25 @855	3000	25275		5055		
9-24-25	DP-47 1.0'-5.0' 9-24-25 @925	3000	23640		4728		
9-24-25	DP-41 2.5-3.0' 9-24-25 @1010	3000	2385		477		
9-24-25	DP 41 3.5-4.0' 9-24-25 @1030	3000	7134		1427		

Technician Signature _____, Reviewed by _____

Appendix B
Radiologic Instrument Calibration and Operational Function Check and Gamma Survey Detector Correlation Documentation

CERTIFICATE OF CALIBRATION

LUDLUM MEASUREMENTS, INC.
501 Oak Street
325-235-5494
Sweetwater, TX 79556, U.S.A.
www.ludlums.com

ACCREDITED
CERT # 4084.01

Model No. / Serial No. 500 / 114513

Customer AVM ENVIRONMENTAL SERVICES INC ORDER NO. 20485975/567484

Cal. Date 6-Jan-25 Cal Due Date 6-Jan-26 Cal. Interval 1 Year Procedure 500/Rev 8

☐ New Instrument Instrument Received ☑ Within Tolerance ☐ Out of Tol. ☐ Requiring Repair ☐ Other-See Comments

T. 74 °F RH 22 % Alt 716.3 mm Hg ☑ Meter Zeroed ☑ Mechanical Check

PULSE WIDTH Uncertainty within 0.85% of reading

	As Found	As Left	Acceptable Range (µs)
NEG PULSE	1.6	1.6	1.5 - 1.9
POS PULSE	1.6	1.6	< 2.25

PULSE AMPLITUDE (NEGATIVE) Uncertainty within 1.2% of reading

Reference Amplitude	As Found Amplitude Reading	As Left Amplitude Reading	Acceptable Range	Reference Amplitude	As Found Amplitude Reading	As Left Amplitude Reading	Acceptable Range
1 V	1 V	1 V	0.9 - 1.1	4 V	4 V	4 V	3.6 - 4.4
100 mV	100 mV	100 mV	90 - 110	400 mV	410 mV	410 mV	360 - 440
10 mV	10 mV	10 mV	9 - 11	40 mV	41 mV	41 mV	36 - 44
1 mV	1 mV	1 mV	0.9 - 1.1	4 mV	4.1 mV	4.1 mV	3.6 - 4.4

PULSE AMPLITUDE (POSITIVE) Uncertainty within 1.2% of reading

Reference Amplitude	As Found Amplitude Reading	As Left Amplitude Reading	Acceptable Range
3 V	3 V	3 V	2.7 - 3.3
300 mV	300 mV	300 mV	270 - 330
30 mV	30 mV	30 mV	27 - 33
3 mV	3 mV	3 mV	2.7 - 3.3

PULSE FREQUENCY (PERIOD) Uncertainty within 0.46% of reading

Pulser Range	As Found Period	As Left Period	Acceptable Range
x 10K	6.669	6.669	6.534 - 6.8
x 1K	66.72	66.72	65.34 - 68
x 100	667.2	667.2	653.4 - 680
x 10	6671	6671	6534 - 6800
x 1	66.73	66.73	65.34 - 68
x 0.1	90	90	88.2 - 91.8 Counts

Digital High Voltage Uncertainty within 1.2% of reading

Reference Voltage	As Found Voltage Reading	As Left Voltage Reading	Acceptable Range
500 V			490 - 510
1500 V			1470 - 1530

Analog High Voltage Uncertainty within 1.2% of reading

Reference Voltage	As Found Voltage Reading	As Left Voltage Reading	Acceptable Range
500 V	500	500	475 - 525
2000 V	2000	2000	1900 - 2100

CPM Reading	As Found cpm Reading	As Left cpm Reading	Acceptable Range
MAX	992	992	981 - 999
MIN	0-1	0-1	0 - 1*

* READING OF 0-99 IS ACCEPTABLE FOR INSTRUMENTS WITH A S/N 100000 AND BELOW OR MAIN BOARD = 5208-066

COMMENTS:

CAL'D W/ 39" CABLE.

Ludlum Measurements, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology, or to the calibration facilities of other International Standards Organization members, or have been derived from accepted values of natural physical constants or have been derived by the ratio type of calibration techniques.
All pass/fail determinations are based on the manufacturer's specifications without considering uncertainty factors.
Measurement results represent expanded uncertainties expressed at approximately the 95% level of confidence, using a coverage factor of k=2.
The calibration system conforms to the requirements of ANSI/NCSL Z540-1-1994 and ANSI N323AB-2013

ISO/IEC 17025:2017(E)
State of Texas Calibration License No. LO-1983

Reference Instruments:
Frequency Counter Model BK 1856D S/N 332E 18132 Cal Date 18-Dec 2024
Oscilloscope Model TEKMA 72:6830 S/N 1102645 Cal Date 11-Oct 2024
Voltmeter Model Fluke 83V S/N 94000441 Cal Date 14-Jun 2024

Calibrator William Tinsley William Tinsley Title Calibrator Date 6-January 2025
QC'd By [signature] Title Final QC Date 7 JAN 25

This certificate shall not be reproduced except in full, without the written approval of Ludlum Measurements, Inc.

AC Inst. Only ☐ ☑ Passed Dielectric (Hi-Pot) and Continuity Test ☐ Failed:

AVM Environmental Services Inc.

Scaler/Ratemeter Calibration Form

Model : L2221 S/N: 68782

Reference Instrument/Source: Ludlum Pulser 500, S/N:114513

HV Calibration

HV Test (2 points): Ref/Inst 600/600 Ref/Inst 900/900

Ratemeter Calibration

Instrument Threshold @ 100 (10 mV), WIN: Out, HV 900VDC; Pulser Threshold @ 200 (20mV)

Range/Mode	Range Multiplier	Calibration Point (Pulser Setting) cpm x multiplier	Target CPM (±5%)	As Found Reading		Left or Set Reading
Ratemeter	x1	40x1	38-42	40		"
	x1	40x10	380-420	400		"
	x10	40x100	3800-4200	4000		"
	x100	40x1K	38K-42K	40K		"
	x1K	40x10K	380K-420K	400K		"
Digital Ratemeter	-	40x1	38-42	40		"
	-	40x10	380-420	399		"
	-	40x100	3800-4200	3990		"
	-	40x1K	38K-42K	40004		"
	-	40x10K	380K-420K	400053		"

Threshold/Gain Calibration

WIN OUT

Pulser Amplitude (mV)	Pulser CPM		L2221 Theshold (mv)	Target CPM	L2221 CPM Found		L2221 CPM Left or Set @
10.0	40000		100 (10 mV)	27K -33K	31525		"
20.0	40000		200 (20 mV)	27K -33K	30790		"
30.0	40000		300 (30 mV)	27K -33K	30441		"
40.0	40000		400 (40 mV)	27K -33K	31849		"
50.0	40000		500 (50 mV)	27K -33K	31336		"

Note: Use R174 Gain Control on Power Supply Board to adjust L2221 CPM @75% for Threshold/Gain Calibration

Window Cut-off Points Check

L2221 Threshold set @100 (10.0 mv)

WIN @ 100 (10.0 mV) ✓ WIN @ 400 (40.0 mV) ✓

WIN @ 200 (20.0 mV) ✓ WIN @ 500 (50.0 mV) ✓

Date 2-17-25 Calibrated By

Designer and Manufacturer of Scientific and Industrial Instruments

www.ludlums.com

CERTIFICATE OF CALIBRATION

LUDLUM MEASUREMENTS, INC.
501 Oak Street
325-235-5494
Sweetwater, TX 79556, U.S.A.

ACCREDITED
CERT # 4084.01

Customer: AVM ENVIRONMENTAL SERVICES INC — ORDER NO. 20501145/577861

Mfg. Ludlum Measurements, Inc. — Model 19 — Serial No. 76248

Mfg. _____ — Model _____ — Serial No. _____

Cal. Date 20-Aug-25 — Cal Due Date 20-Aug-26 — Cal. Interval 1 Year — Meterface 202-016

Check mark ☑ applies to applicable instr. and/or detector IAW mfg. spec. — T. 74 °F — RH 43 % — Alt 705.9 mm Hg

☐ New Instrument — Instrument Received — ☑ Within Toler. +-10% — ☐ 10-20% — ☐ Out of Tol. — ☐ Requiring Repair — ☐ Other-See comments

☑ Mechanical ck. — ☑ Meter Zeroed — ☐ Background Subtract — ☐ Input Sens. Linearity
☑ F/S Resp. ck — ☑ Reset ck. — ☐ Window Operation — ☑ Geotropism
☑ Audio ck. — ☐ Alarm Setting ck. — ☑ Batt. ck.

☐ Calibrated in accordance with LMI SOP 14.8 — ☑ Calibrated in accordance with LMI SOP 14.9

Instrument Volt Set 800 V — Input Sens. 38 mV — Det. Oper. _____ V at _____ mV — Threshold Dial Ratio _____ = _____ mV

☐ HV Readout (2 points) — Ref./Inst. 500 / _____ V — Ref./Inst. 1000 / _____ V

COMMENTS:

Gamma Calibration: GM detectors positioned perpendicular to source except for M 44-9 in which the front of probe faces source.
Multimeter uncertainty within 1.3% of reading, Gamma uncertainty within 5.0% of reading, Neutron uncertainty within 7.0% of reading, Count rate uncertainty within 5.4% of reading.

RANGE/MULTIPLIER	REFERENCE CAL. POINT	INSTRUMENT REC'D "AS FOUND READING"	INSTRUMENT METER READING
5000	4000µR/hr	4200 mR/hr	4000 mR/hr
5000	1000µR/hr	1000	1000
500	400µR/hr = 75300CPM	420	400
500	100µR/hr	105	100
250	200µR/hr = 35900CPM	200	200
250	100µR/hr	100	100
50	7530 cpm	44	40
50	1880 cpm	10.5	10
25	3590 cpm	20	20
25	898 cpm	5	5

50, 25 Range(s) Calibrated Electronically

Digital Readout	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING

Log Scale	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING

Ludlum Measurements, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology, or to the calibration facilities of other International Standards Organization members, or have been derived from accepted values of natural physical constants or have been derived by the ratio type of calibration techniques.
All pass/fail determinations are based on the manufacturer's specifications without considering uncertainty factors.
Measurement results represent expanded uncertainties expressed at approximately the 95% level of confidence, using a coverage factor of k=2.
The calibration system conforms to the requirements of ANSI/NCSL Z540-1-1994 and ANSI N323AB-2013

ISO/IEC 17025:2017(E)
State of Texas Calibration License No: LO-1963

Reference Instruments and/or Sources: Cs-137 S/N: ☐ 059 ☐ 2171CP ☐ 2261CP ☐ 720 ☐ 734 ☐ 781 ☐ 1131 ☐ 1616 ☐ 1696 ☐ 1909 ☐ 1918CP ☐ 2324/2521
☐ 5717CO ☐ 5719CO ☐ 60646 ☐ 70897 ☐ 73410 ☐ E552 ☐ G112 ☑ 2168CP ☑ S-394 ☐ S-1054 ☐ T10081 ☐ T10082 Neutron Am-241 Be ☐ T-304 Ra-226 ☐ Y982
☐ E551 ☐ 5105 ☐ CSV280

☐ Alpha S/N _____ ☐ Beta S/N _____ ☐ Other _____

m 500 S/N 371845 ☐ Oscilloscope S/N _____ ☑ Multimeter S/N 60050420

Calibrator Andrew Fuller Andrew J. Fuller — Title Calibrator — Date 20 AUG 25

QC'd By _____ — Title Final QC — Date 21 Aug 25

This certificate shall not be reproduced except in full, without the written approval of Ludlum Measurements, Inc.

AC Inst. Only ☐ Passed Dielectric (Hi-Pot) and Continuity Test ☐ Failed: _____

Designer and Manufacturer of Scientific and Industrial Instruments

www.ludlums.com

CERTIFICATE OF CALIBRATION

LUDLUM MEASUREMENTS, INC.
501 Oak Street
325-235-5494
Sweetwater, TX 79556, U.S.A.

ACCREDITED
CERT # 4084.01

Customer AVM ENVIRONMENTAL SERVICES INC ORDER NO. 20479685/ 563226

Mfg. Ludlum Measurements, Inc. Model 19 Serial No. 76248

M Model Serial No.

Cal. Date 4-Oct-24 Cal Due Date 4-Oct-25 Cal. Interval 1 Year Meterface 202-016

Check mark ☑ applies to applicable instr. and/or detector IAW mfg. spec. T. 73 °F RH 41 % Alt. 708.4 mm Hg

☐ New Instrument Instrument Received ☑ Within Toler. +-10% ☐ 10-20% ☐ Out of Tol. ☐ Requiring Repair ☐ Other-See comments

☑ Mechanical ck. ☑ Meter Zeroed ☐ Background Subtract ☐ Input Sens. Linearity
☑ F/S Resp. ck. ☑ Reset ck. ☐ Window Operation ☑ Geotropism
☑ Audio ck. ☐ Alarm Setting ck. ☑ Batt. ck.

☐ Calibrated in accordance with LMI SOP 14.8 ☑ Calibrated in accordance with LMI SOP 14.9

Instrument Volt Set 800 V Input Sens. 37 mV. Det. Oper. V at mV Threshold Dial Ratio = mV

☑ HV Readout (2 points) Ref./Inst. 500 / V Ref./Inst. 1000 / V

COMMENTS:

Gamma Calibration: GM detectors positioned perpendicular to source except for M 44-9 in which the front of probe faces source.
Multimeter uncertainty within 1.3% of reading, Gamma uncertainty within 5.0% of reading, Neutron uncertainty within 7.0% of reading, Count rate uncertainty within 5.4% of reading

RANGE/MULTIPLIER	REFERENCE CAL. POINT	INSTRUMENT REC'D "AS FOUND READING"	INSTRUMENT METER READING
5000	4000µR/hr	4000 µR/hr	4000 µR/hr
5000	1000µR/hr	1000	1000
500	400µR/hr = 68,500	400	400
500	100µR/hr	100	100
250	200µR/hr = 35600	210	200
250	100µR/hr	100	100
50	6850 cpm	40	40
50	1712 cpm	10	10
25	3560 cpm	21	20
25	890 cpm	5	5

50, 25 Range(s) Calibrated Electronically

Digital Readout	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING

Log Scale	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING

Ludlum Measurements, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology, or to the calibration facilities of other International Standards Organization members, or have been derived from accepted values of natural physical constants or have been derived by the ratio type of calibration techniques.
All pass/fail determinations are based on the manufacturer's specifications without considering uncertainty factors.
Measurement results represent expanded uncertainties expressed at approximately the 95% level of confidence, using a coverage factor of k=2.
The calibration system conforms to the requirements of ANSI/NCSL Z540-1-1994 and ANSI N323AB-2013

ISO/IEC 17025:2017(E)
State of Texas Calibration License No. LO-1963

Reference Instruments and/or Sources: Cs-137 S/N: ☐ 059 ☐ 2171CP ☐ 2281CP ☐ 720 ☐ 734 ☐ 781 ☐ 1131 ☐ 1616 ☐ 1896 ☐ 1909 ☐ 1916CP ☐ 2324/2521
☐ 5717CO ☐ 5719CO ☐ 60646 ☐ 70897 ☐ 73410 ☐ E552 ☐ G112 ☑ 2168CP ☐ S-394 ☐ S-1054 ☐ T10081 ☐ T10082 Neutron Am-241 Be. ☐ T-304 Ra-226 ☐ Y982
☐ E551 ☐ 5105 ☐ CSV280

☐ Alpha S/N ☐ Beta S/N ☐ Other

☐ m 500 S/N 371845 ☐ Oscilloscope S/N ☑ Multimeter S/N 60050420

rator Andrew Fuller Andrew J Fuller Title Calibrator Date 4 OCT 24

QC'd By Title Final QC Date 5 Oct 24

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AC Inst. Only ☐ Passed Dielectric (Hi-Pot) and Continuity Test ☐ Failed:

ludlums.com

ilac-MRA ACCREDITED CERT #4084.01

CALIBRATION CERTIFICATE

Order No: 20475860

LUDLUM MEASUREMENTS, INC.
501 Oak Street
325-235-5494
Sweetwater, TX 79556, USA

Customer: AVM ENVIRONMENTAL SERVICES
1717 DEL NORTE BLVD
Address: GRANTS, NM 87020-2309
USA

Temp: 73.4 °F
Rel. H: 33%
Alt: 712mm Hg

Cal Date: 25-Nov-24
Cal Due Date: 25-Nov-25
Cal Interval: 1 year

Mfg.: Ludlum Measurements, Inc. **Model: 3003** Desc.: survey meter Serial No.: 25036838

Model 3003 Parameters:
- ☑ New Instrument
- Serial No.: 25036838
- ☑ Alarm Setting Ck.
- ☑ Audio Check
- ☑ Battery Check
- ☑ F/S Resp. Check
- ☑ HV Readout
- ☑ Mechanical Check
- ☑ Window Operation
- Firmware: F.4.4.1244
- Ref./Inst.: 600 / 598 V
- Ref./Inst.: 2000 / 2001 V
- Scaler Count: 6 second(s)
- ☑ LMI SOP 14.8
- Primary Units: cpm

Ratemeter

Reference Point	Direct Reading
5 Mcpm	4.98 Mcpm
2 Mcpm	1.99 Mcpm
800 kcpm	798 kcpm
200 kcpm	199 kcpm
80 kcpm	79.7 kcpm
20 kcpm	19.8 kcpm
8 kcpm	7.98 kcpm
2 kcpm	1.99 kcpm
800 cpm	797 cpm
200 cpm	200 cpm

Scaler

Reference Point	Direct Reading
5 Mcpm	498 kcount
2 Mcpm	198 kcount
800 kcpm	79.8 kcount
200 kcpm	19.9 kcount
80 kcpm	7.99 kcount
20 kcpm	1.99 kcount
8 kcpm	798 count
2 kcpm	200 count
800 cpm	80 count
200 cpm	20 count

COMMENTS:
See attachments for all other settings.

Det1. set up for gamma detector.

Det2. set up for typical M44-7.

Ludlum Measurements, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology.
The pass/fail tolerance of 10% (unless otherwise noted) is based on the manufacturer's specifications without considering uncertainty factors.
Measurement results represent expanded uncertainties expressed at approximately the 95% level of confidence, using a coverage factor of k=2.
Measurement Uncertainties: Voltage measurements 1.4%, Gamma Exposure/Dose 5.6%, Neutron Dose 7.0%, Count rate 5.2%.
The calibration system conforms to the requirements of ANSI/NCSL Z540-1-1994 and ANSI N323AB-2013.

ISO/IEC 17025: 2017 (E)
State of Texas Calibration License No. LO-1963

Reference Instruments and/or Source(s):

Form ID #: AC243825681103

Pulser: 289155 Multimeter: 14670125

Calibrator: Manuela Aguilar Manuela Aguilar Title: Calibrator Date: 25-Nov-24

QC'd by: Title: Final QC Date: 26 Nov 2024

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www.ludlums.com

Designer and Manufacturer
of
Scientific and Industrial
Instruments

LUDLUM MEASUREMENTS, INC.
501 Oak Street
325-235-5494
Sweetwater, TX 79556, U.S.A.

Modification/Option Functional Check

Customer AVM ENVIRONMENTAL SERVICES ORDER NO. 20475860

This Certifies that option or modification # 4498 - 1024

on the Ludlum Model 3000 Serial No. 258369 58 has been functionally checked.

Refer to applicable instrument manuals and/or addenda for specific operating instructions.

Check performed by Jonathon Hernandez Date 28-OCT-24

Manuela Aguilar 25-NOV-24

AVM Environmental Services Inc.

Scaler/Ratemeter Calibration Form

Model : L2221 S/N: 290801

Reference Instrument/Source: Ludlum Pulser 500, S/N:114513

HV Calibration

HV Test (2 points): Ref/Inst 600/600 Ref/Inst 900/900

Ratemeter Calibration

Instrument Threshold @ 100 (10 mV), WIN: Out, HV 900VDC; Pulser Threshold @ 200 (20mV)

Range/Mode	Range Multiplier	Calibration Point (Pulser Setting) cpm x multiplier	Target CPM (±5%)	As Found Reading		Left or Set Reading
Ratemeter	x1	40x1	38-42	40		"
	x1	40x10	380-420	400		"
	x10	40x100	3800-4200	4000		"
	x100	40x1K	38K-42K	40000		"
	x1K	40x10K	380K-420K	400000		"
Digital Ratemeter	-	40x1	38-42	41		"
	-	40x10	380-420	416		"
	-	40x100	3800-4200	3960		"
	-	40x1K	38K-42K	39534		"
	-	40x10K	380K-420K	395480		"

Threshold/Gain Calibration

WIN OUT

Pulser Amplitude (mV)	Pulser CPM		L2221 Theshold (mv)	Target CPM	L2221 CPM Found		L2221 CPM Left or Set @
10.0	40000		100 (10 mV)	27K -33K	30350		"
20.0	40000		200 (20 mV)	27K -33K	30714		"
30.0	40000		300 (30 mV)	27K -33K	31110		"
40.0	40000		400 (40 mV)	27K -33K	30431		"
50.0	40000		500 (50 mV)	27K -33K	31085		"

Note: Use R174 Gain Control on Power Supply Board to adjust L2221 CPM @75% for Threshold/Gain Calibration.

Window Cut-off Points Check

L2221 Threshold set @100 (10.0 mv)

WIN @ 100 (10.0 mV) ✓ WIN @ 400 (40.0 mV) ✓

WIN @ 200 (20.0 mV) ✓ WIN @ 500 (50.0 mV) ✓

Date 2-17-25 Calibrated By

AVM Environmental Services Inc.
L2221 SCA/L44-20 Energy Calibration Form

SCA: L2221, SR #290801 Detector: Ludlum 44-20 (3x3 NaI Scintillator)

Calibration Source: Cs-137 Check Source, 5 uCi (August 2008) For 662 KeV Peak Cal

Threshold (input sensitivity) 652

Window, In/Out IN Window 20

HV Initial 100, At Peak 575

Maximum CPM: 204503 Background CPM: 9

HV Set @ 575 VDC

For Bi-214 609.2 KeV Peak (559 - 659 KeV ROI), Set Threshold @ 559, Window @ 10mV

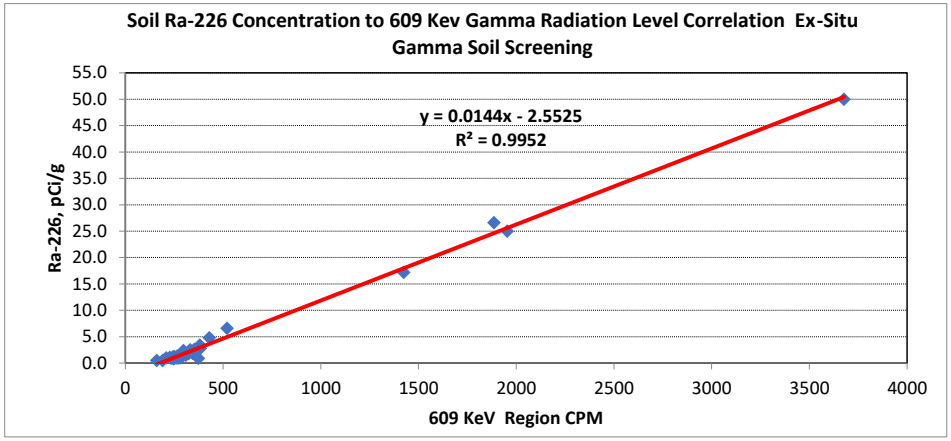
Calibration Check w 1% U3O8 Ore Check Source: 15656 CPM

BKG = 63 cpm

Date 9-30-24 Calibrated By

AVM Environmental Services
Ex-Situ Soil Screening Gamma Radiation Level to Ra-226 Correlation
Mt. Taylor Mine Site Subsurface Soil Investigation

Soil Sample/Ref Std	Date	Ra-226 pCi/g	CPM SCA 609 KeV Region
Blank	9/30/2024	-	65
DP-19, 0.5' - 1.0'	9/3/2025	1.2	250
DP-21, 2.0' - 2.5'	9/3/2025	1.1	254
DP-22, 1.0' - 1.5'	9/3/2025	1.2	244
DP-23, 1.0' - 1.5'	9/3/2025	1.9	346
DP-24, 0.5' - 1.0'	9/3/2025	1.1	271
DP-27, 1.0' - 2.0'	9/3/2025	1.1	227
DP-28, 0.5' - 1.0'	9/3/2025	1.0	209
DP-30, 4.5' - 6.0'	8/21/2025	2.4	333
DP-31, 10.0' - 10.25'	8/21/2025	1.5	293
DP-01, 0.0' - 0.5'	9/11/2025	1.9	321
DP-02, 0.0' - 0.5'	9/11/2025	1.8	324
DP-04, 1.0' - 1.5'	9/15/2025	1.6	304
DP-05, 0.5' - 1.0'	9/16/2025	1.0	251
DP-06, 1.5' - 2.0'	9/15/2025	2.2	356
DP-07, 3.0' - 3.5'	9/16/2025	1.0	254
DP-08, 0.5' - 1.0'	9/15/2025	2.6	353
DP-09, 1.0' - 1.5'	9/10/2025	0.9	374
DP-10, 1.0' - 1.5'	9/10/2025	1.0	268
DP-11, 0.5' - 1.0'	9/10/2025	1.9	343
DP-12, 0.5' - 1.0'	9/16/2025	1.5	309
DP-13, 0.5' - 1.0'	9/16/2025	2.8	384
DP-15, 0.5' - 1.0'	9/15/2025	2.7	366
DP-16, 0.5' - 1.0'	9/15/2025	1.0	271
DP-17, 0.0' - 0.5'	9/11/2025	26.6	1886
DP-17, 0.5' - 1.0'	9/11/2025	1.0	250
DP-18, 0.5' - 1.0'	9/11/2025	0.8	247
DP-20r, 0.5' - 1.0'	9/8/2025	1.0	246
DP-25, 0.5' - 1.0'	9/8/2025	4.8	429
DP-26r, 2.0' - 2.5'	9/8/2025	0.9	235
DP-33, 0.5' - 1.0'	9/9/2025	1.4	294
DP-34, 0.5' - 1.0'	9/9/2025	2.5	331
DP-35, 0.5' - 1.0'	9/9/2025	1.3	265
DP-36, 1.0' - 1.5'	9/9/2025	0.5	161
DP-37, 1.0' - 1.5'	9/10/2025	1.1	252
DP-38, 0.5' - 1.0'	9/10/2025	3.4	381
DP-39, 1.5' - 2.0'	9/10/2025	0.5	191
DP-41, 3.5' - 4.0'	9/24/2025	17.2	1424
DP-44, 1.0' - 1.5'	9/22/2025	1.0	261
DP-46, 0.5' - 1.0'	9/24/2025	1.0	280
DP-48, 0.5' - 1.0'	9/24/2025	2.4	297
6.6 pCi/g Ra-226 Ref Sc	9/30/2024	6.6	520
25 pCi/g Ra-226 Ref So	9/30/2024	25.0	1954
50 pCi/g Ra-226 Ref So	9/30/2024	50.0	3677



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.9976221
R Square	0.9952499
Adjusted R Square	0.9951341
Standard Error	0.6364145
Observations	43

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	3479.338226	3479.33823	8590.462141	2.92567E-49
Residual	41	16.6059596	0.4050234		
Total	42	3495.944186			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-2.5525215	0.122081531	-20.9083349	1.74691E-23	-2.799070188	-2.30597288	-2.79907019	-2.305972882
X Variable 1	0.0144078	0.00015545	92.684746	2.92567E-49	0.014093875	0.01472175	0.01409387	0.014721748

AVM Environmental Services, Inc.
Micro R Meter Function Check Form

Micro R Meter: Ludlum 19, SR#76248

Function Check Source ID: 1% U_3O_8 Ore in Sealed can

Function Check @ Calibration 135

Acceptable Function Check Reading (uR/hr) Range (20%) 108 to 162

Date	Physical Check	Cal Date	Battery[1] Volts or OK	BKG Reading uR/hr	Source Reading[2] uR/hr	Within Acceptable Range Y or N	Cal Due	Tech
3-6-25	✓	10-4-24	ok	8-10	140	y	10-4-25	VP
3-11-25	✓	10-4-24	ok	8-10	140	y	10-4-25	VP
3-12-25	✓	10-4-24	ok	8-10	135	y	10-4-25	VP
3-17-25	✓	10-4-24	ok	10-12	140	y	10-4-25	VP
3-25-25	✓	10-4-24	ok	8-10	140	y	10-4-25	VP
3-26-25	✓	10-4-24	ok	10-12	135	y	10-4-25	VP
3-31-25	✓	10-4-24	ok	8-10	140	y	10-4-25	VP
4-7-25	✓	10-4-24	ok	10-12	135	y	10-4-25	VP
4-8-25	✓	10-4-24	ok	8-10	135	y	10-4-25	VP
4-9-25	✓	10-4-24	ok	8-10	140	y	10-4-25	VP
4-10-25	✓	10-4-24	ok	8-10	140	y	10-4-25	VP
4-15-25	✓	10-4-24	ok	10-12	130	y	10-4-25	VP
4-16-25	✓	10-4-24	ok	8-10	135	y	10-4-25	VP
4-21-25	✓	10-4-24	ok	8-10	140	y	10-4-25	VP
4-22-25	✓	10-4-24	ok	8-10	135	y	10-4-25	VP
4-23-25	✓	10-4-24	ok	8-10	130	y	10-4-25	VP
4-29-25	✓	10-4-24	ok	10-12	135	y	10-4-25	VP
4-30-25	✓	10-4-24	ok	8-10	140	y	10-4-25	VP

Note: (1) Battery Voltage must be within BAT TEST Range (2) Function Check Source must be placed in the circle on the front side of the meter

AVM Environmental Services, Inc.
Micro R Meter Function Check Form

Micro R Meter: Ludlum 19, SR#76248

Function Check Source ID: 1% U_3O_8 Ore in Sealed can

Function Check @ Calibration 135

Acceptable Function Check Reading (uR/hr) Range (20%) 108 to 162

Date	Physical Check	Cal Date	Battery[1] Volts or OK	BKG Reading uR/hr	Source Reading[2] uR/hr	Within Acceptable Range Y or N	Cal Due	Tech
5-12-25	✓	10-4-24	ok	8-10	140	Y	10-4-25	VP
5-13-25	✓	10-4-24	ok	8-10	140	Y	10-4-25	VP
5-14-25	✓	10-4-24	ok	8-10	135	Y	10-4-25	VP
6-6-25	✓	10-4-24	ok	8-10	140	Y	10-4-25	VP
6-19-25	✓	10-4-24	ok	8-10	135	Y	10-4-25	VP
6-30-25	✓	10-4-24	ok	8-12	130	Y	10-4-25	VP
7-28-25	✓	10-4-24	ok	8-10	140	Y	10-4-25	VP
8-4-25	✓	10-4-24	ok	8-10	140	Y	10-4-25	VP

Note: (1) Battery Voltage must be within BAT TEST Range (2) Function Check Source must be placed in the circle on the front side of the meter

AVM Environmental Services, Inc.
Micro R Meter Function Check Form

Micro R Meter: Ludlum 19, SR#76248

Function Check Source ID: 1% U_3O_8 Ore in Sealed can

Function Check @ Calibration 140

Acceptable Function Check Reading (uR/hr) Range (20%) 112 to 168

Date	Physical Check	Cal Date	Battery(1) Volts or OK	BKG Reading uR/hr	Source Reading (2) uR/hr	Within Acceptable Range Y or N	Cal Due	Tech
8-20-25	✓	8-20-25	ok	10-12	140	Y	8-20-26	VP
8-28-25	✓	8-20-25	ok	10-12	135	Y	8-20-26	VP
9-4-25	✓	8-20-25	ok	10-12	140	Y	8-20-26	VP
9-8-25	✓	8-20-25	ok	10-12	135	Y	8-20-26	VP
9-9-25	✓	8-20-25	ok	10-12	140	Y	8-20-26	VP
9-10-25	✓	8-20-25	ok	8-10	135	Y	8-20-26	VP
9-11-25	✓	8-20-25	ok	10-12	135	Y	8-20-26	VP
9-15-25	✓	8-20-25	ok	8-10	135	Y	8-20-26	VP
9-16-25	✓	8-20-25	ok	8-10	135	Y	8-20-26	VP
9-18-25	✓	8-20-25	ok	8-10	135	Y	8-20-26	VP
9-22-25	✓	8-20-25	ok	8-10	140	Y	8-20-26	VP
9-24-25	✓	8-20-25	ok	8-10	135	Y	8-20-26	VP
9-25-25	✓	8-20-25	ok	8-10	135	Y	8-20-26	MM
11-5-25	✓	8-20-25	ok	8-10	140	Y	8-20-26	VP

Note: (1) Battery Voltage must be within BAT TEST Range (2) Function Check Source must be placed in the circle on the front side of the meter

AVM Environmental Services, Inc.
Scaler/Ratemeter - 2" x 2" NaI Detector Function Check

Function Check Source ID: 1% U_3O_8 Ore in Sealed can

2" x 2" NaI Detector ID: SPA-3 S#408522-30

Acceptable background Count (cpm) Range (20%) 6055 to 9083 (Bare)

Acceptable background Count (cpm) Range (20%) 2150 to 3226 (collimated)

Acceptable Source Count (cpm) Range (20%) 78112 to 117168

Date	Scaler/Ratemeter	Physical Check	Cal Due	Battery[1] Volts or OK	HV Volts	THR mV[2]	Window In or OUT[3]	C.C.[4]	BKG Counts cpm	Source Counrts cpm	Within Acceptable Range Y or N	MDC pCi/gm	Tech
2-17-25	L3003 S# 25036838	✓	2-17-26	ok	900	10	out	1	7530 Bare / 2790 Coll	97800	y	–	VP
2-19-25	L3003 S# 25036838	✓	2-17-26	ok	900	10	out	1	7490 Bare / 2550 Coll	99800	y	–	VP
2-20-25	L3003 S#25036838	✓	2-17-26	ok	900	10	out	1	7540 Bare / 2590 Coll	100000	y	–	VP
2-26-25	L3003 S#25036838	✓	2-17-26	ok	900	10	out	1	7640 Bare / 2610 Coll	99900	y	–	VP
3-11-25	L3003 S#25036830	✓	2-17-26	ok	900	10	out	1	7510 Bare / 2620 Coll	99900	y	–	VP
3-12-25	L3003 S#25036830	✓	2-17-26	ok	900	10	out	1	7430 Bare / 2600 Coll	99300	y	–	VP
3-31-25	L3003 S#25036830	✓	2-17-26	ok	900	10	out	1	7540 Bare / 2790 Coll	99100	y	–	VP
5-19-25	L3003 S#25036830	✓	2-17-26	ok	900	10	out	1	7520 Bare / 2690 Coll	98400	y	–	VP
5-21-25	L3003 S#25036830	✓	2-17-26	ok	900	10	out	1	7640 Bare / 2710 Coll	99820	y	–	VP
5-22-25	L3003 S#25036830	✓	2-17-26	ok	900	10	out	1	7620 Bare / 2570 Coll	98770	y	–	VP
5-28-25	L3003 S#25036830	✓	2-17-26	ok	900	10	out	1	7520 Bare / 2800 Coll	97660	y	–	VP
5-29-25	L3003 S#25036830	✓	2-17-26	ok	900	10	out	1	7510 Bare / 2670 Coll	98200	y	–	VP
6-9-25	L3003 S#25036830	✓	2-17-26	ok	900	10	out	1	7720 Bare / 2810 Coll	97700	y	–	VP
6-10-25	L3003 S#25036830	✓	2-17-26	ok	900	10	out	1	7600 Bare / 2720 Coll	97600	y	–	VP
6-11-25	L3003 S#25036830	✓	2-17-26	ok	900	10	out	1	7590 Bare / 2770 Coll	98100	y	–	VP
6-19-25	L3003 S#25036830	✓	2-17-26	ok	900	10	out	1	7600 Bare / 2800 Coll	98110	y	–	VP

Note: (1) Battery Voltage for Ludlum 2221 must be >5.3 volts; (2) Threshhold must be at 10.0 mV; (3) Window Position must be OUT; (4) CC on L2241-2 set at 0.001
For L2241-2 Check HV and Threshold using Ludlum 500 pulser.

AVM Environmental Services, Inc.
Scaler/Ratemeter - 2" x 2" NaI Detector Function Check

Function Check Source ID: 1% U_3O_8 Ore in Sealed can

2" x 2" NaI Detector ID: SPA-3 S# 408522-30

Acceptable background Count (cpm) Range (20%) 6055 to 9083 (Bare)

Acceptable background Count (cpm) Range (20%) 2150 to 3226 (collimated)

Acceptable Source Count (cpm) Range (20%) 78112 to 117168

Date	Scaler/Ratemeter	Physical Check	Cal Due	Battery[1] Volts or OK	HV Volts	THR mV[2]	Window In or OUT[3]	C.C.[4]	BKG Counts cpm	Source Counrts cpm	Within Acceptable Range Y or N	MDC pCi/gm	Tech
7-7-25	L3003 S#250 36830	✓	2-17-26	OK	900	10	out	1	7620 Bare / 2827 Coll.	98040	✓	—	VP
7-8-25	L3003 S#250 36830	✓	2-17-26	ok	900	10	out	1	7560 Bare / 2490 Coll.	99900	✓	—	VP
8-20-25	L3003 S#250 36830	✓	2-17-26	ok	900	10	out	1	7590 Bare / 2620 Coll.	98700	✓	—	VP
8-21-25	L3003 S#250 36830	✓	2-17-26	ok	900	10	out	1	7610 Bare / 2700 Coll.	99200	✓	—	VP
9-2-25	L3003 S#250 36830	✓	2-17-26	ok	900	10	out	1	7980 Bare / 2800 Coll.	98800	✓	—	VP
9-3-25	L3003 S#250 36830	✓	2-17-26	ok	900	10	out	1	7600 Bare / 2820 Coll.	99600	✓	—	VP
9-8-25	L3003 S#250 36830	✓	2-17-26	ok	900	10	out	1	7710 Bare / 2900 Coll.	98600	✓	—	VP
9-9-25	L3003 S#250 36830	✓	2-17-26	ok	900	10	out	1	7640 Bare / 2830 Coll.	98900	✓	—	VP
9-10-25	L3003 S#250 36830	✓	2-17-26	ok	900	10	out	1	7620 Bare / 2840 Coll.	98100	✓	—	VP
9-11-25	L3003 S#250 36830	✓	2-17-26	ok	900	10	out	1	7660 Bare / 2780 Coll.	98100	✓	—	VP
9-15-25	L3003 S#250 36830	✓	2-17-26	ok	900	10	out	1	7420 Bare / 2550 Coll.	97000	✓	—	VP
9-16-25	L3003 S#250 36830	✓	2-17-26	ok	900	10	out	1	7520 Bare / 2600 Coll.	97200	✓	—	VP
9-18-25	L3003 S#250 36830	✓	2-17-26	ok	900	10	out	1	7480 Bare / 2610 Coll.	98100	✓	—	VP
9-22-25	L3003 S#250 36830	✓	2-17-26	ok	900	10	out	1	7430 Bare / 2540 Coll.	97800	✓	—	VP
9-24-25	L3003 S#250 36830	✓	2-17-26	OK	900	10	out	1	7570 Bare / 2580 Coll.	98400	✓	—	MM
									Bare / Coll.				

Note: (1) Battery Voltage for Ludlum 2221 must be >5.3 volts; (2) Threshhold must be at 10.0 mV; (3) Window Position must be OUT; (4) CC on L2241-2 set at 0.001
For L2241-2 Check HV and Threshold using Ludlum 500 pulser.

AVM Environmental Services, Inc.
Scaler/Ratemeter - 2" x 2" NaI Detector Function Check

Function Check Source ID: 1% U_3O_8 Ore in Sealed can

2" x 2" NaI Detector ID: SPA-3 #30

Acceptable background Count (cpm) Range (20%) 6524 to 9786 (Bare)

Acceptable background Count (cpm) Range (20%) 2537 to 3805 (collimated)

Acceptable Source Count (cpm) Range (20%) 77104 to 115656

Date	Scaler/Ratemeter	Physical Check	Cal Due	Battery[1] Volts or OK	HV Volts	THR mV[2]	Window In or OUT[3]	C.C.[4]	BKG Counts cpm	Source Counrts cpm	Within Acceptable Range Y or N	MDC pCi/gm	Tech
2-19-25	L2221 S#290801	✓	2-17-26	ok	900	10	out	1	8341 Bare / 3130 Coll.	97899	Y	—	VP
3-31-25	L2221 S#290801	✓	2-17-26	ok	900	10	out	1	8216 Bare / 3224 Coll.	98878	Y	—	VP
4-7-25	L2221 S#290801	✓	2-17-26	ok	900	10	out	1	8354 Bare / 3127 Coll.	96885	Y	—	VP
4-8-25	L2221 S#290801	✓	2-17-26	ok	900	10	out	1	8169 Bare / 3341 Coll.	97946	Y	—	VP
4-9-25	L2221 S#290801	✓	2-17-26	ok	900	10	out	1	8238 Bare / 3235 Coll.	99787	Y	—	VP
4-10-25	L2221 S#290801	✓	2-17-26	ok	900	10	out	1	8411 Bare / 3187 Coll.	98777	Y	—	VP
4-16-25	L2221 S#290801	✓	2-17-26	ok	900	10	out	1	8362 Bare / 3320 Coll.	98641	Y	—	VP
4-21-25	L2221 S#290801	✓	2-17-26	ok	900	10	out	1	8308 Bare / 3162 Coll.	97443	Y	—	VP
4-22-25	L2221 S#290801	✓	2-17-26	ok	900	10	out	1	8314 Bare / 3310 Coll.	98790	Y	—	VP
4-28-25	L2221 S#290801	✓	2-17-26	ok	900	10	out	1	8398 Bare / 3200 Coll.	97314	Y	—	VP
4-29-25	L2221 S#290801	✓	2-17-26	ok	900	10	out	1	8501 Bare / 3029 Coll.	96776	Y	—	VP
4-30-25	L2221 S#290801	✓	2-17-26	ok	900	10	out	1	8328 Bare / 3209 Coll.	97640	Y	—	VP
5-12-25	L2221 S#290801	✓	2-17-26	ok	900	10	out	1	8364 Bare / 3280 Coll.	97871	Y	—	VP
5-14-25	L2221 S#290801	✓	2-17-26	ok	900	10	out	1	8153 Bare / 3116 Coll.	97658	Y	—	VP
5-15-25	L2221 S#290801	✓	2-17-26	ok	900	10	out	1	8607 Bare / 3152 Coll.	97508	Y	—	VP
6-26-25	L2221 S#290801	✓	2-17-26	ok	900	10	out	1	8514 Bare / 8514 Coll.	98064	Y	—	VP

Note: (1) Battery Voltage for Ludlum 2221 must be >5.3 volts; (2) Threshhold must be at 10.0 mV; (3) Window Position must be OUT; (4) CC on L2241-2 set at 0.001
For L2241-2 Check HV and Threshold using Ludlum 500 pulser.

AVM Environmental Services, Inc.
Scaler/Ratemeter - 2" x 2" NaI Detector Function Check

Function Check Source ID: 1% U_3O_8 Ore in Sealed can

2" x 2" NaI Detector ID: SPA-3 #30

Acceptable background Count (cpm) Range (20%) 6524 to 9786 (Bare)

Acceptable background Count (cpm) Range (20%) 2537 to 3805 (collimated)

Acceptable Source Count (cpm) Range (20%) 77104 to 115656

Date	Scaler/Ratemeter	Physical Check	Cal Due	Battery[1] Volts or OK	HV Volts	THR mV[2]	Window In or OUT[3]	C.C.[4]	BKG Counts cpm	Source Counrts cpm	Within Acceptable Range Y or N	MDC pCi/gm	Tech
7-2-25	L2221 S#290801	✓	2-17-26	ok	900	10	out	1	8332 Bare / 3108 Coll.	98181	y	—	VP
7-3-25	L2221 S#290801	✓	2-17-26	ok	900	10	out	1	8314 Bare / 3310 Coll.	97889	y	—	VP
7-9-25	L2221 S#290801	✓	2-17-26	ok	900	10	out	1	8050 Bare / 3100 Coll.	98834	y	—	VP
7-10-25	L2221 S#290801	✓	2-17-26	ok	900	10	out	1	8199 Bare / 3183 Coll.	99832	y	—	VP
7-23-25	L2221 S#290801	✓	2-17-26	ok	900	10	out	1	7923 Bare / 3283 Coll.	99471	y	—	VP
7-24-25	L2221 S#290801	✓	2-17-26	ok	900	10	out	1	8377 Bare / 3147 Coll.	98693	y	—	VP
7-28-25	L2221 S#290801	✓	2-17-26	ok	900	10	out	1	8064 Bare / 3308 Coll.	98408	y	—	VP
8-4-25	L2221 S#290801	✓	2-17-26	ok	900	10	out	1	8348 Bare / 3217 Coll.	98705	y	—	VP
8-5-25	L2221 S#290801	✓	2-17-26	ok	900	10	out	1	8098 Bare / 3110 Coll.	98089	y	—	VP
8-6-25	L2221 S#290801	✓	2-17-26	ok	900	10	out	1	8278 Bare / 3293 Coll.	97138	y	—	VP
									Bare / Coll.				
									Bare / Coll.				
									Bare / Coll.				
									Bare / Coll.				
									Bare / Coll.				
									Bare / Coll.				

Note: (1) Battery Voltage for Ludlum 2221 must be >5.3 volts; (2) Threshhold must be at 10.0 mV; (3) Window Position must be OUT; (4) CC on L2241-2 set at 0.001
For L2241-2 Check HV and Threshold using Ludlum 500 pulser.

AVM Environmental Services, Inc.
Ludlum SCA L2221 - 44-20 3x3 NaI Detector Function Check
559 - 659 KeV Gamma Radiation Soil Screening

L2221 #68782

Ludlum 44-20 3x3 NaI Detector, #PR295573

Function Check Source ID: 1% U_3O_8 Ore in Sealed can

Acceptable background Count (cpm) Range (20%) 50 to 76

Acceptable Source Count (cpm) Range (20%) 12525 to 18787

Date	Physical Check	Cal Date	Battery[1] Volts or OK	HV Volts	Threshhold mV [2]	Window mV	Window In/Out	BKG Counts cpm	Source Counrts cpm	Within Acceptable Range Y or N	MDC pCi/gm	Tech
9-30-24	✓	9-30-24	ok	575	559	10	in	63	15656	Y	—	VP
8-2-25	✓	9-30-24	ok	577	559	10	in	70	15704	Y	—	VP
9-3-25	✓	9-30-24	ok	585	559	10	in	68	15677	Y	—	VP
9-8-25	✓	9-30-24	ok	585	559	10	in	65	15922	Y	—	VP
9-9-25	✓	9-30-24	ok	575	559	10	in	64	15611	Y	—	VP
9-10-25	✓	9-30-24	ok	577	559	10	in	66	15701	Y	—	VP
9-15-25	✓	9-30-24	ok	578	559	10	in	72	15616	Y	—	VP
9-16-25	✓	9-30-24	ok	579	559	10	in	56	15785	Y	—	VP
9-24-25	✓	9-30-24	ok	581	559	10	in	57	15764	Y	—	VP

Note: (1) Battery Voltage for Ludlum 2221 must be >5.3 volts; (2) Threshhold must be at 10 mV; (3) Window must be IN

Appendix C
Soil Sample COC and Laboratory Analytical Results Report

ANALYTICAL SUMMARY REPORT

October 16, 2025

Rio Grande Resources Corporation
PO Box 1150
Grants, NM 87020-1150

Work Order: C25090418 Quote ID: C17937

Project Name: MTM SCA Characterization

Energy Laboratories, Inc. Casper WY received the following 14 samples for Rio Grande Resources Corporation on 9/10/2025 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C25090418-001	DP-30 [4.5-6.0]Feet	08/21/25 10:35	09/10/25	Soil	Gamma Sample Preparation Drying/Grinding, Radiochemistry Gross Gamma
C25090418-002	DP-31 [10-10.25]Feet	08/21/25 12:45	09/10/25	Soil	Same As Above
C25090418-003	DP-FSS-05	09/02/25 8:30	09/10/25	Soil	Same As Above
C25090418-004	DP-FSS-21	09/02/25 10:00	09/10/25	Soil	Same As Above
C25090418-005	DP-FSS-46	09/02/25 11:30	09/10/25	Soil	Same As Above
C25090418-006	DP-FSS-DS1	09/02/25 12:30	09/10/25	Soil	Same As Above
C25090418-007	DP-28 [0.5-1.0]Feet	09/03/25 7:50	09/10/25	Soil	Same As Above
C25090418-008	DP-27 [1.0-2.0]Feet	09/03/25 8:40	09/10/25	Soil	Same As Above
C25090418-009	DP-21 [2.0-2.5]Feet	09/03/25 9:40	09/10/25	Soil	Same As Above
C25090418-010	DP-19 [0.5-1.0]Feet	09/03/25 10:20	09/10/25	Soil	Same As Above
C25090418-011	DP-22 [1.0-1.5]Feet	09/03/25 11:00	09/10/25	Soil	Same As Above
C25090418-012	DP-23 [1.0-1.5]Feet	09/03/25 12:30	09/10/25	Soil	Same As Above
C25090418-013	DP-24 [0.5-1.0]Feet	09/03/25 13:00	09/10/25	Soil	Same As Above
C25090418-014	DP-DS1 [4.5-6.0]Feet	08/21/25 13:30	09/10/25	Soil	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 2393 Salt Creek Hwy, Casper, WY 82601-9601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

Energy Laboratories, Inc. verifies the reported results for the analysis has been technically reviewed and approved for release.

If you have any questions regarding these test results, please contact your Project Manager.

Digitally signed by
Lisa Bradley
Date: 2025.10.16 14:24:10 -06:00

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090418-001
Client Sample ID: DP-30 [4.5-6.0]

Report Date: 10/16/25
Collection Date: 08/21/25 10:35
DateReceived: 09/10/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.8	pCi/g-dry	U			E901.1M	10/08/25 13:39 / haw
Radium 224 precision (±)	2.8	pCi/g-dry				E901.1M	10/08/25 13:39 / haw
Radium 224 MDC	4.7	pCi/g-dry				E901.1M	10/08/25 13:39 / haw
Radium 226	2.4	pCi/g-dry				E901.1M	10/08/25 13:39 / haw
Radium 226 precision (±)	0.3	pCi/g-dry				E901.1M	10/08/25 13:39 / haw
Radium 226 MDC	0.3	pCi/g-dry				E901.1M	10/08/25 13:39 / haw
Radium 228	1.7	pCi/g-dry				E901.1M	10/08/25 13:39 / haw
Radium 228 precision (±)	0.5	pCi/g-dry				E901.1M	10/08/25 13:39 / haw
Radium 228 MDC	0.5	pCi/g-dry				E901.1M	10/08/25 13:39 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090418-002
Client Sample ID: DP-31 [10-10.25]

Report Date: 10/16/25
Collection Date: 08/21/25 12:45
DateReceived: 09/10/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	2.3	pCi/g-dry				E901.1M	10/08/25 15:12 / haw
Radium 224 precision (±)	1.3	pCi/g-dry				E901.1M	10/08/25 15:12 / haw
Radium 224 MDC	2.1	pCi/g-dry				E901.1M	10/08/25 15:12 / haw
Radium 226	1.5	pCi/g-dry				E901.1M	10/08/25 15:12 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	10/08/25 15:12 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	10/08/25 15:12 / haw
Radium 228	1.7	pCi/g-dry				E901.1M	10/08/25 15:12 / haw
Radium 228 precision (±)	0.4	pCi/g-dry				E901.1M	10/08/25 15:12 / haw
Radium 228 MDC	0.4	pCi/g-dry				E901.1M	10/08/25 15:12 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090418-003
Client Sample ID: DP-FSS-05

Report Date: 10/16/25
Collection Date: 09/02/25 08:30
DateReceived: 09/10/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	-0.3	pCi/g-dry	U			E901.1M	10/08/25 17:41 / haw
Radium 224 precision (±)	1.7	pCi/g-dry				E901.1M	10/08/25 17:41 / haw
Radium 224 MDC	2.9	pCi/g-dry				E901.1M	10/08/25 17:41 / haw
Radium 226	1.2	pCi/g-dry				E901.1M	10/08/25 17:41 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	10/08/25 17:41 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	10/08/25 17:41 / haw
Radium 228	1.2	pCi/g-dry				E901.1M	10/08/25 17:41 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	10/08/25 17:41 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1M	10/08/25 17:41 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090418-004
Client Sample ID: DP-FSS-21

Report Date: 10/16/25
Collection Date: 09/02/25 10:00
DateReceived: 09/10/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.5	pCi/g-dry	U			E901.1M	10/09/25 09:35 / haw
Radium 224 precision (±)	1.7	pCi/g-dry				E901.1M	10/09/25 09:35 / haw
Radium 224 MDC	2.9	pCi/g-dry				E901.1M	10/09/25 09:35 / haw
Radium 226	1.4	pCi/g-dry				E901.1M	10/09/25 09:35 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	10/09/25 09:35 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	10/09/25 09:35 / haw
Radium 228	1.3	pCi/g-dry				E901.1M	10/09/25 09:35 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	10/09/25 09:35 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1M	10/09/25 09:35 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090418-005
Client Sample ID: DP-FSS-46

Report Date: 10/16/25
Collection Date: 09/02/25 11:30
DateReceived: 09/10/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	-0.2	pCi/g-dry	U			E901.1M	10/09/25 11:39 / haw
Radium 224 precision (±)	1.8	pCi/g-dry				E901.1M	10/09/25 11:39 / haw
Radium 224 MDC	3.0	pCi/g-dry				E901.1M	10/09/25 11:39 / haw
Radium 226	1	pCi/g-dry				E901.1M	10/09/25 11:39 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	10/09/25 11:39 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	10/09/25 11:39 / haw
Radium 228	1.4	pCi/g-dry				E901.1M	10/09/25 11:39 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	10/09/25 11:39 / haw
Radium 228 MDC	0.2	pCi/g-dry				E901.1M	10/09/25 11:39 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090418-006
Client Sample ID: DP-FSS-DS1

Report Date: 10/16/25
Collection Date: 09/02/25 12:30
DateReceived: 09/10/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.5	pCi/g-dry	U			E901.1M	10/09/25 16:49 / haw
Radium 224 precision (±)	1.7	pCi/g-dry				E901.1M	10/09/25 16:49 / haw
Radium 224 MDC	2.9	pCi/g-dry				E901.1M	10/09/25 16:49 / haw
Radium 226	1.2	pCi/g-dry				E901.1M	10/09/25 16:49 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	10/09/25 16:49 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	10/09/25 16:49 / haw
Radium 228	1.5	pCi/g-dry				E901.1M	10/09/25 16:49 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	10/09/25 16:49 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1M	10/09/25 16:49 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090418-007
Client Sample ID: DP-28 [0.5-1.0]

Report Date: 10/16/25
Collection Date: 09/03/25 07:50
DateReceived: 09/10/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.4	pCi/g-dry	U			E901.1M	10/13/25 10:05 / haw
Radium 224 precision (±)	1.6	pCi/g-dry				E901.1M	10/13/25 10:05 / haw
Radium 224 MDC	2.7	pCi/g-dry				E901.1M	10/13/25 10:05 / haw
Radium 226	1.0	pCi/g-dry				E901.1M	10/13/25 10:05 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	10/13/25 10:05 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	10/13/25 10:05 / haw
Radium 228	1.2	pCi/g-dry				E901.1M	10/13/25 10:05 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	10/13/25 10:05 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1M	10/13/25 10:05 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090418-008
Client Sample ID: DP-27 [1.0-2.0]

Report Date: 10/16/25
Collection Date: 09/03/25 08:40
DateReceived: 09/10/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.09	pCi/g-dry	U			E901.1M	10/13/25 12:28 / haw
Radium 224 precision (±)	1.7	pCi/g-dry				E901.1M	10/13/25 12:28 / haw
Radium 224 MDC	2.8	pCi/g-dry				E901.1M	10/13/25 12:28 / haw
Radium 226	1.1	pCi/g-dry				E901.1M	10/13/25 12:28 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	10/13/25 12:28 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	10/13/25 12:28 / haw
Radium 228	1.4	pCi/g-dry				E901.1M	10/13/25 12:28 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	10/13/25 12:28 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1M	10/13/25 12:28 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090418-009
Client Sample ID: DP-21 [2.0-2.5]

Report Date: 10/16/25
Collection Date: 09/03/25 09:40
DateReceived: 09/10/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	2.1	pCi/g-dry				E901.1M	10/13/25 14:29 / haw
Radium 224 precision (±)	1.1	pCi/g-dry				E901.1M	10/13/25 14:29 / haw
Radium 224 MDC	1.7	pCi/g-dry				E901.1M	10/13/25 14:29 / haw
Radium 226	1.1	pCi/g-dry				E901.1M	10/13/25 14:29 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	10/13/25 14:29 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	10/13/25 14:29 / haw
Radium 228	1.5	pCi/g-dry				E901.1M	10/13/25 14:29 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	10/13/25 14:29 / haw
Radium 228 MDC	0.4	pCi/g-dry				E901.1M	10/13/25 14:29 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090418-010
Client Sample ID: DP-19 [0.5-1.0]

Report Date: 10/16/25
Collection Date: 09/03/25 10:20
DateReceived: 09/10/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.5	pCi/g-dry	U			E901.1M	10/13/25 16:31 / haw
Radium 224 precision (±)	1.8	pCi/g-dry				E901.1M	10/13/25 16:31 / haw
Radium 224 MDC	2.9	pCi/g-dry				E901.1M	10/13/25 16:31 / haw
Radium 226	1.2	pCi/g-dry				E901.1M	10/13/25 16:31 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	10/13/25 16:31 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	10/13/25 16:31 / haw
Radium 228	1.4	pCi/g-dry				E901.1M	10/13/25 16:31 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	10/13/25 16:31 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1M	10/13/25 16:31 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090418-011
Client Sample ID: DP-22 [1.0-1.5]

Report Date: 10/16/25
Collection Date: 09/03/25 11:00
DateReceived: 09/10/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.5	pCi/g-dry	U			E901.1M	10/13/25 18:44 / haw
Radium 224 precision (±)	2.1	pCi/g-dry				E901.1M	10/13/25 18:44 / haw
Radium 224 MDC	3.4	pCi/g-dry				E901.1M	10/13/25 18:44 / haw
Radium 226	1.2	pCi/g-dry				E901.1M	10/13/25 18:44 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	10/13/25 18:44 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	10/13/25 18:44 / haw
Radium 228	1.5	pCi/g-dry				E901.1M	10/13/25 18:44 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	10/13/25 18:44 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1M	10/13/25 18:44 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090418-012
Client Sample ID: DP-23 [1.0-1.5]

Report Date: 10/16/25
Collection Date: 09/03/25 12:30
DateReceived: 09/10/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.5	pCi/g-dry	U			E901.1M	10/14/25 09:31 / haw
Radium 224 precision (±)	2.0	pCi/g-dry				E901.1M	10/14/25 09:31 / haw
Radium 224 MDC	3.4	pCi/g-dry				E901.1M	10/14/25 09:31 / haw
Radium 226	1.9	pCi/g-dry				E901.1M	10/14/25 09:31 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	10/14/25 09:31 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	10/14/25 09:31 / haw
Radium 228	1.6	pCi/g-dry				E901.1M	10/14/25 09:31 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	10/14/25 09:31 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1M	10/14/25 09:31 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090418-013
Client Sample ID: DP-24 [0.5-1.0]

Report Date: 10/16/25
Collection Date: 09/03/25 13:00
DateReceived: 09/10/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.5	pCi/g-dry	U			E901.1M	10/14/25 11:41 / haw
Radium 224 precision (±)	1.8	pCi/g-dry				E901.1M	10/14/25 11:41 / haw
Radium 224 MDC	3.0	pCi/g-dry				E901.1M	10/14/25 11:41 / haw
Radium 226	1.1	pCi/g-dry				E901.1M	10/14/25 11:41 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	10/14/25 11:41 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	10/14/25 11:41 / haw
Radium 228	1.6	pCi/g-dry				E901.1M	10/14/25 11:41 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	10/14/25 11:41 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1M	10/14/25 11:41 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090418-014
Client Sample ID: DP-DS1 [4.5-6.0]

Report Date: 10/16/25
Collection Date: 08/21/25 13:30
DateReceived: 09/10/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.03	pCi/g-dry	U			E901.1M	10/14/25 13:42 / haw
Radium 224 precision (±)	1.9	pCi/g-dry				E901.1M	10/14/25 13:42 / haw
Radium 224 MDC	3.1	pCi/g-dry				E901.1M	10/14/25 13:42 / haw
Radium 226	2.4	pCi/g-dry				E901.1M	10/14/25 13:42 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	10/14/25 13:42 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	10/14/25 13:42 / haw
Radium 228	1.2	pCi/g-dry				E901.1M	10/14/25 13:42 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	10/14/25 13:42 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1M	10/14/25 13:42 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Casper, WY Branch

Work Order: C25090418 **Report Date:** 10/15/25

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E901.1M										Batch: R321434
Lab ID: MB-321434	9	Method Blank				Run: GAM-HPGE 2_251006A				10/06/25 12:41
Radium 224		0.3	pCi/g-dry							U
Radium 224 precision (±)		0.6	pCi/g-dry							
Radium 224 MDC		1	pCi/g-dry							
Radium 226		0.2	pCi/g-dry							
Radium 226 precision (±)		0.09	pCi/g-dry							
Radium 226 MDC		0.1	pCi/g-dry							
Radium 228		0.1	pCi/g-dry							U
Radium 228 precision (±)		0.1	pCi/g-dry							
Radium 228 MDC		0.2	pCi/g-dry							
Lab ID: LCS-321434	6	Laboratory Control Sample				Run: GAM-HPGE 2_251006A				10/06/25 15:06
Cobalt 60		340	pCi/g-dry		106	70	130			
Cobalt 60 precision (±)		2.0	pCi/g-dry							
Cobalt 60 MDC		0.76	pCi/g-dry							
Lead 210		1800	pCi/g-dry		102	70	130			
Lead 210 precision (±)		14	pCi/g-dry							
Lead 210 MDC		12	pCi/g-dry							
Lab ID: C25090418-005ADUP	9	Sample Duplicate				Run: GAM-HPGE 2_251006A				10/09/25 13:57
Radium 224		-0.50	pCi/g-dry					99	30	UR
Radium 224 precision (±)		1.8	pCi/g-dry							
Radium 224 MDC		3.0	pCi/g-dry							
Radium 226		0.88	pCi/g-dry					7.2	30	
Radium 226 precision (±)		0.16	pCi/g-dry							
Radium 226 MDC		0.17	pCi/g-dry							
Radium 228		1.2	pCi/g-dry					15	30	
Radium 228 precision (±)		0.29	pCi/g-dry							
Radium 228 MDC		0.32	pCi/g-dry							

- Duplicate RPD for Ra224 is outside of the acceptance range for this analysis. However, the RER is less than or equal to the limit of 3. The RER result is 0.13.
-The RER result for Ra226 is 0.30 and Ra228 is 0.51.

Qualifiers:

RL - Analyte Reporting Limit
ND - Not detected at the Reporting Limit (RL)
R - Relative Percent Difference (RPD) exceeds advisory limit
U - Not detected

Work Order Receipt Checklist

Rio Grande Resources Corporation C25090418

Login completed by: Lisa X. Quezada
Date Received: 9/10/2025
Reviewed by: srichins
Received by: SLR
Reviewed Date: 9/19/2025
Carrier name: Return UPS Ground

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	21.8°C No Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

For methods that require zero headspace or require preservation check at the time of analysis due to potential interference, the pH is verified at analysis. Nonconforming sample pH is documented as part of the analysis and included in the sample analysis comments.

Trip Blanks and/or Blind Duplicate samples are assigned the earliest collection time for the associated requested analysis in order to evaluate the holding time unless specifically indicated.

Contact and Corrective Action Comments:

None

Laboratory Certifications and Accreditations

Current certificates are available at www.energylab.com website:

	Agency	Number
Billings, MT	Alaska	17-023
	California	3087
	Colorado	MT00005
	Department of Defense (DoD)/ISO17025	ADE-2588
	Florida (Primary NELAP)	E87668
	Idaho	MT00005
	Louisiana	05079
	Montana	CERT0044
	Nebraska	NE-OS-13-04
	Nevada	NV-C24-00250
	North Dakota	R-007
	National Radon Proficiency	109383-RMP
	Oregon	4184
	South Dakota	ARSD 74:04:07
	Texas	TX-C24-00302
	US EPA Region VIII	Reciprocal
	USDA Soil Permit	P330-20-00170
	Washington	C1039
Casper, WY	Alaska	20-006
	California	3021
	Colorado	WY00002
	Florida (Primary NELAP)	E87641
	Idaho	WY00002
	Louisiana	05083
	Montana	CERT0002
	Nebraska	NE-OS-08-04
	Nevada	NV-C24-00245
	North Dakota	R-125
	Oregon	WY200001
	South Dakota	WY00002
	Texas	T104704181-23-21
	US EPA Region VIII	WY00002
	USNRC License	49-26846-01
	Washington	C1012
Gillette, WY	US EPA Region VIII	WY00006
Helena, MT	Colorado	MT00945
	Montana	CERT0079
	Nevada	NV-C24-00119
	US EPA Region VIII	Reciprocal
	USDA Soil Permit	P330-20-00090

Chain of Custody & Analytical Request Record

ENERGY LABORATORIES — Trust our People. Trust our Data.

www.energylab.com

Account Information *(Billing information)*

Company/Name	Rio Grande Resources Corporation
Contact	Anita Willcox
Phone	505-287-7971
Mailing Address	PO Box 1150
City, State, Zip	Grants, NM 87020
Email	anita.willcox@ga.com
Receive Invoice	☐Hard Copy ☒Email
Receive Report	☐Hard Copy ☒Email
Purchase Order	MT11820
Quote	
Bottle Order	

Report Information *(if different than Account Information)*

Company/Name	AVM Environmental Services, Inc.
Contact	Victor Patel
Phone	505-287-4593
Mailing Address	1717 Del Norte Blvd
City, State, Zip	Grants, NM 87020
Email	vpatelavm@outlook.com
Receive Report	☐Hard Copy ☒Email

Special Report/Formats: ☐ LEVEL IV ☐NELAC ☐ EDD/EDT *(contact laboratory)* ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	MTM SCA Characterization
Sampler Name	Victor Patel
Sampler Phone	505-287-4593
Sample Origin State	New Mexico
EPA/State Compliance	☐ Yes ☒ No

URANIUM MINING CLIENTS MUST indicate sample type
☒ Unprocessed Ore
☐ Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11(e)2 Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Oil
DW - Drinking Water

Analysis Requested

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	EPA 901.1 Modified for soil	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	DP-30 4.5'-6.0'	08/21/2025	10:35 am	1	S	✓			C25090413
2	DP-31 10'-10.25'	08/21/2025	12:45 pm	1	S	✓			
3	DP-FSS-05	09/02/2025	8:30 am	1	S	✓			
4	DP-FSS-21	09/02/2025	10:00 am	1	S	✓			
5	DP-FSS-46	09/02/2025	11:30 am	1	S	✓			
6	DP-FSS-DS1	09/02/2025	12:30 pm	1	S	✓			
7	DP-28 0.5'-1.0'	09/03/2025	7:50 am	1	S	✓			
8	DP-27 1.0'-2.0'	09/03/2025	8:40 am	1	S	✓			
9	DP-21 2.0'-2.5'	09/03/2025	9:40 am	1	S	✓			

ELI is REQUIRED to provide preservative traceability. If the preservatives supplied with the bottle order were NOT used, please attach your preservative information with this COC.

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Victor Patel	9-8-25 @1330			1010	
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Shelby Richins	09/10/25	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number (cash/check only)

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

ELI-COC-01/21 v.4

Chain of Custody & Analytical Request Record

ENERGY LABORATORIES — Trust our People. Trust our Data.

www.energylab.com

Account Information *(Billing information)*

Company/Name	Rio Grande Resources Corporation
Contact	Anita Willcox
Phone	505-287-7971
Mailing Address	PO Box 1150
City, State, Zip	Grants, NM 87020
Email	anita.willcox@ga.com
Receive Invoice	☐Hard Copy ☒Email
Receive Report	☐Hard Copy ☒Email
Purchase Order	MT11820
Quote	
Bottle Order	

Report Information *(if different than Account Information)*

Company/Name	AVM Environmental Services, Inc.
Contact	Victor Patel
Phone	505-287-4593
Mailing Address	1717 Del Norte Blvd
City, State, Zip	Grants, NM 87020
Email	vpatelavm@outlook.com
Receive Report	☐Hard Copy ☒Email

Special Report/Formats: ☐ LEVEL IV ☐NELAC ☐ EDD/EDT *(contact laboratory)* ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	MTM SCA Characterization
Sampler Name	Victor Patel
Sampler Phone	505-287-4593
Sample Origin State	New Mexico
EPA/State Compliance	☐ Yes ☒ No

URANIUM MINING CLIENTS MUST indicate sample type
☒ Unprocessed Ore
☐ Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11(e)2 Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes
A - Air
W - Water
S - Soils/ Solids
V - Vegetation
B - Bioassay
O - Oil
DW - Drinking Water

Analysis Requested

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	EPA 901.1 Modified for soil ✓	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	DP-19 0.5'-1.0'	09/03/2025	10:20 am	1	S	✓			C25090418
2	DP-22 1.0'-1.5'	09/03/2025	11:00 am	1	S	✓			
3	DP-23 1.0'-1.5'	09/03/2025	12:30 pm	1	S	✓			
4	DP-24 0.5'-1.0'	09/03/2025	1:00 pm	1	S	✓			
5	DP-DS1 4.5'-6.0'	08/21/2025	1:30 pm	1	S	✓			
6									
7									
8									
9									

ELI is REQUIRED to provide preservative traceability. If the preservatives supplied with the bottle order were **NOT** used, please attach your preservative information with this COC.

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Victor Patel	9-8-25 @1330			1010	
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Shelby Richins	09/10/25	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number (cash/check only)

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

ANALYTICAL SUMMARY REPORT

November 14, 2025

Rio Grande Resources Corporation
PO Box 1150
Grants, NM 87020-1150

Work Order: C25090966 Quote ID: C17937

Project Name: MTM SCA Characterization

Energy Laboratories, Inc. Casper WY received the following 35 samples for Rio Grande Resources Corporation on 9/29/2025 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C25090966-001	DP-20 [0.5-1.0]Feet	09/08/25 09:00	09/29/25	Soil	Gamma Sample Preparation Drying/Grinding, Radiochemistry Gross Gamma
C25090966-002	DP-25 [0.5-1.0]Feet	09/08/25 09:40	09/29/25	Soil	Same As Above
C25090966-003	DP-26 [2.0-2.5]Feet	09/08/25 10:40	09/29/25	Soil	Same As Above
C25090966-004	DP-34 [0.5-1.0]Feet	09/09/25 10:50	09/29/25	Soil	Same As Above
C25090966-005	DP-35 [0.5-1.0]Feet	09/09/25 11:40	09/29/25	Soil	Same As Above
C25090966-006	DP-33 [0.5-1.0]Feet	09/09/25 12:50	09/29/25	Soil	Same As Above
C25090966-007	DP-36 [1.0-1.5]Feet	09/09/25 13:30	09/29/25	Soil	Same As Above
C25090966-008	DP-37 [1.0-1.5]Feet	09/10/25 08:45	09/29/25	Soil	Same As Above
C25090966-009	DP-38 [0.5-1.0]Feet	09/10/25 09:10	09/29/25	Soil	Same As Above
C25090966-010	DP-39 [1.5-2.0]Feet	09/10/25 09:50	09/29/25	Soil	Same As Above
C25090966-011	DP-11 [0.5-1.0]Feet	09/10/25 10:44	09/29/25	Soil	Same As Above
C25090966-012	DP-10 [1.0-1.5]Feet	09/10/25 11:35	09/29/25	Soil	Same As Above
C25090966-013	DP-09 [1.0-1.5]Feet	09/10/25 13:20	09/29/25	Soil	Same As Above
C25090966-014	DP-02 [0.0-0.5]Feet	09/11/25 08:00	09/29/25	Soil	Same As Above
C25090966-015	DP-01 [0.0-0.5]Feet	09/11/25 08:10	09/29/25	Soil	Same As Above
C25090966-016	DP-17 [0.0-0.5]Feet	09/11/25 08:40	09/29/25	Soil	Same As Above
C25090966-017	DP-17 [0.5-1.0]Feet	09/11/25 08:50	09/29/25	Soil	Same As Above
C25090966-018	DP-18 [0.5-1.0]Feet	09/11/25 09:00	09/29/25	Soil	Same As Above
C25090966-019	DP-DS2 [0.0-0.5]Feet	09/11/25 09:15	09/29/25	Soil	Same As Above
C25090966-020	DP-DS3 [0.0-0.5]Feet	09/11/25 09:30	09/29/25	Soil	Same As Above
C25090966-021	DP-DS4 [0.0-0.5]Feet	09/11/25 09:45	09/29/25	Soil	Same As Above
C25090966-022	DP-08 [0.5-1.0]Feet	09/15/25 08:00	09/29/25	Soil	Same As Above
C25090966-023	DP-06 [1.5-2.0]Feet	09/15/25 09:20	09/29/25	Soil	Same As Above
C25090966-024	DP-04 [1.0-1.5]Feet	09/15/25 10:15	09/29/25	Soil	Same As Above
C25090966-025	DP-16 [0.5-1.0]Feet	09/15/25 12:30	09/29/25	Soil	Same As Above
C25090966-026	DP-15 [0.5-1.0]Feet	09/15/25 13:15	09/29/25	Soil	Same As Above

ANALYTICAL SUMMARY REPORT

C25090966-027	DP-05 [0.5-1.0]Feet	09/16/25 08:10	09/29/25	Soil	Same As Above
C25090966-028	DP-07 [3.0-3.5]Feet	09/16/25 09:15	09/29/25	Soil	Same As Above
C25090966-029	DP-12 [0.5-1.0]Feet	09/16/25 09:40	09/29/25	Soil	Same As Above
C25090966-030	DP-13 [0.5-1.0]Feet	09/16/25 10:00	09/29/25	Soil	Same As Above
C25090966-031	DP-44 [1.0-1.5]Feet	09/22/25 08:50	09/29/25	Soil	Same As Above
C25090966-032	DP-46 [0.5-1.0]Feet	09/24/25 08:10	09/29/25	Soil	Same As Above
C25090966-033	DP-48 [0.5-1.0]Feet	09/24/25 08:30	09/29/25	Soil	Same As Above
C25090966-034	DP-41 [3.5-4.0]Feet	09/24/25 10:30	09/29/25	Soil	Same As Above
C25090966-035	DP-DS5 [0.5-1.0]Feet	09/24/25 11:15	09/29/25	Soil	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 2393 Salt Creek Hwy, Casper, WY 82601-9601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

Energy Laboratories, Inc. verifies the reported results for the analysis has been technically reviewed and approved for release.

If you have any questions regarding these test results, please contact your Project Manager.

Digitally signed by
Manford E. Hurley
Date: 2025.11.14 09:49:55 -07:00

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-001
Client Sample ID: DP-20 [0.5-1.0]

Report Date: 11/14/25
Collection Date: 09/08/25 09:00
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1.9	pCi/g-dry				E901.1M	10/28/25 09:53 / haw
Radium 224 precision (±)	1.1	pCi/g-dry				E901.1M	10/28/25 09:53 / haw
Radium 224 MDC	1.7	pCi/g-dry				E901.1M	10/28/25 09:53 / haw
Radium 226	1	pCi/g-dry				E901.1M	10/28/25 09:53 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	10/28/25 09:53 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	10/28/25 09:53 / haw
Radium 228	1.7	pCi/g-dry				E901.1M	10/28/25 09:53 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	10/28/25 09:53 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1M	10/28/25 09:53 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-002
Client Sample ID: DP-25 [0.5-1.0]

Report Date: 11/14/25
Collection Date: 09/08/25 09:40
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	-0.6	pCi/g-dry	U			E901.1M	10/28/25 14:29 / haw
Radium 224 precision (±)	1.8	pCi/g-dry				E901.1M	10/28/25 14:29 / haw
Radium 224 MDC	3.0	pCi/g-dry				E901.1M	10/28/25 14:29 / haw
Radium 226	4.8	pCi/g-dry				E901.1M	10/28/25 14:29 / haw
Radium 226 precision (±)	0.3	pCi/g-dry				E901.1M	10/28/25 14:29 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	10/28/25 14:29 / haw
Radium 228	0.2	pCi/g-dry	U			E901.1M	10/28/25 14:29 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	10/28/25 14:29 / haw
Radium 228 MDC	0.5	pCi/g-dry				E901.1M	10/28/25 14:29 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-003
Client Sample ID: DP-26 [2.0-2.5]

Report Date: 11/14/25
Collection Date: 09/08/25 10:40
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1.6	pCi/g-dry				E901.1M	10/28/25 16:40 / haw
Radium 224 precision (±)	0.9	pCi/g-dry				E901.1M	10/28/25 16:40 / haw
Radium 224 MDC	1.5	pCi/g-dry				E901.1M	10/28/25 16:40 / haw
Radium 226	0.9	pCi/g-dry				E901.1M	10/28/25 16:40 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	10/28/25 16:40 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	10/28/25 16:40 / haw
Radium 228	1.2	pCi/g-dry				E901.1M	10/28/25 16:40 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	10/28/25 16:40 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1M	10/28/25 16:40 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-004
Client Sample ID: DP-34 [0.5-1.0]

Report Date: 11/14/25
Collection Date: 09/09/25 10:50
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.6	pCi/g-dry	U			E901.1M	10/28/25 18:54 / haw
Radium 224 precision (±)	2.1	pCi/g-dry				E901.1M	10/28/25 18:54 / haw
Radium 224 MDC	3.5	pCi/g-dry				E901.1M	10/28/25 18:54 / haw
Radium 226	2.5	pCi/g-dry				E901.1M	10/28/25 18:54 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	10/28/25 18:54 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	10/28/25 18:54 / haw
Radium 228	1.9	pCi/g-dry				E901.1M	10/28/25 18:54 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	10/28/25 18:54 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1M	10/28/25 18:54 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-005
Client Sample ID: DP-35 [0.5-1.0]

Report Date: 11/14/25
Collection Date: 09/09/25 11:40
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.5	pCi/g-dry	U			E901.1M	10/29/25 09:53 / haw
Radium 224 precision (±)	1.9	pCi/g-dry				E901.1M	10/29/25 09:53 / haw
Radium 224 MDC	3.2	pCi/g-dry				E901.1M	10/29/25 09:53 / haw
Radium 226	1.3	pCi/g-dry				E901.1M	10/29/25 09:53 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	10/29/25 09:53 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	10/29/25 09:53 / haw
Radium 228	1.6	pCi/g-dry				E901.1M	10/29/25 09:53 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	10/29/25 09:53 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1M	10/29/25 09:53 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-006
Client Sample ID: DP-33 [0.5-1.0]

Report Date: 11/14/25
Collection Date: 09/09/25 12:50
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.3	pCi/g-dry	U			E901.1M	10/29/25 11:58 / haw
Radium 224 precision (±)	1.8	pCi/g-dry				E901.1M	10/29/25 11:58 / haw
Radium 224 MDC	3.0	pCi/g-dry				E901.1M	10/29/25 11:58 / haw
Radium 226	1.4	pCi/g-dry				E901.1M	10/29/25 11:58 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	10/29/25 11:58 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	10/29/25 11:58 / haw
Radium 228	1.4	pCi/g-dry				E901.1M	10/29/25 11:58 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	10/29/25 11:58 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1M	10/29/25 11:58 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-007
Client Sample ID: DP-36 [1.0-1.5]

Report Date: 11/14/25
Collection Date: 09/09/25 13:30
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.4	pCi/g-dry	U			E901.1M	10/29/25 14:10 / haw
Radium 224 precision (±)	1.4	pCi/g-dry				E901.1M	10/29/25 14:10 / haw
Radium 224 MDC	2.4	pCi/g-dry				E901.1M	10/29/25 14:10 / haw
Radium 226	0.5	pCi/g-dry				E901.1M	10/29/25 14:10 / haw
Radium 226 precision (±)	0.1	pCi/g-dry				E901.1M	10/29/25 14:10 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	10/29/25 14:10 / haw
Radium 228	1	pCi/g-dry				E901.1M	10/29/25 14:10 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	10/29/25 14:10 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1M	10/29/25 14:10 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-008
Client Sample ID: DP-37 [1.0-1.5]

Report Date: 11/14/25
Collection Date: 09/10/25 08:45
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.5	pCi/g-dry	U			E901.1M	10/29/25 16:14 / haw
Radium 224 precision (±)	1.6	pCi/g-dry				E901.1M	10/29/25 16:14 / haw
Radium 224 MDC	2.7	pCi/g-dry				E901.1M	10/29/25 16:14 / haw
Radium 226	1.1	pCi/g-dry				E901.1M	10/29/25 16:14 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	10/29/25 16:14 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	10/29/25 16:14 / haw
Radium 228	1.3	pCi/g-dry				E901.1M	10/29/25 16:14 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	10/29/25 16:14 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1M	10/29/25 16:14 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-009
Client Sample ID: DP-38 [0.5-1.0]

Report Date: 11/14/25
Collection Date: 09/10/25 09:10
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.5	pCi/g-dry	U			E901.1M	10/29/25 18:17 / haw
Radium 224 precision (±)	1.8	pCi/g-dry				E901.1M	10/29/25 18:17 / haw
Radium 224 MDC	3.1	pCi/g-dry				E901.1M	10/29/25 18:17 / haw
Radium 226	3.4	pCi/g-dry				E901.1M	10/29/25 18:17 / haw
Radium 226 precision (±)	0.3	pCi/g-dry				E901.1M	10/29/25 18:17 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	10/29/25 18:17 / haw
Radium 228	1.0	pCi/g-dry				E901.1M	10/29/25 18:17 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	10/29/25 18:17 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1M	10/29/25 18:17 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-010
Client Sample ID: DP-39 [1.5-2.0]

Report Date: 11/14/25
Collection Date: 09/10/25 09:50
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.4	pCi/g-dry	U			E901.1M	10/30/25 16:42 / haw
Radium 224 precision (±)	1.4	pCi/g-dry				E901.1M	10/30/25 16:42 / haw
Radium 224 MDC	2.3	pCi/g-dry				E901.1M	10/30/25 16:42 / haw
Radium 226	0.5	pCi/g-dry				E901.1M	10/30/25 16:42 / haw
Radium 226 precision (±)	0.1	pCi/g-dry				E901.1M	10/30/25 16:42 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	10/30/25 16:42 / haw
Radium 228	0.9	pCi/g-dry				E901.1M	10/30/25 16:42 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	10/30/25 16:42 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1M	10/30/25 16:42 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-011
Client Sample ID: DP-11 [0.5-1.0]

Report Date: 11/14/25
Collection Date: 09/10/25 10:44
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	-0.4	pCi/g-dry	U			E901.1M	10/30/25 18:46 / haw
Radium 224 precision (±)	1.8	pCi/g-dry				E901.1M	10/30/25 18:46 / haw
Radium 224 MDC	2.9	pCi/g-dry				E901.1M	10/30/25 18:46 / haw
Radium 226	1.9	pCi/g-dry				E901.1M	10/30/25 18:46 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	10/30/25 18:46 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	10/30/25 18:46 / haw
Radium 228	1.5	pCi/g-dry				E901.1M	10/30/25 18:46 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	10/30/25 18:46 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1M	10/30/25 18:46 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-012
Client Sample ID: DP-10 [1.0-1.5]

Report Date: 11/14/25
Collection Date: 09/10/25 11:35
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.5	pCi/g-dry	U			E901.1M	11/03/25 10:26 / haw
Radium 224 precision (±)	1.9	pCi/g-dry				E901.1M	11/03/25 10:26 / haw
Radium 224 MDC	3.2	pCi/g-dry				E901.1M	11/03/25 10:26 / haw
Radium 226	1	pCi/g-dry				E901.1M	11/03/25 10:26 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	11/03/25 10:26 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	11/03/25 10:26 / haw
Radium 228	1.5	pCi/g-dry				E901.1M	11/03/25 10:26 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	11/03/25 10:26 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1M	11/03/25 10:26 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-013
Client Sample ID: DP-09 [1.0-1.5]

Report Date: 11/14/25
Collection Date: 09/10/25 13:20
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.5	pCi/g-dry	U			E901.1M	11/03/25 13:30 / haw
Radium 224 precision (±)	1.6	pCi/g-dry				E901.1M	11/03/25 13:30 / haw
Radium 224 MDC	2.7	pCi/g-dry				E901.1M	11/03/25 13:30 / haw
Radium 226	0.9	pCi/g-dry				E901.1M	11/03/25 13:30 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	11/03/25 13:30 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	11/03/25 13:30 / haw
Radium 228	1.2	pCi/g-dry				E901.1M	11/03/25 13:30 / haw
Radium 228 precision (±)	0.2	pCi/g-dry				E901.1M	11/03/25 13:30 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1M	11/03/25 13:30 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-014
Client Sample ID: DP-02 [0.0-0.5]

Report Date: 11/14/25
Collection Date: 09/11/25 08:00
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.5	pCi/g-dry	U			E901.1M	11/03/25 15:31 / haw
Radium 224 precision (±)	1.9	pCi/g-dry				E901.1M	11/03/25 15:31 / haw
Radium 224 MDC	3.2	pCi/g-dry				E901.1M	11/03/25 15:31 / haw
Radium 226	1.8	pCi/g-dry				E901.1M	11/03/25 15:31 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	11/03/25 15:31 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	11/03/25 15:31 / haw
Radium 228	1.5	pCi/g-dry				E901.1M	11/03/25 15:31 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	11/03/25 15:31 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1M	11/03/25 15:31 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-015
Client Sample ID: DP-01 [0.0-0.5]

Report Date: 11/14/25
Collection Date: 09/11/25 08:10
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.2	pCi/g-dry	U			E901.1M	11/03/25 17:57 / haw
Radium 224 precision (±)	2.1	pCi/g-dry				E901.1M	11/03/25 17:57 / haw
Radium 224 MDC	3.5	pCi/g-dry				E901.1M	11/03/25 17:57 / haw
Radium 226	1.9	pCi/g-dry				E901.1M	11/03/25 17:57 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	11/03/25 17:57 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	11/03/25 17:57 / haw
Radium 228	1.4	pCi/g-dry				E901.1M	11/03/25 17:57 / haw
Radium 228 precision (±)	0.4	pCi/g-dry				E901.1M	11/03/25 17:57 / haw
Radium 228 MDC	0.4	pCi/g-dry				E901.1M	11/03/25 17:57 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-016
Client Sample ID: DP-17 [0.0-0.5]

Report Date: 11/14/25
Collection Date: 09/11/25 08:40
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1.2	pCi/g-dry	U			E901.1M	11/04/25 09:40 / haw
Radium 224 precision (±)	4.3	pCi/g-dry				E901.1M	11/04/25 09:40 / haw
Radium 224 MDC	7.1	pCi/g-dry				E901.1M	11/04/25 09:40 / haw
Radium 226	26.6	pCi/g-dry				E901.1M	11/04/25 09:40 / haw
Radium 226 precision (±)	0.6	pCi/g-dry				E901.1M	11/04/25 09:40 / haw
Radium 226 MDC	0.3	pCi/g-dry				E901.1M	11/04/25 09:40 / haw
Radium 228	2.0	pCi/g-dry				E901.1M	11/04/25 09:40 / haw
Radium 228 precision (±)	0.6	pCi/g-dry				E901.1M	11/04/25 09:40 / haw
Radium 228 MDC	0.8	pCi/g-dry				E901.1M	11/04/25 09:40 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-017
Client Sample ID: DP-17 [0.5-1.0]

Report Date: 11/14/25
Collection Date: 09/11/25 08:50
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1.4	pCi/g-dry				E901.1M	11/04/25 12:07 / haw
Radium 224 precision (±)	0.8	pCi/g-dry				E901.1M	11/04/25 12:07 / haw
Radium 224 MDC	1.3	pCi/g-dry				E901.1M	11/04/25 12:07 / haw
Radium 226	1	pCi/g-dry				E901.1M	11/04/25 12:07 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	11/04/25 12:07 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	11/04/25 12:07 / haw
Radium 228	1.5	pCi/g-dry				E901.1M	11/04/25 12:07 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	11/04/25 12:07 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1M	11/04/25 12:07 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-018
Client Sample ID: DP-18 [0.5-1.0]

Report Date: 11/14/25
Collection Date: 09/11/25 09:00
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1.7	pCi/g-dry				E901.1M	11/04/25 14:08 / haw
Radium 224 precision (±)	1	pCi/g-dry				E901.1M	11/04/25 14:08 / haw
Radium 224 MDC	1.5	pCi/g-dry				E901.1M	11/04/25 14:08 / haw
Radium 226	0.8	pCi/g-dry				E901.1M	11/04/25 14:08 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	11/04/25 14:08 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	11/04/25 14:08 / haw
Radium 228	1.5	pCi/g-dry				E901.1M	11/04/25 14:08 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	11/04/25 14:08 / haw
Radium 228 MDC	0.4	pCi/g-dry				E901.1M	11/04/25 14:08 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-019
Client Sample ID: DP-DS2 [0.0-0.5]

Report Date: 11/14/25
Collection Date: 09/11/25 09:15
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.5	pCi/g-dry	U			E901.1M	11/05/25 15:19 / haw
Radium 224 precision (±)	2.0	pCi/g-dry				E901.1M	11/05/25 15:19 / haw
Radium 224 MDC	3.2	pCi/g-dry				E901.1M	11/05/25 15:19 / haw
Radium 226	1.7	pCi/g-dry				E901.1M	11/05/25 15:19 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	11/05/25 15:19 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	11/05/25 15:19 / haw
Radium 228	1.2	pCi/g-dry				E901.1M	11/05/25 15:19 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	11/05/25 15:19 / haw
Radium 228 MDC	0.4	pCi/g-dry				E901.1M	11/05/25 15:19 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-020
Client Sample ID: DP-DS3 [0.0-0.5]

Report Date: 11/14/25
Collection Date: 09/11/25 09:30
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	-0.6	pCi/g-dry	U			E901.1M	11/05/25 18:04 / haw
Radium 224 precision (±)	2.0	pCi/g-dry				E901.1M	11/05/25 18:04 / haw
Radium 224 MDC	3.3	pCi/g-dry				E901.1M	11/05/25 18:04 / haw
Radium 226	1.9	pCi/g-dry				E901.1M	11/05/25 18:04 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	11/05/25 18:04 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	11/05/25 18:04 / haw
Radium 228	1.6	pCi/g-dry				E901.1M	11/05/25 18:04 / haw
Radium 228 precision (±)	0.4	pCi/g-dry				E901.1M	11/05/25 18:04 / haw
Radium 228 MDC	0.4	pCi/g-dry				E901.1M	11/05/25 18:04 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-021
Client Sample ID: DP-DS4 [0.0-0.5]

Report Date: 11/14/25
Collection Date: 09/11/25 09:45
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1.2	pCi/g-dry	U			E901.1M	11/06/25 13:57 / haw
Radium 224 precision (±)	4.5	pCi/g-dry				E901.1M	11/06/25 13:57 / haw
Radium 224 MDC	7.5	pCi/g-dry				E901.1M	11/06/25 13:57 / haw
Radium 226	28.0	pCi/g-dry				E901.1M	11/06/25 13:57 / haw
Radium 226 precision (±)	0.7	pCi/g-dry				E901.1M	11/06/25 13:57 / haw
Radium 226 MDC	0.4	pCi/g-dry				E901.1M	11/06/25 13:57 / haw
Radium 228	1.8	pCi/g-dry				E901.1M	11/06/25 13:57 / haw
Radium 228 precision (±)	0.6	pCi/g-dry				E901.1M	11/06/25 13:57 / haw
Radium 228 MDC	0.8	pCi/g-dry				E901.1M	11/06/25 13:57 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-022
Client Sample ID: DP-08 [0.5-1.0]

Report Date: 11/14/25
Collection Date: 09/15/25 08:00
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	-0.6	pCi/g-dry	U			E901.1M	11/06/25 15:58 / haw
Radium 224 precision (±)	2.1	pCi/g-dry				E901.1M	11/06/25 15:58 / haw
Radium 224 MDC	3.5	pCi/g-dry				E901.1M	11/06/25 15:58 / haw
Radium 226	2.6	pCi/g-dry				E901.1M	11/06/25 15:58 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	11/06/25 15:58 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	11/06/25 15:58 / haw
Radium 228	1.6	pCi/g-dry				E901.1M	11/06/25 15:58 / haw
Radium 228 precision (±)	0.4	pCi/g-dry				E901.1M	11/06/25 15:58 / haw
Radium 228 MDC	0.4	pCi/g-dry				E901.1M	11/06/25 15:58 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-023
Client Sample ID: DP-06 [1.5-2.0]

Report Date: 11/14/25
Collection Date: 09/15/25 09:20
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.6	pCi/g-dry	U			E901.1M	11/06/25 18:03 / haw
Radium 224 precision (±)	1.9	pCi/g-dry				E901.1M	11/06/25 18:03 / haw
Radium 224 MDC	3.2	pCi/g-dry				E901.1M	11/06/25 18:03 / haw
Radium 226	2.2	pCi/g-dry				E901.1M	11/06/25 18:03 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	11/06/25 18:03 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	11/06/25 18:03 / haw
Radium 228	1.6	pCi/g-dry				E901.1M	11/06/25 18:03 / haw
Radium 228 precision (±)	0.4	pCi/g-dry				E901.1M	11/06/25 18:03 / haw
Radium 228 MDC	0.4	pCi/g-dry				E901.1M	11/06/25 18:03 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-024
Client Sample ID: DP-04 [1.0-1.5]

Report Date: 11/14/25
Collection Date: 09/15/25 10:15
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	2.0	pCi/g-dry				E901.1M	11/10/25 09:59 / haw
Radium 224 precision (±)	1.1	pCi/g-dry				E901.1M	11/10/25 09:59 / haw
Radium 224 MDC	1.7	pCi/g-dry				E901.1M	11/10/25 09:59 / haw
Radium 226	1.6	pCi/g-dry				E901.1M	11/10/25 09:59 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	11/10/25 09:59 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	11/10/25 09:59 / haw
Radium 228	1.5	pCi/g-dry				E901.1M	11/10/25 09:59 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	11/10/25 09:59 / haw
Radium 228 MDC	0.4	pCi/g-dry				E901.1M	11/10/25 09:59 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-025
Client Sample ID: DP-16 [0.5-1.0]

Report Date: 11/14/25
Collection Date: 09/15/25 12:30
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1.7	pCi/g-dry				E901.1M	11/10/25 12:01 / haw
Radium 224 precision (±)	0.9	pCi/g-dry				E901.1M	11/10/25 12:01 / haw
Radium 224 MDC	1.5	pCi/g-dry				E901.1M	11/10/25 12:01 / haw
Radium 226	1.0	pCi/g-dry				E901.1M	11/10/25 12:01 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	11/10/25 12:01 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	11/10/25 12:01 / haw
Radium 228	1.3	pCi/g-dry				E901.1M	11/10/25 12:01 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	11/10/25 12:01 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1M	11/10/25 12:01 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-026
Client Sample ID: DP-15 [0.5-1.0]

Report Date: 11/14/25
Collection Date: 09/15/25 13:15
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	2.1	pCi/g-dry				E901.1M	11/10/25 14:05 / haw
Radium 224 precision (±)	1.2	pCi/g-dry				E901.1M	11/10/25 14:05 / haw
Radium 224 MDC	2.0	pCi/g-dry				E901.1M	11/10/25 14:05 / haw
Radium 226	2.7	pCi/g-dry				E901.1M	11/10/25 14:05 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	11/10/25 14:05 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	11/10/25 14:05 / haw
Radium 228	1.5	pCi/g-dry				E901.1M	11/10/25 14:05 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	11/10/25 14:05 / haw
Radium 228 MDC	0.4	pCi/g-dry				E901.1M	11/10/25 14:05 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-027
Client Sample ID: DP-05 [0.5-1.0]

Report Date: 11/14/25
Collection Date: 09/16/25 08:10
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.5	pCi/g-dry	U			E901.1M	11/10/25 16:06 / haw
Radium 224 precision (±)	1.9	pCi/g-dry				E901.1M	11/10/25 16:06 / haw
Radium 224 MDC	3.2	pCi/g-dry				E901.1M	11/10/25 16:06 / haw
Radium 226	1.0	pCi/g-dry				E901.1M	11/10/25 16:06 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	11/10/25 16:06 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	11/10/25 16:06 / haw
Radium 228	1.2	pCi/g-dry				E901.1M	11/10/25 16:06 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	11/10/25 16:06 / haw
Radium 228 MDC	0.4	pCi/g-dry				E901.1M	11/10/25 16:06 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-028
Client Sample ID: DP-07 [3.0-3.5]

Report Date: 11/14/25
Collection Date: 09/16/25 09:15
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	2.0	pCi/g-dry				E901.1M	11/10/25 18:08 / haw
Radium 224 precision (±)	1	pCi/g-dry				E901.1M	11/10/25 18:08 / haw
Radium 224 MDC	1.5	pCi/g-dry				E901.1M	11/10/25 18:08 / haw
Radium 226	1	pCi/g-dry				E901.1M	11/10/25 18:08 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	11/10/25 18:08 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	11/10/25 18:08 / haw
Radium 228	1.0	pCi/g-dry				E901.1M	11/10/25 18:08 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	11/10/25 18:08 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1M	11/10/25 18:08 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-029
Client Sample ID: DP-12 [0.5-1.0]

Report Date: 11/14/25
Collection Date: 09/16/25 09:40
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	2.3	pCi/g-dry				E901.1M	11/11/25 09:47 / haw
Radium 224 precision (±)	1.0	pCi/g-dry				E901.1M	11/11/25 09:47 / haw
Radium 224 MDC	1.6	pCi/g-dry				E901.1M	11/11/25 09:47 / haw
Radium 226	1.5	pCi/g-dry				E901.1M	11/11/25 09:47 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	11/11/25 09:47 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	11/11/25 09:47 / haw
Radium 228	1.3	pCi/g-dry				E901.1M	11/11/25 09:47 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	11/11/25 09:47 / haw
Radium 228 MDC	0.4	pCi/g-dry				E901.1M	11/11/25 09:47 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-030
Client Sample ID: DP-13 [0.5-1.0]

Report Date: 11/14/25
Collection Date: 09/16/25 10:00
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	-0.1	pCi/g-dry	U			E901.1M	11/11/25 13:51 / haw
Radium 224 precision (±)	2.1	pCi/g-dry				E901.1M	11/11/25 13:51 / haw
Radium 224 MDC	3.5	pCi/g-dry				E901.1M	11/11/25 13:51 / haw
Radium 226	2.8	pCi/g-dry				E901.1M	11/11/25 13:51 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	11/11/25 13:51 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	11/11/25 13:51 / haw
Radium 228	1.6	pCi/g-dry				E901.1M	11/11/25 13:51 / haw
Radium 228 precision (±)	0.4	pCi/g-dry				E901.1M	11/11/25 13:51 / haw
Radium 228 MDC	0.4	pCi/g-dry				E901.1M	11/11/25 13:51 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-031
Client Sample ID: DP-44 [1.0-1.5]

Report Date: 11/14/25
Collection Date: 09/22/25 08:50
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1.9	pCi/g-dry				E901.1M	11/11/25 15:53 / haw
Radium 224 precision (±)	1.0	pCi/g-dry				E901.1M	11/11/25 15:53 / haw
Radium 224 MDC	1.6	pCi/g-dry				E901.1M	11/11/25 15:53 / haw
Radium 226	1.0	pCi/g-dry				E901.1M	11/11/25 15:53 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	11/11/25 15:53 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	11/11/25 15:53 / haw
Radium 228	1.7	pCi/g-dry				E901.1M	11/11/25 15:53 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	11/11/25 15:53 / haw
Radium 228 MDC	0.4	pCi/g-dry				E901.1M	11/11/25 15:53 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-032
Client Sample ID: DP-46 [0.5-1.0]

Report Date: 11/14/25
Collection Date: 09/24/25 08:10
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1.9	pCi/g-dry				E901.1M	11/11/25 18:20 / haw
Radium 224 precision (±)	1.0	pCi/g-dry				E901.1M	11/11/25 18:20 / haw
Radium 224 MDC	1.6	pCi/g-dry				E901.1M	11/11/25 18:20 / haw
Radium 226	1.0	pCi/g-dry				E901.1M	11/11/25 18:20 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	11/11/25 18:20 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	11/11/25 18:20 / haw
Radium 228	1.6	pCi/g-dry				E901.1M	11/11/25 18:20 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	11/11/25 18:20 / haw
Radium 228 MDC	0.3	pCi/g-dry				E901.1M	11/11/25 18:20 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-033
Client Sample ID: DP-48 [0.5-1.0]

Report Date: 11/14/25
Collection Date: 09/24/25 08:30
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.6	pCi/g-dry	U			E901.1M	11/12/25 09:49 / haw
Radium 224 precision (±)	2.1	pCi/g-dry				E901.1M	11/12/25 09:49 / haw
Radium 224 MDC	3.5	pCi/g-dry				E901.1M	11/12/25 09:49 / haw
Radium 226	2.4	pCi/g-dry				E901.1M	11/12/25 09:49 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	11/12/25 09:49 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	11/12/25 09:49 / haw
Radium 228	1.5	pCi/g-dry				E901.1M	11/12/25 09:49 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	11/12/25 09:49 / haw
Radium 228 MDC	0.4	pCi/g-dry				E901.1M	11/12/25 09:49 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-034
Client Sample ID: DP-41 [3.5-4.0]

Report Date: 11/14/25
Collection Date: 09/24/25 10:30
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	1	pCi/g-dry	U			E901.1M	11/12/25 11:51 / haw
Radium 224 precision (±)	3.5	pCi/g-dry				E901.1M	11/12/25 11:51 / haw
Radium 224 MDC	5.8	pCi/g-dry				E901.1M	11/12/25 11:51 / haw
Radium 226	17.2	pCi/g-dry				E901.1M	11/12/25 11:51 / haw
Radium 226 precision (±)	0.5	pCi/g-dry				E901.1M	11/12/25 11:51 / haw
Radium 226 MDC	0.3	pCi/g-dry				E901.1M	11/12/25 11:51 / haw
Radium 228	1.1	pCi/g-dry				E901.1M	11/12/25 11:51 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	11/12/25 11:51 / haw
Radium 228 MDC	0.5	pCi/g-dry				E901.1M	11/12/25 11:51 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: MTM SCA Characterization
Lab ID: C25090966-035
Client Sample ID: DP-DS5 [0.5-1.0]

Report Date: 11/14/25
Collection Date: 09/24/25 11:15
DateReceived: 09/29/25
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, GAMMA							
Radium 224	0.5	pCi/g-dry	U			E901.1M	11/12/25 13:53 / haw
Radium 224 precision (±)	1.9	pCi/g-dry				E901.1M	11/12/25 13:53 / haw
Radium 224 MDC	3.2	pCi/g-dry				E901.1M	11/12/25 13:53 / haw
Radium 226	1.9	pCi/g-dry				E901.1M	11/12/25 13:53 / haw
Radium 226 precision (±)	0.2	pCi/g-dry				E901.1M	11/12/25 13:53 / haw
Radium 226 MDC	0.2	pCi/g-dry				E901.1M	11/12/25 13:53 / haw
Radium 228	1.3	pCi/g-dry				E901.1M	11/12/25 13:53 / haw
Radium 228 precision (±)	0.3	pCi/g-dry				E901.1M	11/12/25 13:53 / haw
Radium 228 MDC	0.4	pCi/g-dry				E901.1M	11/12/25 13:53 / haw

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
U - Not detected
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Casper, WY Branch

Work Order: C25090966 **Report Date:** 11/13/25

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E901.1M										Batch: R322153
Lab ID: MB-322153	9	Method Blank			Run: GAM-HPGE 2_251027A				10/27/25 10:26	
Radium 224		0.1	pCi/g-dry							U
Radium 224 precision (±)		0.6	pCi/g-dry							
Radium 224 MDC		1	pCi/g-dry							
Radium 226		0.09	pCi/g-dry							U
Radium 226 precision (±)		0.1	pCi/g-dry							
Radium 226 MDC		0.1	pCi/g-dry							
Radium 228		0.07	pCi/g-dry							U
Radium 228 precision (±)		0.1	pCi/g-dry							
Radium 228 MDC		0.2	pCi/g-dry							
Lab ID: LCS-322153	6	Laboratory Control Sample			Run: GAM-HPGE 2_251027A				10/27/25 13:26	
Cobalt 60		340	pCi/g-dry		107	70	130			
Cobalt 60 precision (±)		2.8	pCi/g-dry							
Cobalt 60 MDC		0.77	pCi/g-dry							
Lead 210		1700	pCi/g-dry		101	70	130			
Lead 210 precision (±)		14	pCi/g-dry							
Lead 210 MDC		12	pCi/g-dry							
Lab ID: C25090966-001ADUP	9	Sample Duplicate			Run: GAM-HPGE 2_251027A				10/28/25 12:19	
Radium 224		0.53	pCi/g-dry					110	30	UR
Radium 224 precision (±)		1.9	pCi/g-dry							
Radium 224 MDC		3.2	pCi/g-dry							
Radium 226		1.0	pCi/g-dry					0.7	30	
Radium 226 precision (±)		0.21	pCi/g-dry							
Radium 226 MDC		0.23	pCi/g-dry							
Radium 228		1.7	pCi/g-dry					2.6	30	
Radium 228 precision (±)		0.32	pCi/g-dry							
Radium 228 MDC		0.32	pCi/g-dry							
- Duplicate RPD for Ra224 is outside of the acceptance range for this analysis. However, the RER is less than or equal to the limit of 3. The RER result is 0.61.										
- The RER result for Ra226 is 0.03 and Ra228 is 0.10.										
Lab ID: C25100876-002ADUP	9	Sample Duplicate			Run: GAM-HPGE 2_251027A				10/30/25 15:02	
Radium 224		-1.3	pCi/g-dry					89	30	UR
Radium 224 precision (±)		2.6	pCi/g-dry							
Radium 224 MDC		3.7	pCi/g-dry							
Radium 226		0.26	pCi/g-dry					69	30	UR
Radium 226 precision (±)		0.37	pCi/g-dry							
Radium 226 MDC		0.53	pCi/g-dry							
Radium 228		0.32	pCi/g-dry					75	30	UR
Radium 228 precision (±)		0.58	pCi/g-dry							
Radium 228 MDC		0.90	pCi/g-dry							
- Duplicate RPD is outside of the acceptance range for this analysis. However, the RER is less than or equal to the limit of 3. The RER result for Ra224 is 0.23, Ra226 is 0.5 and Ra228 is 0.49.										

Qualifiers:

RL - Analyte Reporting Limit

R - Relative Percent Difference (RPD) exceeds advisory limit

ND - Not detected at the Reporting Limit (RL)

U - Not detected

QA/QC Summary Report

Prepared by Casper, WY Branch

Work Order: C25090966 **Report Date:** 11/13/25

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E901.1M										Batch: R322448
Lab ID: MB-322448	9	Method Blank			Run: GAM-HPGE 2_251104A					11/04/25 16:33
Radium 224		0.3	pCi/g-dry							U
Radium 224 precision (±)		0.6	pCi/g-dry							
Radium 224 MDC		1	pCi/g-dry							
Radium 226		0.08	pCi/g-dry							U
Radium 226 precision (±)		0.09	pCi/g-dry							
Radium 226 MDC		0.1	pCi/g-dry							
Radium 228		0.02	pCi/g-dry							U
Radium 228 precision (±)		0.2	pCi/g-dry							
Radium 228 MDC		0.3	pCi/g-dry							
Lab ID: LCS-322448	6	Laboratory Control Sample			Run: GAM-HPGE 2_251104A					11/05/25 13:04
Cobalt 60		310	pCi/g-dry		99	70	130			
Cobalt 60 precision (±)		2.7	pCi/g-dry							
Cobalt 60 MDC		0.78	pCi/g-dry							
Lead 210		1700	pCi/g-dry		98	70	130			
Lead 210 precision (±)		14	pCi/g-dry							
Lead 210 MDC		12	pCi/g-dry							
Lab ID: C25090966-020ADUP	9	Sample Duplicate			Run: GAM-HPGE 2_251104A					11/06/25 09:49
Radium 224		-0.055	pCi/g-dry					170	30	UR
Radium 224 precision (±)		1.9	pCi/g-dry							
Radium 224 MDC		3.2	pCi/g-dry							
Radium 226		1.8	pCi/g-dry					5.4	30	
Radium 226 precision (±)		0.18	pCi/g-dry							
Radium 226 MDC		0.17	pCi/g-dry							
Radium 228		1.6	pCi/g-dry					0	30	
Radium 228 precision (±)		0.35	pCi/g-dry							
Radium 228 MDC		0.39	pCi/g-dry							
- Duplicate RPD for Ra224 is outside of the acceptance range for this analysis. However, the RER is less than or equal to the limit of 3. The RER result is 0.20.										
- The RER result for Ra226 is 0.36 and Ra228 is 0.00.										
Lab ID: C25090966-029ADUP	9	Sample Duplicate			Run: GAM-HPGE 2_251104A					11/11/25 11:50
Radium 224		-0.58	pCi/g-dry					330	30	UR
Radium 224 precision (±)		1.9	pCi/g-dry							
Radium 224 MDC		3.1	pCi/g-dry							
Radium 226		1.5	pCi/g-dry					5.2	30	
Radium 226 precision (±)		0.18	pCi/g-dry							
Radium 226 MDC		0.17	pCi/g-dry							
Radium 228		1.3	pCi/g-dry					5.1	30	
Radium 228 precision (±)		0.32	pCi/g-dry							
Radium 228 MDC		0.35	pCi/g-dry							
- Duplicate RPD for Ra224 is outside of the acceptance range for this analysis. However, the RER is less than or equal to the limit of 3. The RER result is 1.34.										
- The RER result for Ra226 is 0.31 and Ra228 is 0.14.										

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

R - Relative Percent Difference (RPD) exceeds advisory limit

U - Not detected

Work Order Receipt Checklist

Rio Grande Resources Corporation C25090966

Login completed by: Dakota R. Sawyer
Date Received: 9/29/2025
Reviewed by: srichins
Received by: LDS
Reviewed Date: 10/7/2025
Carrier name: Return UPS Ground

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	22.7°C No Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

For methods that require zero headspace or require preservation check at the time of analysis due to potential interference, the pH is verified at analysis. Nonconforming sample pH is documented as part of the analysis and included in the sample analysis comments.

Trip Blanks and/or Blind Duplicate samples are assigned the earliest collection time for the associated requested analysis in order to evaluate the holding time unless specifically indicated.

Contact and Corrective Action Comments:

The temperature of the sample(s) in shipping container 1 was 22.7°C and shipping container 2 was 21.5°C. DRS 09/29/25

Laboratory Certifications and Accreditations

Current certificates are available at www.energylab.com website:

	Agency	Number
Billings, MT	Alaska	17-023
	California	3087
	Colorado	MT00005
	Department of Defense (DoD)/ISO17025	ADE-2588
	Florida (Primary NELAP)	E87668
	Idaho	MT00005
	Louisiana	05079
	Montana	CERT0044
	Nebraska	NE-OS-13-04
	Nevada	NV-C24-00250
	North Dakota	R-007
	National Radon Proficiency	109383-RMP
	Oregon	4184
	South Dakota	ARSD 74:04:07
	Texas	TX-C24-00302
	US EPA Region VIII	Reciprocal
	USDA Soil Permit	P330-20-00170
	Washington	C1039
Casper, WY	Alaska	20-006
	California	3021
	Colorado	WY00002
	Florida (Primary NELAP)	E87641
	Idaho	WY00002
	Louisiana	05083
	Montana	CERT0002
	Nebraska	NE-OS-08-04
	Nevada	NV-C24-00245
	North Dakota	R-125
	Oregon	WY200001
	South Dakota	WY00002
	Texas	T104704181-23-21
	US EPA Region VIII	WY00002
	USNRC License	49-26846-01
	Washington	C1012
Gillette, WY	US EPA Region VIII	WY00006
Helena, MT	Colorado	MT00945
	Montana	CERT0079
	Nevada	NV-C24-00119
	US EPA Region VIII	Reciprocal
	USDA Soil Permit	P330-20-00090

Chain of Custody & Analytical Request Record

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Account Information (Billing information)

Company/Name	Rio Grande Resources Corporation
Contact	Anita Willcox
Phone	505-287-7971
Mailing Address	PO Box 1150
City, State, Zip	Grants, NM 87020
Email	anita.willcox@ga.com
Receive Invoice	☐Hard Copy ☒Email — Receive Report ☐Hard Copy ☒Email
Purchase Order	MT11820
Quote	
Bottle Order	

Report Information (if different than Account Information)

Company/Name	AVM Environmental Services, Inc.
Contact	Victor Patel
Phone	505-287-4593
Mailing Address	1717 Del Norte Blvd
City, State, Zip	Grants, NM 87020
Email	vpatelavm@outlook.com
Receive Report	☐Hard Copy ☒Email
Special Report/Formats:	☐ LEVEL IV ☐NELAC ☐ EDD/EDT (contact laboratory) ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	MTM SCA Characterization
Sampler Name	Victor Patel
Sampler Phone	505-287-4593
Sample Origin State	New Mexico
EPA/State Compliance	☐ Yes ☒ No

URANIUM MINING CLIENTS MUST indicate sample type
☒ Unprocessed Ore
☐ Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11(e)2 Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Oil
DW - Drinking Water

Analysis Requested

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	EPA 901.1 Modified for soil	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	DP-20 0.5'-1.0'	09/08/2025	9:00 am	1	S	✓			C25090926
2	DP-25 0.5'-1.0'	09/08/2025	9:40 am	1	S	✓			
3	DP-26 2.0'-2.5'	09/08/2025	10:40 am	1	S	✓			
4	DP-34 0.5'-1.0'	09/09/2025	10:50 am	1	S	✓			
5	DP-35 0.5'-1.0'	09/09/2025	11:40 am	1	S	✓			
6	DP-33 0.5'-1.0'	09/09/2025	12:50 pm	1	S	✓			
7	DP-36 1.0'-1.5'	09/09/2025	1:30 pm	1	S	✓			
8	DP-37 1.0'-1.5'	09/10/2025	8:45 am	1	S	✓			
9	DP-38 0.5'-1.0'	09/10/2025	9:10 am	1	S	✓			

ELI is REQUIRED to provide preservative traceability. If the preservatives supplied with the bottle order were NOT used, please attach your preservative information with this COC.

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Victor Patel	9-29-25/1200				
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Lorie Snider	09-29-25 10:00	Lorie Snider

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number (cash/check only)

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

ENERGY LABORATORIES
Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

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Account Information (Billing information)

Company/Name	Rio Grande Resources Corporation
Contact	Anita Willcox
Phone	505-287-7971
Mailing Address	PO Box 1150
City, State, Zip	Grants, NM 87020
Email	anita.willcox@ga.com
Receive Invoice	☐Hard Copy ☒Email
Receive Report	☐Hard Copy ☒Email
Purchase Order	MT11820
Quote	
Bottle Order	

Report Information (if different than Account Information)

Company/Name	AVM Environmental Services, Inc.
Contact	Victor Patel
Phone	505-287-4593
Mailing Address	1717 Del Norte Blvd
City, State, Zip	Grants, NM 87020
Email	vpatelavm@outlook.com
Receive Report	☐Hard Copy ☒Email

Special Report/Formats:
☐ LEVEL IV ☐NELAC ☐ EDD/EDT (contact laboratory) ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	MTM SCA Characterization
Sampler Name	Victor Patel
Sampler Phone	505-287-4593
Sample Origin State	New Mexico
EPA/State Compliance	☐ Yes ☒ No

URANIUM MINING CLIENTS MUST indicate sample type
☒ Unprocessed Ore
☐ Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11(e)2 Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Oil
DW - Drinking Water

Analysis Requested

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	EPA 901.1 Modified for soil ✓	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	DP-39 1.5'-2.0'	09/10/2025	9:50 am	1	S	✓			C25090966
2	DP-11 0.5'-1.0'	09/10/2025	10:44 am	1	S	✓			
3	DP-10 1.0'-1.5'	09/10/2025	11:35 am	1	S	✓			
4	DP-09 1.0'-1.5'	09/10/2025	1:20 pm	1	S	✓			
5	DP-02 0.0'-0.5'	09/11/2025	8:00 am	1	S	✓			
6	DP-01 0.0'-0.5'	09/11/2025	8:10 am	1	S	✓			
7	DP-17 0.0'-0.5'	09/11/2025	8:40 am	1	S	✓			
8	DP-17 0.5'-1.0'	09/11/2025	8:50 am	1	S	✓			
9	DP-18 0.5'-1.0'	09/11/2025	9:00 am	1	S	✓			

ELI is REQUIRED to provide preservative traceability. If the preservatives supplied with the bottle order were NOT used, please attach your preservative information with this COC.

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Victor Patel	9-25-25 1200				
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Lorie Snider	09-29-25 10:00	Lorie Snider

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number (cash/check only)

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

Chain of Custody & Analytical Request Record

ENERGY LABORATORIES — Trust our People. Trust our Data.

www.energylab.com

Account Information *(Billing information)*

Company/Name	Rio Grande Resources Corporation
Contact	Anita Willcox
Phone	505-287-7971
Mailing Address	PO Box 1150
City, State, Zip	Grants, NM 87020
Email	anita.willcox@ga.com
Receive Invoice	☐Hard Copy ☒Email
Receive Report	☐Hard Copy ☒Email
Purchase Order	MT11820
Quote	
Bottle Order	

Report Information *(if different than Account Information)*

Company/Name	AVM Environmental Services, Inc.
Contact	Victor Patel
Phone	505-287-4593
Mailing Address	1717 Del Norte Blvd
City, State, Zip	Grants, NM 87020
Email	vpatelavm@outlook.com
Receive Report	☐Hard Copy ☒Email
Special Report/Formats:	☐ LEVEL IV ☐NELAC ☐ EDD/EDT *(contact laboratory)* ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	MTM SCA Characterization
Sampler Name	Victor Patel
Sampler Phone	505-287-4593
Sample Origin State	New Mexico
EPA/State Compliance	☐ Yes ☒ No

URANIUM MINING CLIENTS MUST indicate sample type
☒ Unprocessed Ore
☐ Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11(e)2 Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Oil
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	EPA 901.1 Modified for soil	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	DP-DS2 0.0'-0.5'	09/11/2025	9:15 am	1	S	✓			C25090966
2	DP-DS3 0.0'-0.5'	09/11/2025	9:30 am	1	S	✓			
3	DP-DS4 0.0'-0.5'	09/11/2025	9:45 am	1	S	✓			
4	DP-08 0.5'-1.0'	09/15/2025	8:00 am	1	S	✓			
5	DP-06 1.5'-2.0'	09/15/2025	9:20 am	1	S	✓			
6	DP-04 1.0'-1.5'	09/15/2025	10:15 am	1	S	✓			
7	DP-16 0.5'-1.0'	09/15/2025	12:30 pm	1	S	✓			
8	DP-15 0.5'-1.0'	09/15/2025	1:15 pm	1	S	✓			
9	DP-05 0.5'-1.0'	09/16/2025	8:10 am	1	S	✓			

ELI is REQUIRED to provide preservative traceability. If the preservatives supplied with the bottle order were NOT used, please attach your preservative information with this COC.

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Victor Patel	9-25-25 1200				
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Lorie Snider	09-29-25 10:00	Lorie Snider

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number (cash/check only)

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

Chain of Custody & Analytical Request Record

ENERGY LABORATORIES — Trust our People. Trust our Data.

www.energylab.com

Account Information (Billing information)

Company/Name	Rio Grande Resources Corporation
Contact	Anita Willcox
Phone	505-287-7971
Mailing Address	PO Box 1150
City, State, Zip	Grants, NM 87020
Email	anita.willcox@ga.com
Receive Invoice	☐Hard Copy ■Email
Receive Report	☐Hard Copy ■Email
Purchase Order	MT11820
Quote	
Bottle Order	

Report Information (if different than Account Information)

Company/Name	AVM Environmental Services, Inc.
Contact	Victor Patel
Phone	505-287-4593
Mailing Address	1717 Del Norte Blvd
City, State, Zip	Grants, NM 87020
Email	vpatelavm@outlook.com
Receive Report	☐Hard Copy ■Email

Special Report/Formats: ☐ LEVEL IV ☐NELAC ☐ EDD/EDT (contact laboratory) ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	MTM SCA Characterization
Sampler Name	Victor Patel
Sampler Phone	505-287-4593
Sample Origin State	New Mexico
EPA/State Compliance	☐ Yes ■ No

URANIUM MINING CLIENTS MUST indicate sample type
■ Unprocessed Ore
☐ Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11(e)2 Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Oil
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	EPA 901.1 Modified for soil +	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	DP-07 3.0'-3.5'	09/16/2025	9:15 am	1	S	✓			C25090966
2	DP-12 0.5'-1.0'	09/16/2025	9:40 am	1	S	✓			
3	DP-13 0.5'-1.0'	09/16/2025	10:00 am	1	S	✓			
4	DP-44 1.0'-1.5'	09/22/2025	8:50 am	1	S	✓			
5	DP 46 0.5'-1.0'	09/24/2025	8:10 am	1	S	✓			
6	DP-48 0.5'-1.0'	09/24/2025	8:30 am	1	S	✓			
7	DP-41 3.5'-4.0'	09/24/2025	10:30 am	1	S	✓			
8	DP-DS5 0.5'-1.0'	09/24/2025	11:15 am	1	S	✓			
9									

ELI is REQUIRED to provide preservative traceability. If the preservatives supplied with the bottle order were NOT used, please attach your preservative information with this COC.

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Victor Patel	9-25-25/1200				
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Lori Snider	09-29-25 10:00	

LABORATORY USE ONLY

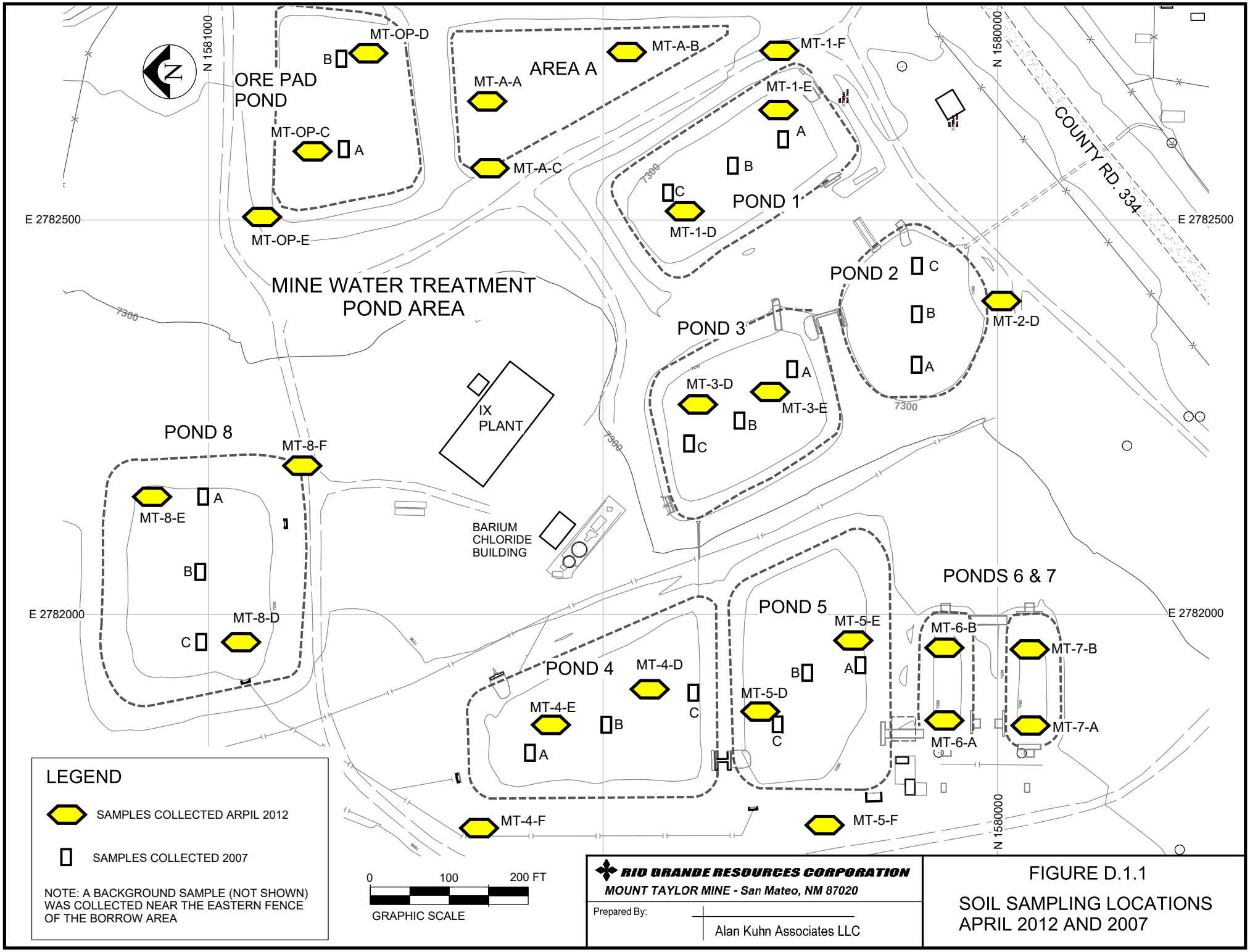
Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number (cash/check only)

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

APPENDIX D.3

Field Sampling and Laboratory Test Data

Laboratory Test Results


N 1581000
N 1580000
E 2782500
E 2782000
ORE PAD POND
MT-OP-D
B
MT-OP-C
A
MT-OP-E
AREA A
MT-A-A
MT-A-B
MT-A-C
MT-1-F
MT-1-E
A
B
C
MT-1-D
POND 1
COUNTY RD. 334
MINE WATER TREATMENT POND AREA
7300
POND 2
C
B
A
MT-2-D
POND 3
MT-3-D
MT-3-E
A
B
C
IX PLANT
POND 8
MT-8-F
MT-8-E
A
B
C
MT-8-D
BARIUM CHLORIDE BUILDING
PONDS 6 & 7
POND 5
MT-5-E
A
B
MT-5-D
C
MT-6-B
MT-7-B
MT-6-A
MT-7-A
POND 4
MT-4-D
MT-4-E
A
B
C
MT-4-F
MT-5-F
LEGEND
SAMPLES COLLECTED ARPIL 2012
SAMPLES COLLECTED 2007
NOTE: A BACKGROUND SAMPLE (NOT SHOWN) WAS COLLECTED NEAR THE EASTERN FENCE OF THE BORROW AREA
0
100
200 FT
GRAPHIC SCALE
RIO GRANDE RESOURCES CORPORATION
MOUNT TAYLOR MINE - San Mateo, NM 87020
Prepared By:
Alan Kuhn Associates LLC
FIGURE D.1.1
SOIL SAMPLING LOCATIONS
APRIL 2012 AND 2007

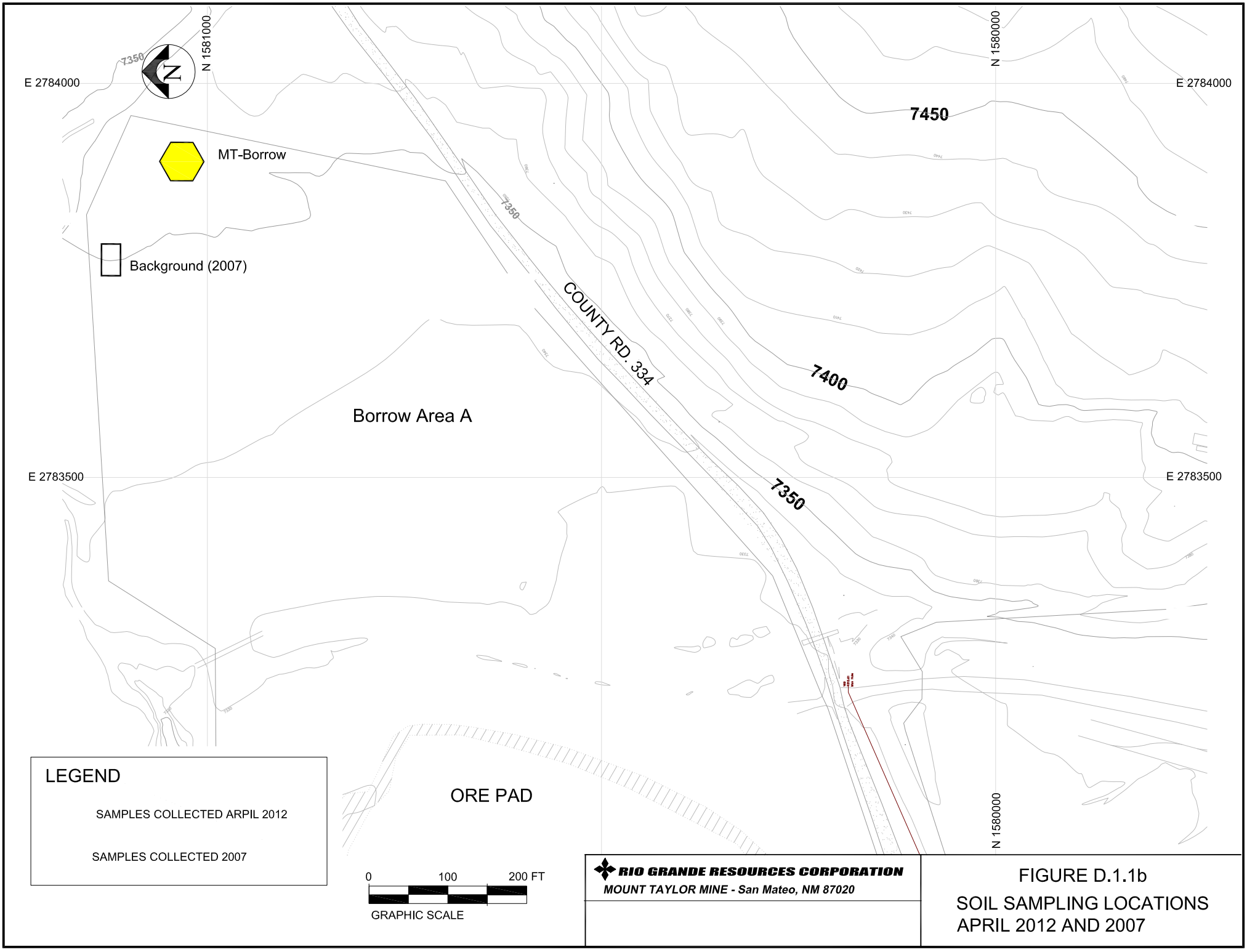
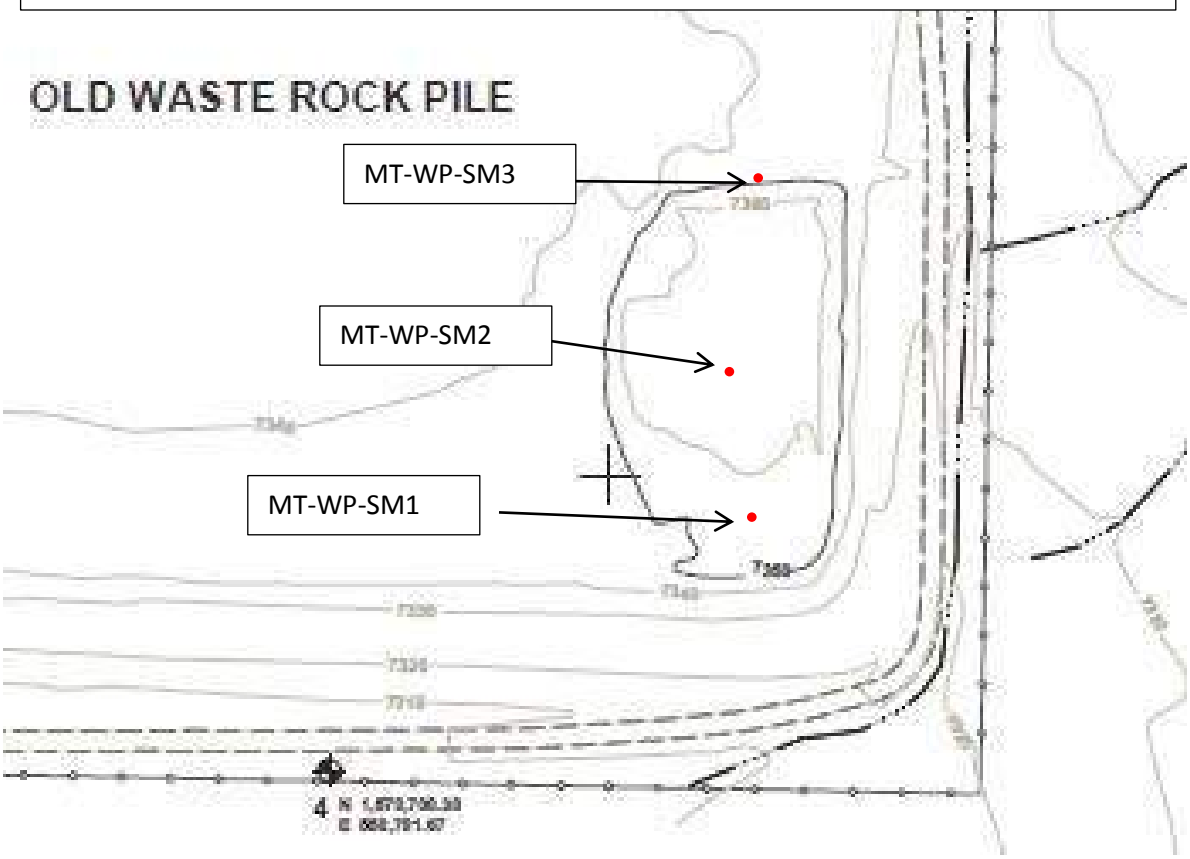

N 1581000
N 1580000
E 2784000
E 2783500
7350
7400
7450
MT-Borrow
Background (2007)
COUNTY RD. 334
Borrow Area A
ORE PAD
LEGEND
SAMPLES COLLECTED ARPIL 2012
SAMPLES COLLECTED 2007
0
100
200 FT
GRAPHIC SCALE
RIO GRANDE RESOURCES CORPORATION
MOUNT TAYLOR MINE - San Mateo, NM 87020
FIGURE D.1.1b
SOIL SAMPLING LOCATIONS
APRIL 2012 AND 2007

Figure D.1.1c

MT TAYLOR MINE SHAFT MUCK SAMPLE LOCATIONS – 5/18/2010



Bulk samples of shaft muck from Mt. Taylor Mine waste rock pile collected on 5/18/2012 by Alan Kuhn. Locations are approximate (+/- 50 ft) based on visual reference to slopes. Splits delivered 5/18/12 to Kleinfelder Albuquerque for grain size analysis and plasticity tests. Other splits left with RGR Mine office for shipment to Energy Labs for testing of U and Ra concentration.

TABLE 1
Soil Physical Properties Analytical Results - April 2012
RIO GRANDE RESOURCES SOIL SAMPLING AND TESTING FOR CLOSEOUT PLAN
MT. TAYLOR MINE, SAN MATEO, NEW MEXICO

Boring ID	Approximate Collection Depth (inches bgs)	Collection Date	Soil Classification	Atterberg Limits		Moisture Content (%)
Analytical Method			USCS	PI	LL	D2216A
MT-WP-SM1	0-6	4/10/2012	SC	24	37	7.1
MT-WP-SM2	0-6	4/10/2012	CL	27	43	7.9
MT-WP-SM3	0-6	4/10/2012	SC	21	34	2.5
BORROW	24-66	4/10/2012	CL	13	37	10.7
MT-1-F	0-6	4/10/2012	SC	15	35	13.7
MT-2-D	0-6	4/10/2012	CL	14	33	16.4
MT-3-F	0-6	4/10/2012	CL	17	35	17.3
MT-4-F	0-6	4/10/2012	CL	13	34	10.5
MT-5-F	0-6	4/10/2012	CL	17	37	17.6
MT-7-C	0-6	4/10/2012	CL	17	39	17.9
MT-8-F	0-6	4/10/2012	SC	13	27	12.9
MT-OP-E	0-6	4/10/2012	CL	12	31	10.3

Notes:
bgs = below ground surface
PI = Plastic Index
LL = Liquid Limit

TABLE 2
Soil Chemical Analytical Results - April 2012
Total Metals by SW 6010/SW 6020 and Radiochemistry by E903.0/RA-05
RIO GRANDE RESOURCES SOIL SAMPLING AND TESTING FOR CLOSEOUT PLAN
MT. TAYLOR MINE, SAN MATEO, NEW MEXICO

Sample ID	Location	Collection Depth (inches bgs)	Collection Date	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Radium 226	Radium 228	Selenium	Silver	Uranium
	CONCENTRATION			mg/L						pCi/g	pCi/g	mg/L		
Analytical Method				SW 6020	SW 6010B	SW 6010B	SW 6010B	SW 6020	SW 7470A	E903.0	RA-05	SW 6020	SW 6020	SW 6020
NMED SSL DAF 1				1.31E-02	3.01E+02	1.37E+00	9.86E+07	NA	5.71E-01	30[3]		9.65E-01	1.57E+00	4.93E+01
S1-01-01	MT-1-E	0-4	4/10/2012	0.014	0.28	<0.001	0.014 B	0.014	<0.002	124	1.8	0.26	<0.002 D	2.2 D
S1-01-02	MT-1-E	16-18	4/10/2012	0.048	3.8	0.001	0.040 B	0.078	<0.002	113	1.3	0.49	<0.002 D	5.3 D
S1-01-03	MT-1-E	44-48	4/10/2012	0.010	0.34	<0.001	0.027 B	0.023	<0.002	12.6	0.8	0.14	0.002 D	0.094 D
S1-02-01	MT-1-D	0-4	4/10/2012	0.023	0.39	<0.001	0.014 B	0.021	<0.002	224	2.3	0.19	<0.002 D	1.5 D
S1-02-02	MT-1-D	26-30	4/10/2012	0.003	<0.05	<0.001	0.007 B	0.004	<0.002	0.9	0.8	0.11	<0.002 D	0.24 D
S1-02-03	MT-1-D	44-48	4/10/2012	0.003	<0.05	<0.001	0.006 B	0.003	<0.002	0.6	0.6	0.012	<0.002 D	0.050 D
S3-01-01	MT-3-E	0-12	4/10/2012	0.007	0.31	0.002	<0.005	0.002	<0.002	21.0	1.5	0.19	<0.001	9.7 B
S3-01-02	MT-3-E	20-26	4/10/2012	0.014	2.3	0.001	0.050	0.064	<0.002	6.2	0.7	0.036	<0.001	5.7 B
S3-01-03	MT-3-E	26-36	4/10/2012	0.005	0.14	<0.001	0.013	0.012	<0.002	4.5	0.8	0.053	<0.001	0.47 B
S3-01-04	MT-3-E	64-75	4/10/2012	0.003	0.07	<0.001	0.011	0.005	<0.002	1.7	0.7	0.032	<0.001	0.036 B
S3-02-01	MT-3-D	0-12	4/10/2012	0.018	6.6	0.002	0.015	0.028	<0.002	6.4	2.2	0.15	<0.001	7.8 B
S3-02-02	MT-3-D	26-30	4/10/2012	0.002	<0.05	<0.001	0.009	0.001	<0.002	3.0	0.7	0.023	<0.001	0.18 B
S3-02-03	MT-3-D	50-54	4/10/2012	0.006	0.27	<0.001	0.018	0.016	<0.002	2.4	0.3	0.003	<0.001	0.022 B
S5-01-01	MT-5-E	0-12	4/10/2012	0.009	5.5	<0.001	0.027 B	0.028	<0.002	11.3	0.3	0.010	<0.002 D	0.11
S5-01-02	MT-5-E	36-37	4/10/2012	0.004	0.07	<0.001	0.012	0.005	<0.002	1.7	0.6	0.004	<0.002	0.0054
S5-02-01	MT-5-D	0-12	4/10/2012	<0.001	0.10	<0.001	0.008	<0.001	<0.002	0.8	0.2	0.40	<0.002	1.5
S5-02-02	MT-5-D	17-24	4/10/2012	<0.001	0.08	<0.001	0.005	<0.001	<0.002	2.1	0.2	0.15	<0.002	1.1
S5-02-03	MT-5-D	40-44	4/10/2012	0.006	0.62	<0.001	0.017	0.013	<0.002	4.1	0.5	0.012	<0.002	0.011 D
S7-01-01	MT-7-A	0-12	4/10/2012	0.004	0.06	<0.001	0.005	<0.001	<0.002	10.4	0.1	0.26	<0.002	0.37
S7-01-02	MT-7-A	24-30	4/10/2012	0.002	0.06	<0.001	0.009	0.003	<0.002	1.1	0.6	0.002	<0.002	0.0047
S7-01-03	MT-7-A	30-35	4/10/2012	<0.001	0.05	<0.001	0.009	0.001	<0.002	1.5	0.2	0.002	<0.002	0.0049
S7-02-01	MT-7-B	0-12	4/10/2012	0.013	0.76	<0.001	0.006	0.001	<0.002	2.6	0.5	0.22	<0.001	0.18
S7-02-02	MT-7-B	23-43	4/10/2012	0.007	0.31	<0.001	0.013	0.020	<0.002	1.9	0.2	0.13	<0.001	0.014
S7-02-03	MT-7-B	43-46	4/10/2012	0.003	0.16	<0.001	0.010	0.005	<0.002	1.1	0.3	0.003	<0.001	0.0053
S8-01-01	MT-8-E	0-8	4/10/2012	0.008	0.91	<0.001	0.012	0.009	<0.002	27.2	0.2	0.007	<0.002	0.016
S8-01-02	MT-8-E	17-30	4/10/2012	0.004	0.09	<0.001	0.006	<0.001	<0.002	2.5	0.6	0.30	0.002	3.8
S8-01-03	MT-8-E	36-40	4/10/2012	0.032	0.16	<0.001	0.010	0.006	<0.002	24.5	0.5	0.036	<0.002	0.022
S8-02-01	MT-8-D	0-12	4/10/2012	0.004	0.12	<0.001	0.009	0.005	<0.002	10.6	0.1	0.22	<0.002	0.12
S8-02-02	MT-8-D	18-24	4/10/2012	0.006	0.06	<0.001	0.006	<0.001	<0.002	1.7	1.5	1.0	<0.002	6.7
S8-02-03	MT-8-D	40-50	4/10/2012	0.011	0.98	<0.001	0.028	0.013	<0.002	14.0	0.2	0.063	<0.002	0.19
S8-02-04	MT-8-D	58-62	4/10/2012	0.004	0.15	<0.001	0.011	0.005	<0.002	2.0	0.6	<0.001	<0.002	0.0056 D
SA-01-01	MT-A-A	0-4	4/10/2012	0.036	0.31	<0.001	0.014 B	0.021	<0.002	152	1.8	0.046	<0.002 D	0.44 D
SA-01-02	MT-A-A	6-8	4/10/2012	0.006	0.11	<0.001	0.010 B	0.009	<0.002	8.7	0.7	0.051	<0.002 D	0.45 D
SA-01-03	MT-A-A	28-30	4/10/2012	0.003	<0.05	<0.001	0.005 B	0.003	<0.002	1.7	0.6	0.095	<0.002 D	0.030 D
SA-02-01	MT-A-B	0-4	4/10/2012	0.025	0.25	<0.001	0.011 B	0.010	<0.002	275	3.5	0.014	<0.002 D	0.37 D
SA-02-02	MT-A-B	8-10	4/10/2012	0.006	0.15	<0.001	0.013 B	0.010	<0.002	5.4	0.7	0.003	<0.002 D	0.11 D
SA-02-03	MT-A-B	30-33	4/10/2012	0.006	0.09	<0.001	0.013 B	0.006	<0.002	29.3	1.3	0.003	<0.002 D	0.088 D
MT-1-F (6" B.G.)	MT-1-F	6	4/10/2012	0.006	0.17	<0.001	0.014	0.016	<0.002	2.0	0.6	0.005	<0.001	0.077 B
MT-2-D (6" B.G.)	MT-2-D	6	4/10/2012	0.002	0.06	<0.001	0.005	0.003	<0.002	0.6	0.6	<0.001	<0.001	0.0098 B
MT-3-F (6" B.G.)	MT-3-F	6	4/10/2012	0.002	<0.05	<0.001	<0.005	0.001	<0.002	0.9	0.5	0.001	<0.002 D	0.0090 D
MT-4-D-S1 (0-6" B.G.)	MT-4-D	0-6	4/10/2012	0.008	1.0	<0.001	0.008	0.003	<0.002	18.1	0.9	0.015	<0.002 D	0.033 D
MT-4-D-S2 (14" B.G.)	MT-4-D	14	4/10/2012	0.007	<0.05	<0.001	0.006	0.001	<0.002	2.8	0.2	0.39	<0.002 D	0.20 D

TABLE 2
Soil Chemical Analytical Results - April 2012
Total Metals by SW 6010/SW 6020 and Radiochemistry by E903.0/RA-05
RIO GRANDE RESOURCES SOIL SAMPLING AND TESTING FOR CLOSEOUT PLAN
MT. TAYLOR MINE, SAN MATEO, NEW MEXICO

Sample ID	Location	Collection Depth (inches bgs)	Collection Date	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Radium 226	Radium 228	Selenium	Silver	Uranium
	CONCENTRATION			mg/L						pCi/g	pCi/g	mg/L		
Analytical Method				SW 6020	SW 6010B	SW 6010B	SW 6010B	SW 6020	SW 7470A	E903.0	RA-05	SW 6020	SW 6020	SW 6020
NMED SSL DAF 1				1.31E-02	3.01E+02	1.37E+00	9.86E+07	NA	5.71E-01	30[3]		9.65E-01	1.57E+00	4.93E+01
MT-4-D-S3 (48" B.G.)	**MT-4-D**	48	4/10/2012	0.003	0.88	<0.001	0.009	0.003	<0.002	6.7	0.8	0.020	<0.002 D	0.013 D
MT-4-E-S1 (0-4" B.G.)	**MT-4-E**	0-4	4/10/2012	0.034	34	<0.001	0.007	0.008	<0.002	8.7	1.5	0.15	<0.002 D	0.39 D
MT-4-E-S2 (10-12" B.G.)	**MT-4-E**	10-12	4/10/2012	0.005	0.22	<0.001	0.011	0.005	<0.002	4.8	0.4	0.072	<0.002 D	0.014 D
MT-4-E-S3 (36" B.G.)	**MT-4-E**	36	4/10/2012	0.003	0.13	<0.001	0.007	0.003	<0.002	2.9	0.7	0.026	0.003 D	0.0043 D
MT-4-E-S4 (48" B.G.)	**MT-4-E**	48	4/10/2012	0.005 B	0.06	<0.001	0.006	0.002	<0.002	6.2	0.4	0.011	<0.001	0.027
MT-4-F (6" B.G.)	**MT-4-F**	6	4/10/2012	0.005	<0.05	<0.001	<0.005	0.003	<0.002	0.8	1.0	0.002	<0.002 D	0.0027 D
MT-5-F (6" B.G.)	**MT-5-F**	6	4/10/2012	0.002	<0.05	<0.001	<0.005	0.001	<0.002	2.0	0.8	0.001	0.003 D	0.0029 D
MT-6-A-S1 (0-5" B.G.)	**MT-6-A**	0-5	4/10/2012	0.012	7.3	<0.001	0.007	0.016	<0.002	6.4	0.2	0.007	<0.001	0.044
MT-6-A-S2 (12-20" B.G.)	**MT-6-B**	12-20	4/10/2012	0.003 B	0.05	<0.001	0.007	<0.001	<0.002	0.4	0.1	0.15	<0.001	0.26 U
MT-6-B-S1 (8-10" B.G.)	**MT-6-B**	8-10	4/10/2012	0.004 B	0.05	<0.001	0.007	<0.001	<0.002	0.8	0.2	0.16	<0.001	0.26
MT-6-B-S2 (30" B.G.)	**MT-6-B**	30	4/10/2012	0.002 B	0.06	<0.001	<0.005	<0.001	<0.002	4.1	0.8	0.003	<0.001	0.014
MT-7-C (6" B.G.)	**MT-7-C**	6	4/10/2012	0.002	<0.05	<0.001	0.006	0.002	<0.002	0.6	0.8	<0.001	<0.002 D	0.0023 D
MT-8-F (6" B.G.)	**MT-8-F**	6	4/10/2012	0.001	0.05	0.001	0.005	0.001	0.002	-1000	-1000	0.001	0.002 D	0.0006 D
MT-A-C (6" B.G.)	**MT-A-C**	6	4/10/2012	0.003	<0.05	<0.001	<0.005	0.001	<0.002	1.7	0.5	0.044	<0.002 D	0.14
MT-Borrow/Background	**MT-Borrow**	24-66	4/10/2012	0.001	<0.05	<0.001	<0.005	<0.001	<0.002	0.7	0.7	0.001	<0.002 D	0.0007
MT-OP-C-S1 (0-6" B.G.)	**MT-OP-C**	0-6	4/10/2012	0.015	0.05	<0.001	0.010	0.001	<0.002	53.3	2.1	0.052	<0.001	1.8
MT-OP-C-S2 (20" B.G.)	**MT-OP-C**	20	4/10/2012	0.005	0.05	<0.001	0.007	0.002	<0.002	1.7	0.6	0.018	<0.002 D	0.14
MT-OP-C-S3 (48-50' B.G.	**MT-OP-C**	48-50	4/10/2012	0.004	<0.05	<0.001	<0.005	<0.001	<0.002	0.8	0.8	0.028	<0.002 D	0.049
MT-OP-C-S4 (72" B.G.)	**MT-OP-C**	72	4/10/2012	0.004	<0.05	<0.001	<0.005	<0.001	<0.002	1.5	0.6	0.025	<0.002 D	0.0064
MT-OP-D-S1 (0-6" B.G.)	**MT-OP-D**	0-6	4/10/2012	0.013	1.3	<0.001	0.007	0.008	<0.002	51.9	0.5	0.009	<0.002 D	0.23
MT-OP-D-S2 (48-50" B.G.	**MT-OP-D**	48-50	4/10/2012	0.001	0.05	<0.001	<0.005	<0.001	<0.002	1.9	0.6	0.005	<0.002 D	0.10
MT-OP-D-S3 (76" B.G.)	**MT-OP-D**	76	4/10/2012	0.006	0.11	<0.001	0.012	0.009	<0.002	0.6	0.5	0.002	<0.002 D	0.0034
MT-OP-E (6" B.G.)	**MT-OP-E**	6	4/10/2012	0.004	0.05	<0.001	0.006	0.003	<0.002	1.1	0.8	0.005	<0.002 D	0.0056

Notes:
bgs = below ground surface
mg/Kg = milligrams per killogram
DAF=Dilution Attenuation Factor
NA = No DAF values available, NMED 2012, rev6

Total metals concentrations should be compared to background soil sample concentrations before comparing to Soil Screening Levels (SSL). Only metal concentrations above background should be considered for comparison to SSLs.
NMED considers a DAF=20 to be protective of groundwater for a 0.5-acre source. SSL values are included for reference only, as they are applicable for reclamation, not for mines that are active or on stand-by status.
B = The analyte was detected in the method blank.
D = Reporting limit increased due to sample matrix.
U = Not detected at minimum detectable concentration.

TABLE 3
Sediment Analytical Results
Cloride and Sulfate Detections - April 2012
RIO GRANDE RESOURCES SOIL SAMPLING AND TESTING FOR CLOSEOUT PLAN
MT. TAYLOR MINE, SAN MATEO, NEW MEXICO

ClientSampID	Location	Sample Interval (inches below grade)	Method	Analyte	Value (mg/kg)	Analyte	Value (mg/kg)
Berms							
MT-4-F	MT-4-F	6	E300.1	Chloride	51.2	Sulfate	405
MT-5-F	MT-5-F	6	E300.2	Chloride	37.0	Sulfate	183
MT-8F	MT-8F	6	E300.3	Chloride	14.2	Sulfate	28.9
Ponds							
MT-4-D-S1	MT-4-D	0-6	E300.0	Chloride	7.76	Sulfate	77
MT-4-D-S2	MT-4-D	14	E300.0	Chloride	92.00	Sulfate	1840
MT-4-D-S3	MT-4-D	48	E300.0	Chloride	6.49	Sulfate	132
MT-4-E-S1	MT-4-E	0-4	E300.0	Chloride	46.40	Sulfate	853
MT-4-E-S2	MT-4-E	10-12	E300.0	Chloride	34.10	Sulfate	1150
MT-4-E-S3	MT-4-E	36	E300.0	Chloride	13.10	Sulfate	184
MT-4-E-S4	MT-4-E	48	E300.0	Chloride	4.51	Sulfate	131
S5-01-01	MT-5-E	0-12	E300.0	Chloride	9.64	Sulfate	113
S5-01-02	MT-5-E	30-37	E300.0	Chloride	7.87	Sulfate	261
S5-02-01	MT-5-D	0-12	E300.1	Chloride	17.2	Sulfate	2860
S5-02-02	MT-5-D	17-24	E300.2	Chloride	23.1	Sulfate	2530
S5-02-03	MT-5-D	40-44	E300.3	Chloride	5.10	Sulfate	279
S8-01-01	MT-8-E	0-8	E300.0	Chloride	29.3	Sulfate	35.3
S8-01-02	MT-8-E	17-30	E300.0	Chloride	39.6	Sulfate	2750
S8-01-03	MT-8-E	36-40	E300.0	Chloride	12.0	Sulfate	197
S8-02-01	MT-8-D	0-12	E300.0	Chloride	58.6	Sulfate	1660
S8-02-02	MT-8-D	18-24	E300.0	Chloride	44.6	Sulfate	2480
S8-02-03	MT-8-D	40-50	E300.0	Chloride	9.13	Sulfate	536
S8-02-04	MT-8-D	56-62	E300.0	Chloride	3.01	Sulfate	31.2

ANALYTICAL SUMMARY REPORT

July 05, 2012

Rio Grande Resources Corporation
PO Box 1150
Grants, NM 87020

Workorder No.: C12040804 Quote ID: C3778 - Mt Taylor Mine Closure Plan

Project Name: Mt. Taylor Mine Closure Plan

Energy Laboratories, Inc. Casper WY received the following 37 samples for Rio Grande Resources Corporation on 4/13/2012 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C12040804-001	S1-01-01	04/10/12 10:45	04/13/12	Sediment	Metals, SPLP Extractable Mercury, SPLP Mercury Analysis Prep Filterability Digestion, Total Metals Digestion For RadioChemistry Radium 226 Radium 228 SPLP Extraction, Regular
C12040804-002	S1-01-02	04/10/12 10:50	04/13/12	Sediment	Same As Above
C12040804-003	S1-01-03	04/10/12 11:00	04/13/12	Sediment	Same As Above
C12040804-004	S1-02-01	04/10/12 11:40	04/13/12	Sediment	Same As Above
C12040804-005	S1-02-02	04/10/12 11:43	04/13/12	Sediment	Same As Above
C12040804-006	S1-02-03	04/10/12 11:45	04/13/12	Sediment	Same As Above
C12040804-007	SA-01-01	04/10/12 11:30	04/13/12	Sediment	Same As Above
C12040804-008	SA-01-02	04/10/12 11:35	04/13/12	Sediment	Same As Above
C12040804-009	SA-01-03	04/10/12 11:45	04/13/12	Sediment	Same As Above
C12040804-010	SA-02-01	04/10/12 11:48	04/13/12	Sediment	Same As Above
C12040804-011	SA-02-02	04/10/12 11:48	04/13/12	Sediment	Same As Above
C12040804-012	SA-02-03	04/10/12 11:48	04/13/12	Sediment	Same As Above
C12040804-013	S8-01-01	04/10/12 13:00	04/13/12	Sediment	Metals, SPLP Extractable Mercury, SPLP Mercury Analysis Prep Filterability E300.0 Anions Digestion, Total Metals Digestion For RadioChemistry DI Water Soil Extract Radium 226 Radium 228 SPLP Extraction, Regular
C12040804-014	S8-01-02	04/10/12 13:09	04/13/12	Sediment	Same As Above
C12040804-015	S8-01-03	04/10/12 13:09	04/13/12	Sediment	Same As Above
C12040804-016	S8-02-01	04/10/12 13:26	04/13/12	Sediment	Same As Above

ANALYTICAL SUMMARY REPORT

C12040804-017	S8-02-02	04/10/12 13:36	04/13/12	Sediment	Same As Above
C12040804-018	S8-02-03	04/10/12 13:36	04/13/12	Sediment	Same As Above
C12040804-019	S8-02-04	04/10/12 13:39	04/13/12	Sediment	Same As Above
C12040804-020	S5-01-01	04/10/12 14:05	04/13/12	Sediment	Same As Above
C12040804-021	S7-01-01	04/10/12 15:12	04/13/12	Sediment	Metals, SPLP Extractable Mercury, SPLP Mercury Analysis Prep Filterability Digestion, Total Metals Digestion For RadioChemistry Radium 226 Radium 228 SPLP Extraction, Regular
C12040804-022	S7-01-02	04/10/12 15:17	04/13/12	Sediment	Same As Above
C12040804-023	S7-01-03	04/10/12 15:22	04/13/12	Sediment	Same As Above
C12040804-024	S5-02-02	04/10/12 14:15	04/13/12	Sediment	Metals, SPLP Extractable Mercury, SPLP Mercury Analysis Prep Filterability E300.0 Anions Digestion, Total Metals Digestion For RadioChemistry DI Water Soil Extract Radium 226 Radium 228 SPLP Extraction, Regular
C12040804-025	S5-02-03	04/10/12 14:20	04/13/12	Sediment	Same As Above
C12040804-026	S5-02-01	04/10/12 14:30	04/13/12	Sediment	Same As Above
C12040804-027	S5-01-02	04/10/12 14:09	04/13/12	Sediment	Same As Above
C12040804-028	S3-01-01	04/10/12 9:15	04/13/12	Sediment	Metals, SPLP Extractable Mercury, SPLP Mercury Analysis Prep Filterability Digestion, Total Metals Digestion For RadioChemistry Radium 226 Radium 228 SPLP Extraction, Regular
C12040804-029	S3-01-02	04/10/12 8:50	04/13/12	Sediment	Same As Above
C12040804-030	S3-01-03	04/10/12 9:40	04/13/12	Sediment	Same As Above
C12040804-031	S3-02-01	04/10/12 10:22	04/13/12	Sediment	Same As Above
C12040804-032	S3-02-02	04/10/12 10:30	04/13/12	Sediment	Same As Above
C12040804-033	S3-02-03	04/10/12 10:30	04/13/12	Sediment	Same As Above
C12040804-034	S7-02-01	04/10/12 15:45	04/13/12	Sediment	Same As Above
C12040804-035	S7-02-02	04/10/12 15:50	04/13/12	Sediment	Same As Above
C12040804-036	S7-02-03	04/10/12 15:55	04/13/12	Sediment	Same As Above
C12040804-037	S3-01-04	04/10/12 9:46	04/13/12	Sediment	Same As Above

ANALYTICAL SUMMARY REPORT

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

CLIENT: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Sample Delivery Group: C12040804

Revised Date: 07/05/12
Report Date: 06/13/12

CASE NARRATIVE

REVISED/SUPPLEMENTAL REPORT
The attached analytical report has been revised from a previously submitted report due to the request by the client for the analysis of Radium 226 and Radium 228 on the Sediment on all samples and Chloride and Sulfate on the Sediment on samples -013 through -020 and -024 through -027. The data presented here is from that analysis.

PREP COMMENTS
The prep hold time for Mercury analysis was exceeded by up to 10.2 days.
The prep hold time for Chloride and Sulfate analysis was exceeded by 38.8 days.

ORIGINAL SAMPLE SUBMITTAL(S)
All original sample submittals have been returned with the data package.

SAMPLE TEMPERATURE COMPLIANCE: 4°C (±2°C)
Temperature of samples received may not be considered properly preserved by accepted standards. Samples that are hand delivered immediately after collection shall be considered acceptable if there is evidence that the chilling process has begun.

GROSS ALPHA ANALYSIS
Method 900.0 for gross alpha and gross beta is intended as a drinking water method for low TDS waters. Data provided by this method for non potable waters should be viewed as inconsistent.

RADON IN AIR ANALYSIS
The desired exposure time is 48 hours (2 days). The time delay in returning the canister to the laboratory for processing should be as short as possible to avoid excessive decay. Maximum recommended delay between end of exposure to beginning of counting should not exceed 8 days.

SOIL/SOLID SAMPLES
All samples reported on an as received basis unless otherwise indicated.

ATRAZINE, SIMAZINE AND PCB ANALYSIS
Data for PCBs, Atrazine and Simazine are reported from EPA 525.2. PCB data reported by ELI reflects the results for seven individual Aroclors. When the results for all seven are ND (not detected), the sample meets EPA compliance criteria for PCB monitoring.

SUBCONTRACTING ANALYSIS
Subcontracting of sample analyses to an outside laboratory may be required. If so, ENERGY LABORATORIES will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

BRANCH LABORATORY LOCATIONS
eli-b - Energy Laboratories, Inc. - Billings, MT
eli-g - Energy Laboratories, Inc. - Gillette, WY
eli-h - Energy Laboratories, Inc. - Helena, MT
eli-r - Energy Laboratories, Inc. - Rapid City, SD
eli-t - Energy Laboratories, Inc. - College Station, TX

CERTIFICATIONS:
USEPA: WY00002, Radiochemical WY00937; FL-DOH NELAC: E87641, Radiochemical E871017; California: 02118CA; Oregon: WY200001, Radiochemical WY200002; Utah: WY00002; Virginia: 00057; Washington: C836

ISO 17025 DISCLAIMER:
The results of this Analytical Report relate only to the items submitted for analysis.

ENERGY LABORATORIES, INC. - CASPER,WY certifies that certain method selections contained in this report meet requirements as set forth by the above accrediting authorities. Some results requested by the client may not be covered under these certifications. All analysis data to be submitted for regulatory enforcement should be certified in the sample state of origin. Please verify ELI's certification coverage by visiting www.energylab.com

ELI appreciates the opportunity to provide you with this analytical service. For additional information and services visit our web page www.energylab.com.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-001
Client Sample ID: S1-01-01

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 10:45
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.014	mg/L		0.001		SW6020	04/20/12 13:36 / smm
Barium	0.28	mg/L		0.05		SW6020	04/20/12 13:36 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/20/12 13:36 / smm
Chromium	0.014	mg/L	B	0.005		SW6020	04/20/12 13:36 / smm
Lead	0.014	mg/L		0.001		SW6020	04/20/12 13:36 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 07:52 / rdw
Selenium	0.26	mg/L		0.001		SW6020	04/20/12 13:36 / smm
Silver	ND	mg/L	D	0.002		SW6020	04/20/12 13:36 / smm
Uranium	2.2	mg/L	D	0.0006		SW6020	04/20/12 13:36 / smm
RADIONUCLIDES							
Radium 226	124	pCi/g-dry				E903.0	07/02/12 22:18 / plj
Radium 226 precision (±)	1	pCi/g-dry				E903.0	07/02/12 22:18 / plj
Radium 226 MDC	0.03	pCi/g-dry				E903.0	07/02/12 22:18 / plj
Radium 228	1.8	pCi/g-dry				RA-05	06/25/12 12:20 / plj
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	06/25/12 12:20 / plj
Radium 228 MDC	0.3	pCi/g-dry				RA-05	06/25/12 12:20 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-002
Client Sample ID: S1-01-02

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 10:50
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.048	mg/L		0.001		SW6020	04/20/12 12:57 / smm
Barium	3.8	mg/L		0.05		SW6020	04/20/12 12:57 / smm
Cadmium	0.001	mg/L		0.001		SW6020	04/20/12 12:57 / smm
Chromium	0.040	mg/L	B	0.005		SW6020	04/20/12 12:57 / smm
Lead	0.078	mg/L		0.001		SW6020	04/20/12 12:57 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 07:56 / rdw
Selenium	0.49	mg/L		0.001		SW6020	04/20/12 12:57 / smm
Silver	ND	mg/L	D	0.002		SW6020	04/20/12 12:57 / smm
Uranium	5.3	mg/L	D	0.0006		SW6020	04/20/12 12:57 / smm
RADIONUCLIDES							
Radium 226	113	pCi/g-dry				E903.0	07/02/12 22:18 / plj
Radium 226 precision (±)	0.9	pCi/g-dry				E903.0	07/02/12 22:18 / plj
Radium 226 MDC	0.03	pCi/g-dry				E903.0	07/02/12 22:18 / plj
Radium 228	1.3	pCi/g-dry				RA-05	06/25/12 12:20 / plj
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	06/25/12 12:20 / plj
Radium 228 MDC	0.2	pCi/g-dry				RA-05	06/25/12 12:20 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-003
Client Sample ID: S1-01-03

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 11:00
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.010	mg/L		0.001		SW6020	04/20/12 13:14 / smm
Barium	0.34	mg/L		0.05		SW6020	04/20/12 13:14 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/20/12 13:14 / smm
Chromium	0.027	mg/L	B	0.005		SW6020	04/20/12 13:14 / smm
Lead	0.023	mg/L		0.001		SW6020	04/20/12 13:14 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 07:57 / rdw
Selenium	0.14	mg/L		0.001		SW6020	04/20/12 13:14 / smm
Silver	0.002	mg/L	D	0.002		SW6020	04/20/12 13:14 / smm
Uranium	0.094	mg/L	D	0.0006		SW6020	04/20/12 13:14 / smm
RADIONUCLIDES							
Radium 226	12.6	pCi/g-dry				E903.0	07/02/12 22:18 / plj
Radium 226 precision (±)	0.3	pCi/g-dry				E903.0	07/02/12 22:18 / plj
Radium 226 MDC	0.03	pCi/g-dry				E903.0	07/02/12 22:18 / plj
Radium 228	0.8	pCi/g-dry				RA-05	06/25/12 12:20 / plj
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	06/25/12 12:20 / plj
Radium 228 MDC	0.3	pCi/g-dry				RA-05	06/25/12 12:20 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-004
Client Sample ID: S1-02-01

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 11:40
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.023	mg/L		0.001		SW6020	04/20/12 13:17 / smm
Barium	0.39	mg/L		0.05		SW6020	04/20/12 13:17 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/20/12 13:17 / smm
Chromium	0.014	mg/L	B	0.005		SW6020	04/20/12 13:17 / smm
Lead	0.021	mg/L		0.001		SW6020	04/20/12 13:17 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 07:58 / rdw
Selenium	0.19	mg/L		0.001		SW6020	04/20/12 13:17 / smm
Silver	ND	mg/L	D	0.002		SW6020	04/20/12 13:17 / smm
Uranium	1.5	mg/L	D	0.0006		SW6020	04/20/12 13:17 / smm
RADIONUCLIDES							
Radium 226	224	pCi/g-dry				E903.0	07/02/12 22:18 / plj
Radium 226 precision (±)	1.3	pCi/g-dry				E903.0	07/02/12 22:18 / plj
Radium 226 MDC	0.03	pCi/g-dry				E903.0	07/02/12 22:18 / plj
Radium 228	2.3	pCi/g-dry				RA-05	06/25/12 12:20 / plj
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	06/25/12 12:20 / plj
Radium 228 MDC	0.3	pCi/g-dry				RA-05	06/25/12 12:20 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-005
Client Sample ID: S1-02-02

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 11:43
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.003	mg/L		0.001		SW6020	04/20/12 13:19 / smm
Barium	ND	mg/L		0.05		SW6020	04/20/12 13:19 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/20/12 13:19 / smm
Chromium	0.007	mg/L	B	0.005		SW6020	04/20/12 13:19 / smm
Lead	0.004	mg/L		0.001		SW6020	04/20/12 13:19 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 08:00 / rdw
Selenium	0.11	mg/L		0.001		SW6020	04/20/12 13:19 / smm
Silver	ND	mg/L	D	0.002		SW6020	04/20/12 13:19 / smm
Uranium	0.24	mg/L	D	0.0006		SW6020	04/20/12 13:19 / smm
RADIONUCLIDES							
Radium 226	0.9	pCi/g-dry				E903.0	07/02/12 22:18 / plj
Radium 226 precision (±)	0.09	pCi/g-dry				E903.0	07/02/12 22:18 / plj
Radium 226 MDC	0.03	pCi/g-dry				E903.0	07/02/12 22:18 / plj
Radium 228	0.8	pCi/g-dry				RA-05	06/25/12 12:20 / plj
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	06/25/12 12:20 / plj
Radium 228 MDC	0.3	pCi/g-dry				RA-05	06/25/12 12:20 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-006
Client Sample ID: S1-02-03

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 11:45
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.003	mg/L		0.001		SW6020	04/20/12 13:22 / smm
Barium	ND	mg/L		0.05		SW6020	04/20/12 13:22 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/20/12 13:22 / smm
Chromium	0.006	mg/L	B	0.005		SW6020	04/20/12 13:22 / smm
Lead	0.003	mg/L		0.001		SW6020	04/20/12 13:22 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 08:20 / rdw
Selenium	0.012	mg/L		0.001		SW6020	04/20/12 13:22 / smm
Silver	ND	mg/L	D	0.002		SW6020	04/20/12 13:22 / smm
Uranium	0.050	mg/L	D	0.0006		SW6020	04/20/12 13:22 / smm
RADIONUCLIDES							
Radium 226	0.6	pCi/g-dry				E903.0	07/02/12 22:18 / plj
Radium 226 precision (±)	0.07	pCi/g-dry				E903.0	07/02/12 22:18 / plj
Radium 226 MDC	0.03	pCi/g-dry				E903.0	07/02/12 22:18 / plj
Radium 228	0.6	pCi/g-dry				RA-05	06/25/12 12:20 / plj
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	06/25/12 12:20 / plj
Radium 228 MDC	0.3	pCi/g-dry				RA-05	06/25/12 12:20 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-007
Client Sample ID: SA-01-01

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 11:30
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.036	mg/L		0.001		SW6020	04/20/12 13:25 / smm
Barium	0.31	mg/L		0.05		SW6020	04/20/12 13:25 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/20/12 13:25 / smm
Chromium	0.014	mg/L	B	0.005		SW6020	04/20/12 13:25 / smm
Lead	0.021	mg/L		0.001		SW6020	04/20/12 13:25 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 08:22 / rdw
Selenium	0.046	mg/L		0.001		SW6020	04/20/12 13:25 / smm
Silver	ND	mg/L	D	0.002		SW6020	04/20/12 13:25 / smm
Uranium	0.44	mg/L	D	0.0006		SW6020	04/20/12 13:25 / smm
RADIONUCLIDES							
Radium 226	152	pCi/g-dry				E903.0	07/02/12 22:18 / plj
Radium 226 precision (±)	1.1	pCi/g-dry				E903.0	07/02/12 22:18 / plj
Radium 226 MDC	0.03	pCi/g-dry				E903.0	07/02/12 22:18 / plj
Radium 228	1.8	pCi/g-dry				RA-05	06/25/12 12:20 / plj
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	06/25/12 12:20 / plj
Radium 228 MDC	0.3	pCi/g-dry				RA-05	06/25/12 12:20 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-008
Client Sample ID: SA-01-02

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 11:35
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.006	mg/L		0.001		SW6020	04/20/12 13:28 / smm
Barium	0.11	mg/L		0.05		SW6020	04/20/12 13:28 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/20/12 13:28 / smm
Chromium	0.010	mg/L	B	0.005		SW6020	04/20/12 13:28 / smm
Lead	0.009	mg/L		0.001		SW6020	04/20/12 13:28 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 08:23 / rdw
Selenium	0.051	mg/L		0.001		SW6020	04/20/12 13:28 / smm
Silver	ND	mg/L	D	0.002		SW6020	04/20/12 13:28 / smm
Uranium	0.45	mg/L	D	0.0006		SW6020	04/20/12 13:28 / smm
RADIONUCLIDES							
Radium 226	8.7	pCi/g-dry				E903.0	07/02/12 23:06 / plj
Radium 226 precision (±)	0.4	pCi/g-dry				E903.0	07/02/12 23:06 / plj
Radium 226 MDC	0.05	pCi/g-dry				E903.0	07/02/12 23:06 / plj
Radium 228	0.7	pCi/g-dry				RA-05	06/25/12 12:20 / plj
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	06/25/12 12:20 / plj
Radium 228 MDC	0.3	pCi/g-dry				RA-05	06/25/12 12:20 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-009
Client Sample ID: SA-01-03

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 11:45
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.003	mg/L		0.001		SW6020	04/20/12 13:31 / smm
Barium	ND	mg/L		0.05		SW6020	04/20/12 13:31 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/20/12 13:31 / smm
Chromium	0.005	mg/L	B	0.005		SW6020	04/20/12 13:31 / smm
Lead	0.003	mg/L		0.001		SW6020	04/20/12 13:31 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 08:24 / rdw
Selenium	0.095	mg/L		0.001		SW6020	04/20/12 13:31 / smm
Silver	ND	mg/L	D	0.002		SW6020	04/20/12 13:31 / smm
Uranium	0.030	mg/L	D	0.0006		SW6020	04/20/12 13:31 / smm
RADIONUCLIDES							
Radium 226	1.7	pCi/g-dry				E903.0	07/02/12 23:06 / plj
Radium 226 precision (±)	0.2	pCi/g-dry				E903.0	07/02/12 23:06 / plj
Radium 226 MDC	0.05	pCi/g-dry				E903.0	07/02/12 23:06 / plj
Radium 228	0.6	pCi/g-dry				RA-05	06/25/12 12:20 / plj
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	06/25/12 12:20 / plj
Radium 228 MDC	0.3	pCi/g-dry				RA-05	06/25/12 12:20 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-010
Client Sample ID: SA-02-01

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 11:48
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.025	mg/L		0.001		SW6020	04/20/12 13:33 / smm
Barium	0.25	mg/L		0.05		SW6020	04/20/12 13:33 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/20/12 13:33 / smm
Chromium	0.011	mg/L	B	0.005		SW6020	04/20/12 13:33 / smm
Lead	0.010	mg/L		0.001		SW6020	04/20/12 13:33 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 08:26 / rdw
Selenium	0.014	mg/L		0.001		SW6020	04/20/12 13:33 / smm
Silver	ND	mg/L	D	0.002		SW6020	04/20/12 13:33 / smm
Uranium	0.37	mg/L	D	0.0006		SW6020	04/20/12 13:33 / smm
RADIONUCLIDES							
Radium 226	275	pCi/g-dry				E903.0	07/02/12 23:06 / plj
Radium 226 precision (±)	2.0	pCi/g-dry				E903.0	07/02/12 23:06 / plj
Radium 226 MDC	0.05	pCi/g-dry				E903.0	07/02/12 23:06 / plj
Radium 228	3.5	pCi/g-dry				RA-05	06/25/12 12:20 / plj
Radium 228 precision (±)	0.3	pCi/g-dry				RA-05	06/25/12 12:20 / plj
Radium 228 MDC	0.2	pCi/g-dry				RA-05	06/25/12 12:20 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-011
Client Sample ID: SA-02-02

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 11:48
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.006	mg/L		0.001		SW6020	04/20/12 14:40 / smm
Barium	0.15	mg/L		0.05		SW6020	04/20/12 14:40 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/20/12 14:40 / smm
Chromium	0.013	mg/L	B	0.005		SW6020	04/20/12 14:40 / smm
Lead	0.010	mg/L		0.001		SW6020	04/20/12 14:40 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 08:31 / rdw
Selenium	0.003	mg/L		0.001		SW6020	04/20/12 14:40 / smm
Silver	ND	mg/L	D	0.002		SW6020	04/20/12 14:40 / smm
Uranium	0.11	mg/L	D	0.0006		SW6020	04/20/12 14:40 / smm
RADIONUCLIDES							
Radium 226	5.4	pCi/g-dry				E903.0	07/02/12 23:06 / plj
Radium 226 precision (±)	0.3	pCi/g-dry				E903.0	07/02/12 23:06 / plj
Radium 226 MDC	0.05	pCi/g-dry				E903.0	07/02/12 23:06 / plj
Radium 228	0.7	pCi/g-dry				RA-05	06/25/12 13:54 / plj
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	06/25/12 13:54 / plj
Radium 228 MDC	0.3	pCi/g-dry				RA-05	06/25/12 13:54 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-012
Client Sample ID: SA-02-03

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 11:48
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.006	mg/L		0.001		SW6020	04/20/12 14:06 / smm
Barium	0.09	mg/L		0.05		SW6020	04/20/12 14:06 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/20/12 14:06 / smm
Chromium	0.013	mg/L	B	0.005		SW6020	04/20/12 14:06 / smm
Lead	0.006	mg/L		0.001		SW6020	04/20/12 14:06 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 08:37 / rdw
Selenium	0.003	mg/L		0.001		SW6020	04/20/12 14:06 / smm
Silver	ND	mg/L	D	0.002		SW6020	04/20/12 14:06 / smm
Uranium	0.088	mg/L	D	0.0006		SW6020	04/20/12 14:06 / smm
RADIONUCLIDES							
Radium 226	29.3	pCi/g-dry				E903.0	07/02/12 23:06 / plj
Radium 226 precision (±)	0.7	pCi/g-dry				E903.0	07/02/12 23:06 / plj
Radium 226 MDC	0.05	pCi/g-dry				E903.0	07/02/12 23:06 / plj
Radium 228	1.3	pCi/g-dry				RA-05	06/25/12 13:54 / plj
Radium 228 precision (±)	0.3	pCi/g-dry				RA-05	06/25/12 13:54 / plj
Radium 228 MDC	0.3	pCi/g-dry				RA-05	06/25/12 13:54 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-013
Client Sample ID: S8-01-01

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 13:00
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
SATURATED PASTE EXTRACT							
Chloride	29.3	mg/kg		1.00		E300.0	06/27/12 21:54 / ljl
Chloride, 1:1	0.827	meq/L		0.0282		E300.0	06/27/12 21:54 / ljl
Sulfate	35.3	mg/kg		1.00		E300.0	06/27/12 21:54 / ljl
Sulfate, 1:1	0.735	meq/L		0.0208		E300.0	06/27/12 21:54 / ljl
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.008	mg/L		0.001		SW6020	04/20/12 14:12 / smm
Barium	0.91	mg/L		0.05		SW6020	04/20/12 14:12 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/20/12 14:12 / smm
Chromium	0.012	mg/L	B	0.005		SW6020	04/20/12 14:12 / smm
Lead	0.009	mg/L		0.001		SW6020	04/20/12 14:12 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 08:39 / rdw
Selenium	0.007	mg/L		0.001		SW6020	04/20/12 14:12 / smm
Silver	ND	mg/L	D	0.002		SW6020	04/20/12 14:12 / smm
Uranium	0.016	mg/L	D	0.0006		SW6020	04/20/12 14:12 / smm
RADIONUCLIDES							
Radium 226	27.2	pCi/g-dry				E903.0	07/02/12 23:06 / plj
Radium 226 precision (±)	0.6	pCi/g-dry				E903.0	07/02/12 23:06 / plj
Radium 226 MDC	0.04	pCi/g-dry				E903.0	07/02/12 23:06 / plj
Radium 228	0.2	pCi/g-dry	U			RA-05	06/25/12 13:54 / plj
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	06/25/12 13:54 / plj
Radium 228 MDC	0.3	pCi/g-dry				RA-05	06/25/12 13:54 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.
U - Not detected at minimum detectable concentration

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-014
Client Sample ID: S8-01-02

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 13:09
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
SATURATED PASTE EXTRACT							
Chloride	38.9	mg/kg		1.00		E300.0	06/27/12 22:10 / ljl
Chloride, 1:1	1.10	meq/L		0.0282		E300.0	06/27/12 22:10 / ljl
Sulfate	2750	mg/kg		1.00		E300.0	06/28/12 13:59 / ljl
Sulfate, 1:1	57.2	meq/L		0.0208		E300.0	06/28/12 13:59 / ljl
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.004	mg/L		0.001		SW6020	04/20/12 14:26 / smm
Barium	0.09	mg/L		0.05		SW6020	04/20/12 14:26 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/20/12 14:26 / smm
Chromium	0.006	mg/L	B	0.005		SW6020	04/20/12 14:26 / smm
Lead	ND	mg/L		0.001		SW6020	04/20/12 14:26 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 08:40 / rdw
Selenium	0.30	mg/L		0.001		SW6020	04/20/12 14:26 / smm
Silver	0.002	mg/L	D	0.002		SW6020	04/20/12 14:26 / smm
Uranium	3.8	mg/L	D	0.0006		SW6020	04/20/12 14:26 / smm
RADIONUCLIDES							
Radium 226	2.5	pCi/g-dry				E903.0	07/02/12 23:06 / plj
Radium 226 precision (±)	0.2	pCi/g-dry				E903.0	07/02/12 23:06 / plj
Radium 226 MDC	0.05	pCi/g-dry				E903.0	07/02/12 23:06 / plj
Radium 228	0.6	pCi/g-dry				RA-05	06/25/12 13:54 / plj
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	06/25/12 13:54 / plj
Radium 228 MDC	0.3	pCi/g-dry				RA-05	06/25/12 13:54 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-015
Client Sample ID: S8-01-03

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 13:09
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
SATURATED PASTE EXTRACT							
Chloride	12.0	mg/kg		1.00		E300.0	06/27/12 22:27 / ljl
Chloride, 1:1	0.340	meq/L		0.0282		E300.0	06/27/12 22:27 / ljl
Sulfate	197	mg/kg		1.00		E300.0	06/27/12 22:27 / ljl
Sulfate, 1:1	4.11	meq/L		0.0208		E300.0	06/27/12 22:27 / ljl
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.032	mg/L		0.001		SW6020	04/20/12 14:29 / smm
Barium	0.16	mg/L		0.05		SW6020	04/20/12 14:29 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/20/12 14:29 / smm
Chromium	0.010	mg/L	B	0.005		SW6020	04/20/12 14:29 / smm
Lead	0.006	mg/L		0.001		SW6020	04/20/12 14:29 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 08:41 / rdw
Selenium	0.036	mg/L		0.001		SW6020	04/20/12 14:29 / smm
Silver	ND	mg/L	D	0.002		SW6020	04/20/12 14:29 / smm
Uranium	0.022	mg/L	D	0.0006		SW6020	04/20/12 14:29 / smm
RADIONUCLIDES							
Radium 226	24.5	pCi/g-dry				E903.0	07/02/12 23:06 / plj
Radium 226 precision (±)	0.6	pCi/g-dry				E903.0	07/02/12 23:06 / plj
Radium 226 MDC	0.05	pCi/g-dry				E903.0	07/02/12 23:06 / plj
Radium 228	0.5	pCi/g-dry				RA-05	06/25/12 13:54 / plj
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	06/25/12 13:54 / plj
Radium 228 MDC	0.3	pCi/g-dry				RA-05	06/25/12 13:54 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-016
Client Sample ID: S8-02-01

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 13:26
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
SATURATED PASTE EXTRACT							
Chloride	58.6	mg/kg		1.00		E300.0	06/27/12 22:43 / ljl
Chloride, 1:1	1.65	meq/L		0.0282		E300.0	06/27/12 22:43 / ljl
Sulfate	1660	mg/kg		1.00		E300.0	06/27/12 22:43 / ljl
Sulfate, 1:1	34.5	meq/L		0.0208		E300.0	06/27/12 22:43 / ljl
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.004	mg/L		0.001		SW6020	04/20/12 14:32 / smm
Barium	0.12	mg/L		0.05		SW6020	04/20/12 14:32 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/20/12 14:32 / smm
Chromium	0.009	mg/L	B	0.005		SW6020	04/20/12 14:32 / smm
Lead	0.005	mg/L		0.001		SW6020	04/20/12 14:32 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 08:43 / rdw
Selenium	0.22	mg/L		0.001		SW6020	04/20/12 14:32 / smm
Silver	ND	mg/L	D	0.002		SW6020	04/20/12 14:32 / smm
Uranium	0.12	mg/L	D	0.0006		SW6020	04/20/12 14:32 / smm
RADIONUCLIDES							
Radium 226	10.6	pCi/g-dry				E903.0	07/02/12 23:06 / plj
Radium 226 precision (±)	0.4	pCi/g-dry				E903.0	07/02/12 23:06 / plj
Radium 226 MDC	0.05	pCi/g-dry				E903.0	07/02/12 23:06 / plj
Radium 228	0.1	pCi/g-dry	U			RA-05	06/25/12 13:54 / plj
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	06/25/12 13:54 / plj
Radium 228 MDC	0.3	pCi/g-dry				RA-05	06/25/12 13:54 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.
U - Not detected at minimum detectable concentration

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-017
Client Sample ID: S8-02-02

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 13:36
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
SATURATED PASTE EXTRACT							
Chloride	44.6	mg/kg		1.00		E300.0	06/27/12 23:00 / ljl
Chloride, 1:1	1.26	meq/L		0.0282		E300.0	06/27/12 23:00 / ljl
Sulfate	2480	mg/kg		1.00		E300.0	06/27/12 23:00 / ljl
Sulfate, 1:1	51.7	meq/L		0.0208		E300.0	06/27/12 23:00 / ljl
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.006	mg/L		0.001		SW6020	04/20/12 14:34 / smm
Barium	0.06	mg/L		0.05		SW6020	04/20/12 14:34 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/20/12 14:34 / smm
Chromium	0.006	mg/L	B	0.005		SW6020	04/20/12 14:34 / smm
Lead	ND	mg/L		0.001		SW6020	04/20/12 14:34 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 08:44 / rdw
Selenium	1.0	mg/L		0.001		SW6020	04/20/12 14:34 / smm
Silver	ND	mg/L	D	0.002		SW6020	04/20/12 14:34 / smm
Uranium	6.7	mg/L	D	0.0006		SW6020	04/20/12 14:34 / smm
RADIONUCLIDES							
Radium 226	1.7	pCi/g-dry				E903.0	07/02/12 23:06 / plj
Radium 226 precision (±)	0.2	pCi/g-dry				E903.0	07/02/12 23:06 / plj
Radium 226 MDC	0.05	pCi/g-dry				E903.0	07/02/12 23:06 / plj
Radium 228	1.5	pCi/g-dry				RA-05	06/25/12 13:54 / plj
Radium 228 precision (±)	0.3	pCi/g-dry				RA-05	06/25/12 13:54 / plj
Radium 228 MDC	0.3	pCi/g-dry				RA-05	06/25/12 13:54 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-018
Client Sample ID: S8-02-03

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 13:36
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
SATURATED PASTE EXTRACT							
Chloride	9.13	mg/kg		1.00		E300.0	06/27/12 23:49 / ljl
Chloride, 1:1	0.258	meq/L		0.0282		E300.0	06/27/12 23:49 / ljl
Sulfate	536	mg/kg		1.00		E300.0	06/27/12 23:49 / ljl
Sulfate, 1:1	11.2	meq/L		0.0208		E300.0	06/27/12 23:49 / ljl
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.011	mg/L		0.001		SW6020	04/20/12 14:37 / smm
Barium	0.98	mg/L		0.05		SW6020	04/20/12 14:37 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/20/12 14:37 / smm
Chromium	0.028	mg/L	B	0.005		SW6020	04/20/12 14:37 / smm
Lead	0.013	mg/L		0.001		SW6020	04/20/12 14:37 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 08:45 / rdw
Selenium	0.063	mg/L		0.001		SW6020	04/20/12 14:37 / smm
Silver	ND	mg/L	D	0.002		SW6020	04/20/12 14:37 / smm
Uranium	0.19	mg/L	D	0.0006		SW6020	04/20/12 14:37 / smm
RADIONUCLIDES							
Radium 226	14.0	pCi/g-dry				E903.0	07/03/12 01:58 / plj
Radium 226 precision (±)	0.3	pCi/g-dry				E903.0	07/03/12 01:58 / plj
Radium 226 MDC	0.03	pCi/g-dry				E903.0	07/03/12 01:58 / plj
Radium 228	0.2	pCi/g-dry	U			RA-05	06/25/12 13:54 / plj
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	06/25/12 13:54 / plj
Radium 228 MDC	0.3	pCi/g-dry				RA-05	06/25/12 13:54 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.
U - Not detected at minimum detectable concentration

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-019
Client Sample ID: S8-02-04

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 13:39
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
SATURATED PASTE EXTRACT							
Chloride	3.01	mg/kg		1.00		E300.0	06/28/12 14:14 / ljl
Chloride, 1:1	0.0850	meq/L		0.0282		E300.0	06/28/12 14:14 / ljl
Sulfate	31.2	mg/kg		1.00		E300.0	06/28/12 14:14 / ljl
Sulfate, 1:1	0.650	meq/L		0.0208		E300.0	06/28/12 14:14 / ljl
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.004	mg/L		0.001		SW6020	04/26/12 19:47 / smm
Barium	0.15	mg/L		0.05		SW6020	04/26/12 19:47 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/26/12 19:47 / smm
Chromium	0.011	mg/L	B	0.005		SW6020	04/26/12 19:47 / smm
Lead	0.005	mg/L		0.001		SW6020	04/26/12 19:47 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 08:53 / rdw
Selenium	ND	mg/L		0.001		SW6020	04/26/12 19:47 / smm
Silver	ND	mg/L	D	0.002		SW6020	04/26/12 19:47 / smm
Uranium	0.0056	mg/L	D	0.0006		SW6020	05/02/12 14:20 / smm
RADIONUCLIDES							
Radium 226	2.0	pCi/g-dry				E903.0	07/03/12 01:58 / plj
Radium 226 precision (±)	0.1	pCi/g-dry				E903.0	07/03/12 01:58 / plj
Radium 226 MDC	0.03	pCi/g-dry				E903.0	07/03/12 01:58 / plj
Radium 228	0.6	pCi/g-dry				RA-05	06/25/12 12:20 / plj
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	06/25/12 12:20 / plj
Radium 228 MDC	0.3	pCi/g-dry				RA-05	06/25/12 12:20 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-020
Client Sample ID: S5-01-01

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 14:05
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
SATURATED PASTE EXTRACT							
Chloride	9.64	mg/kg		1.00		E300.0	06/28/12 00:22 / ljl
Chloride, 1:1	0.272	meq/L		0.0282		E300.0	06/28/12 00:22 / ljl
Sulfate	113	mg/kg		1.00		E300.0	06/28/12 00:22 / ljl
Sulfate, 1:1	2.35	meq/L		0.0208		E300.0	06/28/12 00:22 / ljl
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.009	mg/L		0.001		SW6020	04/26/12 19:13 / smm
Barium	5.5	mg/L		0.05		SW6020	04/26/12 19:13 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/26/12 19:13 / smm
Chromium	0.027	mg/L	B	0.005		SW6020	04/26/12 19:13 / smm
Lead	0.028	mg/L		0.001		SW6020	04/26/12 19:13 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 08:57 / rdw
Selenium	0.010	mg/L		0.001		SW6020	04/26/12 19:13 / smm
Silver	ND	mg/L	D	0.002		SW6020	04/26/12 19:13 / smm
Uranium	0.11	mg/L	D	0.0006		SW6020	05/02/12 14:00 / smm
RADIONUCLIDES							
Radium 226	11.3	pCi/g-dry				E903.0	07/02/12 23:59 / plj
Radium 226 precision (±)	0.3	pCi/g-dry				E903.0	07/02/12 23:59 / plj
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/02/12 23:59 / plj
Radium 228	0.3	pCi/g-dry				RA-05	06/25/12 15:52 / plj
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	06/25/12 15:52 / plj
Radium 228 MDC	0.2	pCi/g-dry				RA-05	06/25/12 15:52 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-021
Client Sample ID: S7-01-01

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 15:12
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.004	mg/L		0.001		SW6020	04/26/12 19:18 / smm
Barium	0.06	mg/L		0.05		SW6020	04/26/12 19:18 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/26/12 19:18 / smm
Chromium	0.005	mg/L	B	0.005		SW6020	04/26/12 19:18 / smm
Lead	ND	mg/L		0.001		SW6020	04/26/12 19:18 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 08:59 / rdw
Selenium	0.26	mg/L		0.001		SW6020	04/26/12 19:18 / smm
Silver	ND	mg/L	D	0.002		SW6020	04/26/12 19:18 / smm
Uranium	0.37	mg/L	D	0.0006		SW6020	05/02/12 14:04 / smm
RADIONUCLIDES							
Radium 226	10.4	pCi/g-dry				E903.0	07/02/12 23:59 / plj
Radium 226 precision (±)	0.2	pCi/g-dry				E903.0	07/02/12 23:59 / plj
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/02/12 23:59 / plj
Radium 228	0.1	pCi/g-dry	U			RA-05	06/25/12 15:52 / plj
Radium 228 precision (±)	0.1	pCi/g-dry				RA-05	06/25/12 15:52 / plj
Radium 228 MDC	0.2	pCi/g-dry				RA-05	06/25/12 15:52 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.
U - Not detected at minimum detectable concentration

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-022
Client Sample ID: S7-01-02

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 15:17
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.002	mg/L		0.001		SW6020	04/26/12 19:21 / smm
Barium	0.06	mg/L		0.05		SW6020	04/26/12 19:21 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/26/12 19:21 / smm
Chromium	0.009	mg/L	B	0.005		SW6020	04/26/12 19:21 / smm
Lead	0.003	mg/L		0.001		SW6020	04/26/12 19:21 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 09:00 / rdw
Selenium	0.002	mg/L		0.001		SW6020	04/26/12 19:21 / smm
Silver	ND	mg/L	D	0.002		SW6020	04/26/12 19:21 / smm
Uranium	0.0047	mg/L	D	0.0006		SW6020	05/02/12 14:12 / smm
RADIONUCLIDES							
Radium 226	1.1	pCi/g-dry				E903.0	07/02/12 23:59 / plj
Radium 226 precision (±)	0.08	pCi/g-dry				E903.0	07/02/12 23:59 / plj
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/02/12 23:59 / plj
Radium 228	0.6	pCi/g-dry				RA-05	06/25/12 15:52 / plj
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	06/25/12 15:52 / plj
Radium 228 MDC	0.2	pCi/g-dry				RA-05	06/25/12 15:52 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-023
Client Sample ID: S7-01-03

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 15:22
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	ND	mg/L		0.001		SW6020	05/01/12 16:45 / cp
Barium	0.05	mg/L		0.05		SW6020	05/01/12 16:45 / cp
Cadmium	ND	mg/L		0.001		SW6020	05/01/12 16:45 / cp
Chromium	0.009	mg/L	B	0.005		SW6020	05/01/12 16:45 / cp
Lead	0.001	mg/L		0.001		SW6020	05/01/12 16:45 / cp
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 09:01 / rdw
Selenium	0.002	mg/L		0.001		SW6020	05/01/12 16:45 / cp
Silver	ND	mg/L	D	0.002		SW6020	05/01/12 16:45 / cp
Uranium	0.0049	mg/L	D	0.0006		SW6020	05/01/12 16:45 / cp
RADIONUCLIDES							
Radium 226	1.5	pCi/g-dry				E903.0	07/02/12 23:59 / plj
Radium 226 precision (±)	0.1	pCi/g-dry				E903.0	07/02/12 23:59 / plj
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/02/12 23:59 / plj
Radium 228	0.2	pCi/g-dry	U			RA-05	06/25/12 15:52 / plj
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	06/25/12 15:52 / plj
Radium 228 MDC	0.2	pCi/g-dry				RA-05	06/25/12 15:52 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.
U - Not detected at minimum detectable concentration

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-024
Client Sample ID: S5-02-02

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 14:15
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
SATURATED PASTE EXTRACT							
Chloride	23.1	mg/kg		1.00		E300.0	06/28/12 00:38 / ljl
Chloride, 1:1	0.653	meq/L		0.0282		E300.0	06/28/12 00:38 / ljl
Sulfate	2530	mg/kg		1.00		E300.0	06/28/12 00:38 / ljl
Sulfate, 1:1	52.7	meq/L		0.0208		E300.0	06/28/12 00:38 / ljl
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	ND	mg/L		0.001		SW6020	04/26/12 19:24 / smm
Barium	0.08	mg/L		0.05		SW6020	04/26/12 19:24 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/26/12 19:24 / smm
Chromium	0.005	mg/L	B	0.005		SW6020	04/26/12 19:24 / smm
Lead	ND	mg/L		0.001		SW6020	04/26/12 19:24 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 09:03 / rdw
Selenium	0.15	mg/L		0.001		SW6020	04/26/12 19:24 / smm
Silver	ND	mg/L	D	0.002		SW6020	04/26/12 19:24 / smm
Uranium	1.1	mg/L	D	0.0006		SW6020	05/02/12 14:14 / smm
RADIONUCLIDES							
Radium 226	2.1	pCi/g-dry				E903.0	07/02/12 23:59 / plj
Radium 226 precision (±)	0.1	pCi/g-dry				E903.0	07/02/12 23:59 / plj
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/02/12 23:59 / plj
Radium 228	0.2	pCi/g-dry	U			RA-05	06/25/12 15:52 / plj
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	06/25/12 15:52 / plj
Radium 228 MDC	0.3	pCi/g-dry				RA-05	06/25/12 15:52 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.
U - Not detected at minimum detectable concentration

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-025
Client Sample ID: S5-02-03

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 14:20
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
SATURATED PASTE EXTRACT							
Chloride	5.10	mg/kg		1.00		E300.0	06/28/12 00:55 / ljl
Chloride, 1:1	0.144	meq/L		0.0282		E300.0	06/28/12 00:55 / ljl
Sulfate	279	mg/kg		1.00		E300.0	06/28/12 00:55 / ljl
Sulfate, 1:1	5.80	meq/L		0.0208		E300.0	06/28/12 00:55 / ljl
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.006	mg/L		0.001		SW6020	04/26/12 19:38 / smm
Barium	0.62	mg/L		0.05		SW6020	04/26/12 19:38 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/26/12 19:38 / smm
Chromium	0.017	mg/L	B	0.005		SW6020	04/26/12 19:38 / smm
Lead	0.013	mg/L		0.001		SW6020	04/26/12 19:38 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 09:04 / rdw
Selenium	0.012	mg/L		0.001		SW6020	04/26/12 19:38 / smm
Silver	ND	mg/L	D	0.002		SW6020	04/26/12 19:38 / smm
Uranium	0.011	mg/L	D	0.0006		SW6020	05/02/12 14:15 / smm
RADIONUCLIDES							
Radium 226	4.1	pCi/g-dry				E903.0	07/02/12 23:59 / plj
Radium 226 precision (±)	0.2	pCi/g-dry				E903.0	07/02/12 23:59 / plj
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/02/12 23:59 / plj
Radium 228	0.5	pCi/g-dry				RA-05	06/25/12 15:52 / plj
Radium 228 precision (±)	0.1	pCi/g-dry				RA-05	06/25/12 15:52 / plj
Radium 228 MDC	0.2	pCi/g-dry				RA-05	06/25/12 15:52 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-026
Client Sample ID: S5-02-01

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 14:30
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
SATURATED PASTE EXTRACT							
Chloride	17.2	mg/kg		1.00		E300.0	06/28/12 01:11 / ljl
Chloride, 1:1	0.485	meq/L		0.0282		E300.0	06/28/12 01:11 / ljl
Sulfate	2860	mg/kg		1.00		E300.0	06/28/12 01:11 / ljl
Sulfate, 1:1	59.6	meq/L		0.0208		E300.0	06/28/12 01:11 / ljl
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	ND	mg/L		0.001		SW6020	04/26/12 19:41 / smm
Barium	0.10	mg/L		0.05		SW6020	04/26/12 19:41 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/26/12 19:41 / smm
Chromium	0.008	mg/L	B	0.005		SW6020	04/26/12 19:41 / smm
Lead	ND	mg/L		0.001		SW6020	04/26/12 19:41 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 09:08 / rdw
Selenium	0.40	mg/L		0.001		SW6020	04/26/12 19:41 / smm
Silver	ND	mg/L	D	0.002		SW6020	04/26/12 19:41 / smm
Uranium	1.5	mg/L	D	0.0006		SW6020	05/02/12 14:17 / smm
RADIONUCLIDES							
Radium 226	0.8	pCi/g-dry				E903.0	07/02/12 23:59 / plj
Radium 226 precision (±)	0.07	pCi/g-dry				E903.0	07/02/12 23:59 / plj
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/02/12 23:59 / plj
Radium 228	0.2	pCi/g-dry	U			RA-05	06/25/12 15:52 / plj
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	06/25/12 15:52 / plj
Radium 228 MDC	0.2	pCi/g-dry				RA-05	06/25/12 15:52 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.
U - Not detected at minimum detectable concentration

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-027
Client Sample ID: S5-01-02

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 14:09
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
SATURATED PASTE EXTRACT							
Chloride	7.87	mg/kg		1.00		E300.0	06/28/12 01:44 / ljl
Chloride, 1:1	0.222	meq/L		0.0282		E300.0	06/28/12 01:44 / ljl
Sulfate	261	mg/kg		1.00		E300.0	06/28/12 01:44 / ljl
Sulfate, 1:1	5.43	meq/L		0.0208		E300.0	06/28/12 01:44 / ljl
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.004	mg/L		0.001		SW6020	04/26/12 19:44 / smm
Barium	0.07	mg/L		0.05		SW6020	04/26/12 19:44 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/26/12 19:44 / smm
Chromium	0.012	mg/L	B	0.005		SW6020	04/26/12 19:44 / smm
Lead	0.005	mg/L		0.001		SW6020	04/26/12 19:44 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 09:09 / rdw
Selenium	0.004	mg/L		0.001		SW6020	04/26/12 19:44 / smm
Silver	ND	mg/L	D	0.002		SW6020	04/26/12 19:44 / smm
Uranium	0.0054	mg/L	D	0.0006		SW6020	05/02/12 14:19 / smm
RADIONUCLIDES							
Radium 226	1.7	pCi/g-dry				E903.0	07/03/12 01:40 / plj
Radium 226 precision (±)	0.1	pCi/g-dry				E903.0	07/03/12 01:40 / plj
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/03/12 01:40 / plj
Radium 228	0.6	pCi/g-dry				RA-05	06/25/12 15:52 / plj
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	06/25/12 15:52 / plj
Radium 228 MDC	0.2	pCi/g-dry				RA-05	06/25/12 15:52 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-028
Client Sample ID: S3-01-01

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 09:15
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.007	mg/L		0.001		SW6020	04/25/12 20:23 / smm
Barium	0.31	mg/L		0.05		SW6020	04/25/12 20:23 / smm
Cadmium	0.002	mg/L		0.001		SW6020	04/25/12 20:23 / smm
Chromium	ND	mg/L		0.005		SW6020	04/25/12 20:23 / smm
Lead	0.002	mg/L		0.001		SW6020	04/25/12 20:23 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 09:15 / rdw
Selenium	0.19	mg/L		0.001		SW6020	04/25/12 20:23 / smm
Silver	ND	mg/L		0.001		SW6020	04/25/12 20:23 / smm
Uranium	9.7	mg/L	B	0.0003		SW6020	04/25/12 20:23 / smm
RADIONUCLIDES							
Radium 226	21.0	pCi/g-dry				E903.0	07/03/12 01:40 / plj
Radium 226 precision (±)	0.4	pCi/g-dry				E903.0	07/03/12 01:40 / plj
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/03/12 01:40 / plj
Radium 228	1.5	pCi/g-dry				RA-05	06/25/12 15:52 / plj
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	06/25/12 15:52 / plj
Radium 228 MDC	0.2	pCi/g-dry				RA-05	06/25/12 15:52 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-029
Client Sample ID: S3-01-02

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 08:50
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.014	mg/L		0.001		SW6020	04/25/12 20:37 / smm
Barium	2.3	mg/L		0.05		SW6020	04/25/12 20:37 / smm
Cadmium	0.001	mg/L		0.001		SW6020	04/25/12 20:37 / smm
Chromium	0.050	mg/L		0.005		SW6020	04/25/12 20:37 / smm
Lead	0.064	mg/L		0.001		SW6020	04/25/12 20:37 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 09:19 / rdw
Selenium	0.036	mg/L		0.001		SW6020	04/25/12 20:37 / smm
Silver	ND	mg/L		0.001		SW6020	04/25/12 20:37 / smm
Uranium	5.7	mg/L	B	0.0003		SW6020	04/25/12 20:37 / smm
RADIONUCLIDES							
Radium 226	6.2	pCi/g-dry				E903.0	07/03/12 01:40 / plj
Radium 226 precision (±)	0.2	pCi/g-dry				E903.0	07/03/12 01:40 / plj
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/03/12 01:40 / plj
Radium 228	0.7	pCi/g-dry				RA-05	06/25/12 15:52 / plj
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	06/25/12 15:52 / plj
Radium 228 MDC	0.2	pCi/g-dry				RA-05	06/25/12 15:52 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-030
Client Sample ID: S3-01-03

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 09:40
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.005	mg/L		0.001		SW6020	04/25/12 20:41 / smm
Barium	0.14	mg/L		0.05		SW6020	04/25/12 20:41 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/25/12 20:41 / smm
Chromium	0.013	mg/L		0.005		SW6020	04/25/12 20:41 / smm
Lead	0.012	mg/L		0.001		SW6020	04/25/12 20:41 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 09:20 / rdw
Selenium	0.053	mg/L		0.001		SW6020	04/25/12 20:41 / smm
Silver	ND	mg/L		0.001		SW6020	04/25/12 20:41 / smm
Uranium	0.47	mg/L	B	0.0003		SW6020	04/25/12 20:41 / smm
RADIONUCLIDES							
Radium 226	4.5	pCi/g-dry				E903.0	07/03/12 01:40 / plj
Radium 226 precision (±)	0.2	pCi/g-dry				E903.0	07/03/12 01:40 / plj
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/03/12 01:40 / plj
Radium 228	0.8	pCi/g-dry				RA-05	06/25/12 17:32 / plj
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	06/25/12 17:32 / plj
Radium 228 MDC	0.3	pCi/g-dry				RA-05	06/25/12 17:32 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-031
Client Sample ID: S3-02-01

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 10:22
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.018	mg/L		0.001		SW6020	04/25/12 21:04 / smm
Barium	6.6	mg/L		0.05		SW6020	04/25/12 21:04 / smm
Cadmium	0.002	mg/L		0.001		SW6020	04/25/12 21:04 / smm
Chromium	0.015	mg/L		0.005		SW6020	04/25/12 21:04 / smm
Lead	0.028	mg/L		0.001		SW6020	04/25/12 21:04 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 09:24 / rdw
Selenium	0.15	mg/L		0.001		SW6020	04/25/12 21:04 / smm
Silver	ND	mg/L		0.001		SW6020	04/25/12 21:04 / smm
Uranium	7.8	mg/L	B	0.0003		SW6020	04/25/12 21:04 / smm
RADIONUCLIDES							
Radium 226	6.4	pCi/g-dry				E903.0	07/03/12 01:40 / plj
Radium 226 precision (±)	0.2	pCi/g-dry				E903.0	07/03/12 01:40 / plj
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/03/12 01:40 / plj
Radium 228	2.2	pCi/g-dry				RA-05	06/25/12 17:32 / plj
Radium 228 precision (±)	0.3	pCi/g-dry				RA-05	06/25/12 17:32 / plj
Radium 228 MDC	0.3	pCi/g-dry				RA-05	06/25/12 17:32 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-032
Client Sample ID: S3-02-02

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 10:30
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.002	mg/L		0.001		SW6020	04/25/12 21:08 / smm
Barium	ND	mg/L		0.05		SW6020	04/25/12 21:08 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/25/12 21:08 / smm
Chromium	0.009	mg/L		0.005		SW6020	04/25/12 21:08 / smm
Lead	0.001	mg/L		0.001		SW6020	04/25/12 21:08 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 09:25 / rdw
Selenium	0.023	mg/L		0.001		SW6020	04/25/12 21:08 / smm
Silver	ND	mg/L		0.001		SW6020	04/25/12 21:08 / smm
Uranium	0.18	mg/L	B	0.0003		SW6020	04/25/12 21:08 / smm
RADIONUCLIDES							
Radium 226	3.0	pCi/g-dry				E903.0	07/03/12 01:40 / plj
Radium 226 precision (±)	0.2	pCi/g-dry				E903.0	07/03/12 01:40 / plj
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/03/12 01:40 / plj
Radium 228	0.7	pCi/g-dry				RA-05	06/25/12 17:32 / plj
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	06/25/12 17:32 / plj
Radium 228 MDC	0.3	pCi/g-dry				RA-05	06/25/12 17:32 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-033
Client Sample ID: S3-02-03

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 10:30
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.006	mg/L		0.001		SW6020	04/25/12 21:13 / smm
Barium	0.27	mg/L		0.05		SW6020	04/25/12 21:13 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/25/12 21:13 / smm
Chromium	0.018	mg/L		0.005		SW6020	04/25/12 21:13 / smm
Lead	0.016	mg/L		0.001		SW6020	04/25/12 21:13 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 09:27 / rdw
Selenium	0.003	mg/L		0.001		SW6020	04/25/12 21:13 / smm
Silver	ND	mg/L		0.001		SW6020	04/25/12 21:13 / smm
Uranium	0.022	mg/L	B	0.0003		SW6020	04/25/12 21:13 / smm
RADIONUCLIDES							
Radium 226	2.4	pCi/g-dry				E903.0	07/03/12 01:40 / plj
Radium 226 precision (±)	0.1	pCi/g-dry				E903.0	07/03/12 01:40 / plj
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/03/12 01:40 / plj
Radium 228	0.3	pCi/g-dry				RA-05	06/25/12 17:32 / plj
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	06/25/12 17:32 / plj
Radium 228 MDC	0.3	pCi/g-dry				RA-05	06/25/12 17:32 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-034
Client Sample ID: S7-02-01

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 15:45
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.013	mg/L		0.001		SW6020	04/25/12 21:17 / smm
Barium	0.76	mg/L		0.05		SW6020	04/25/12 21:17 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/25/12 21:17 / smm
Chromium	0.006	mg/L		0.005		SW6020	04/25/12 21:17 / smm
Lead	0.001	mg/L		0.001		SW6020	04/25/12 21:17 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 09:28 / rdw
Selenium	0.22	mg/L		0.001		SW6020	04/25/12 21:17 / smm
Silver	ND	mg/L		0.001		SW6020	04/25/12 21:17 / smm
Uranium	0.18	mg/L	B	0.0003		SW6020	04/25/12 21:17 / smm
RADIONUCLIDES							
Radium 226	2.6	pCi/g-dry				E903.0	07/03/12 01:40 / plj
Radium 226 precision (±)	0.1	pCi/g-dry				E903.0	07/03/12 01:40 / plj
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/03/12 01:40 / plj
Radium 228	0.5	pCi/g-dry				RA-05	06/25/12 17:32 / plj
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	06/25/12 17:32 / plj
Radium 228 MDC	0.3	pCi/g-dry				RA-05	06/25/12 17:32 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-035
Client Sample ID: S7-02-02

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 15:50
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.007	mg/L		0.001		SW6020	04/25/12 21:22 / smm
Barium	0.31	mg/L		0.05		SW6020	04/25/12 21:22 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/25/12 21:22 / smm
Chromium	0.013	mg/L		0.005		SW6020	04/25/12 21:22 / smm
Lead	0.020	mg/L		0.001		SW6020	04/25/12 21:22 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 09:29 / rdw
Selenium	0.13	mg/L		0.001		SW6020	04/25/12 21:22 / smm
Silver	ND	mg/L		0.001		SW6020	04/25/12 21:22 / smm
Uranium	0.014	mg/L	B	0.0003		SW6020	04/25/12 21:22 / smm
RADIONUCLIDES							
Radium 226	1.9	pCi/g-dry				E903.0	07/03/12 01:40 / plj
Radium 226 precision (±)	0.1	pCi/g-dry				E903.0	07/03/12 01:40 / plj
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/03/12 01:40 / plj
Radium 228	0.2	pCi/g-dry	U			RA-05	06/25/12 17:32 / plj
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	06/25/12 17:32 / plj
Radium 228 MDC	0.3	pCi/g-dry				RA-05	06/25/12 17:32 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
U - Not detected at minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-036
Client Sample ID: S7-02-03

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 15:55
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.003	mg/L		0.001		SW6020	04/25/12 21:26 / smm
Barium	0.16	mg/L		0.05		SW6020	04/25/12 21:26 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/25/12 21:26 / smm
Chromium	0.010	mg/L		0.005		SW6020	04/25/12 21:26 / smm
Lead	0.005	mg/L		0.001		SW6020	04/25/12 21:26 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 09:31 / rdw
Selenium	0.003	mg/L		0.001		SW6020	04/25/12 21:26 / smm
Silver	ND	mg/L		0.001		SW6020	04/25/12 21:26 / smm
Uranium	0.0053	mg/L	B	0.0003		SW6020	04/25/12 21:26 / smm
RADIONUCLIDES							
Radium 226	1.1	pCi/g-dry				E903.0	07/03/12 01:40 / plj
Radium 226 precision (±)	0.09	pCi/g-dry				E903.0	07/03/12 01:40 / plj
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/03/12 01:40 / plj
Radium 228	0.3	pCi/g-dry				RA-05	06/25/12 17:32 / plj
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	06/25/12 17:32 / plj
Radium 228 MDC	0.3	pCi/g-dry				RA-05	06/25/12 17:32 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12040804-037
Client Sample ID: S3-01-04

Revised Date: 07/05/12
Report Date: 06/13/12
Collection Date: 04/10/12 09:46
DateReceived: 04/13/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/18/12 08:51 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.003	mg/L		0.001		SW6020	04/25/12 21:31 / smm
Barium	0.07	mg/L		0.05		SW6020	04/25/12 21:31 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/25/12 21:31 / smm
Chromium	0.011	mg/L		0.005		SW6020	04/25/12 21:31 / smm
Lead	0.005	mg/L		0.001		SW6020	04/25/12 21:31 / smm
Mercury	ND	mg/L		0.002		SW7470A	05/19/12 09:32 / rdw
Selenium	0.032	mg/L		0.001		SW6020	04/25/12 21:31 / smm
Silver	ND	mg/L		0.001		SW6020	04/25/12 21:31 / smm
Uranium	0.036	mg/L	B	0.0003		SW6020	04/25/12 21:31 / smm
RADIONUCLIDES							
Radium 226	1.7	pCi/g-dry				E903.0	07/03/12 03:34 / plj
Radium 226 precision (±)	0.1	pCi/g-dry				E903.0	07/03/12 03:34 / plj
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/03/12 03:34 / plj
Radium 228	0.7	pCi/g-dry				RA-05	06/25/12 17:32 / plj
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	06/25/12 17:32 / plj
Radium 228 MDC	0.3	pCi/g-dry				RA-05	06/25/12 17:32 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 07/05/12

Client: Rio Grande Resources Corporation **Report Date:** 06/13/12

Project: Mt. Taylor Mine Closure Plan **Work Order:** C12040804

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC2-C_120626A	
Sample ID: ICV-062612-10	2	Initial Calibration Verification Standard							06/26/12 15:31	
Chloride		9.60	mg/L	1.0	96	90	110			
Sulfate		38.7	mg/L	1.0	97	90	110			
Method: E300.0									Batch: 34002	
Sample ID: MB-34002	2	Method Blank				Run: IC2-C_120626A			06/27/12 21:21	
Chloride		ND	mg/kg	1.0						
Sulfate		0.0820	mg/kg	1.0						
Sample ID: LCS1-34002	2	Laboratory Control Sample				Run: IC2-C_120626A			06/27/12 21:37	
Chloride		42.9	mg/kg	1.0	121	70	130			
Sulfate		1910	mg/kg	1.0	105	70	130			
Sample ID: C12040804-026CPDS	2	Post Digestion/Distillation Spike				Run: IC2-C_120626A			06/28/12 01:27	
Chloride		487	mg/kg	1.0	94	80	120			
Sulfate		4670	mg/kg	1.0	90	80	120			
Sample ID: C12040804-027CDUP	2	Sample Duplicate				Run: IC2-C_120626A			06/28/12 02:00	
Chloride		7.34	mg/kg	1.0				6.9	20	
Sulfate		251	mg/kg	1.0				3.8	20	

Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 07/05/12

Client: Rio Grande Resources Corporation

Report Date: 06/13/12

Project: Mt. Taylor Mine Closure Plan

Work Order: C12040804

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E903.0										Batch: 34003
Sample ID: MB-34003	3	Method Blank				Run: BERTHOLD 770-1_120620B				07/02/12 22:18
Radium 226		0.003	pCi/g-dry							U
Radium 226 precision (±)		0.005	pCi/g-dry							
Radium 226 MDC		0.007	pCi/g-dry							
Sample ID: LCS-34003		Laboratory Control Sample				Run: BERTHOLD 770-1_120620B				07/02/12 22:18
Radium 226		2.4	pCi/g-dry		793	70	130			S
- LCS response is outside of the acceptance range for this analysis due to a very small amount of the precipitate from C12040804-001B being transferred to the planchet. Since the MB, MS, and MSD are acceptable the batch is approved.										
Sample ID: C12040804-019BMS		Sample Matrix Spike				Run: BERTHOLD 770-1_120620B				07/03/12 01:58
Radium 226		3.2	pCi/g-dry		83	70	130			
Sample ID: C12040804-019BMSD		Sample Matrix Spike Duplicate				Run: BERTHOLD 770-1_120620B				07/03/12 01:58
Radium 226		3.3	pCi/g-dry		90	70	130	2.6	19.7	
Method: E903.0										Batch: 34004
Sample ID: MB-34004	3	Method Blank				Run: BERTHOLD 770-2_120620A				07/02/12 23:59
Radium 226		0.1	pCi/g-dry							
Radium 226 precision (±)		0.03	pCi/g-dry							
Radium 226 MDC		0.02	pCi/g-dry							
Sample ID: LCS-34004		Laboratory Control Sample				Run: BERTHOLD 770-2_120620A				07/02/12 23:59
Radium 226		1.4	pCi/g-dry		87	70	130			
Sample ID: C12041044-003BMS		Sample Matrix Spike				Run: BERTHOLD 770-2_120620A				07/03/12 03:34
Radium 226		2.5	pCi/g-dry		104	70	130			
Sample ID: C12041044-003BMSD		Sample Matrix Spike Duplicate				Run: BERTHOLD 770-2_120620A				07/03/12 03:34
Radium 226		2.2	pCi/g-dry		87	70	130	12	20.8	

Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

U - Not detected at minimum detectable concentration

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 07/05/12
Report Date: 06/13/12
Work Order: C12040804

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: RA-05										Batch: 34003
Sample ID: LCS-34003		Laboratory Control Sample				Run: TENNELEC-3_120620A				06/25/12 12:20
Radium 228		1.5	pCi/g-dry		104	70	130			
Sample ID: MB-34003	3	Method Blank				Run: TENNELEC-3_120620A				06/25/12 12:20
Radium 228		-0.02	pCi/g-dry							U
Radium 228 precision (±)		0.2	pCi/g-dry							
Radium 228 MDC		0.3	pCi/g-dry							
Sample ID: C12040804-019BMS		Sample Matrix Spike				Run: TENNELEC-3_120620A				06/25/12 12:20
Radium 228		2.1	pCi/g-dry		109	70	130			
Sample ID: C12040804-019BMSD		Sample Matrix Spike Duplicate				Run: TENNELEC-3_120620A				06/25/12 12:20
Radium 228		1.9	pCi/g-dry		94	70	130	10	33.9	
Method: RA-05										Batch: 34004
Sample ID: LCS-34004		Laboratory Control Sample				Run: TENNELEC-3_120620B				06/25/12 15:52
Radium 228		1.5	pCi/g-dry		104	70	130			
Sample ID: MB-34004	3	Method Blank				Run: TENNELEC-3_120620B				06/25/12 15:52
Radium 228		0.07	pCi/g-dry							U
Radium 228 precision (±)		0.2	pCi/g-dry							
Radium 228 MDC		0.3	pCi/g-dry							
Sample ID: C12041044-003BMS		Sample Matrix Spike				Run: TENNELEC-3_120620B				06/25/12 15:52
Radium 228		1.8	pCi/g-dry		93	70	130			
Sample ID: C12041044-003BMSD		Sample Matrix Spike Duplicate				Run: TENNELEC-3_120620B				06/25/12 15:52
Radium 228		1.9	pCi/g-dry		101	70	130	6.0	33.5	

Qualifiers:

RL - Analyte reporting limit.
MDC - Minimum detectable concentration
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 07/05/12

Client: Rio Grande Resources Corporation

Report Date: 06/13/12

Project: Mt. Taylor Mine Closure Plan

Work Order: C12040804

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Analytical Run: ICPMS2-C_120420A	
Sample ID: ICV	8	Initial Calibration Verification Standard							04/20/12 12:15	
Arsenic		0.0502	mg/L	0.0010	100	90	110			
Barium		0.0500	mg/L	0.0010	100	90	110			
Cadmium		0.0501	mg/L	0.0010	100	90	110			
Chromium		0.0508	mg/L	0.0010	102	90	110			
Lead		0.0492	mg/L	0.0010	98	90	110			
Selenium		0.0513	mg/L	0.0010	103	90	110			
Silver		0.0206	mg/L	0.0010	103	90	110			
Uranium		0.0506	mg/L	0.00030	101	90	110			
Sample ID: ICSA	8	Interference Check Sample A							04/20/12 12:18	
Arsenic		2.10E-05	mg/L	0.0010						
Barium		2.84E-05	mg/L	0.0010						
Cadmium		4.02E-05	mg/L	0.0010						
Chromium		0.000116	mg/L	0.0010						
Lead		3.52E-05	mg/L	0.0010						
Selenium		-0.000115	mg/L	0.0010						
Silver		0.000711	mg/L	0.0010						
Uranium		8.01E-05	mg/L	0.00030						
Sample ID: ICSAB	8	Interference Check Sample AB							04/20/12 12:21	
Arsenic		0.0101	mg/L	0.0010	101	70	130			
Barium		1.24E-05	mg/L	0.0010						
Cadmium		0.0102	mg/L	0.0010	102	70	130			
Chromium		0.0102	mg/L	0.0010	102	70	130			
Lead		1.20E-05	mg/L	0.0010						
Selenium		5.51E-05	mg/L	0.0010						
Silver		0.0101	mg/L	0.0010	101	70	130			
Uranium		2.09E-05	mg/L	0.00030						
Method: SW6020									Batch: 33385	
Sample ID: MB-33385	8	Method Blank				Run: ICPMS2-C_120420A			04/20/12 12:46	
Arsenic		0.0007	mg/L	6E-05						
Barium		0.002	mg/L	3E-05						
Cadmium		ND	mg/L	1E-05						
Chromium		0.005	mg/L	4E-05						
Lead		0.0001	mg/L	3E-05						
Selenium		ND	mg/L	0.0002						
Silver		0.001	mg/L	3E-05						
Uranium		5E-05	mg/L	1E-05						
Sample ID: LCS3-33385	8	Laboratory Control Sample				Run: ICPMS2-C_120420A			04/20/12 12:49	
Arsenic		0.47	mg/L	0.0010	95	80	120			
Barium		0.50	mg/L	0.050	99	80	120			
Cadmium		0.24	mg/L	0.0010	98	80	120			
Chromium		0.49	mg/L	0.0050	98	80	120			
Lead		0.51	mg/L	0.0010	102	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 07/05/12

Client: Rio Grande Resources Corporation

Report Date: 06/13/12

Project: Mt. Taylor Mine Closure Plan

Work Order: C12040804

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 33385
Sample ID: LCS3-33385	8	Laboratory Control Sample				Run: ICPMS2-C_120420A			04/20/12 12:49	
Selenium		0.46	mg/L	0.0010	91	80	120			
Silver		0.052	mg/L	0.0020	101	80	120			
Uranium		0.52	mg/L	0.00060	105	80	120			
Sample ID: LCSD3-33385	8	Laboratory Control Sample Duplicate				Run: ICPMS2-C_120420A			04/20/12 12:52	
Arsenic		0.48	mg/L	0.0010	96	80	120	1.3	20	
Barium		0.50	mg/L	0.050	100	80	120	1.0	20	
Cadmium		0.25	mg/L	0.0010	98	80	120	0.7	20	
Chromium		0.50	mg/L	0.0050	98	80	120	0.4	20	
Lead		0.52	mg/L	0.0010	104	80	120	1.2	20	
Selenium		0.46	mg/L	0.0010	92	80	120	1.2	20	
Silver		0.053	mg/L	0.0020	105	80	120	3.3	20	
Uranium		0.53	mg/L	0.00060	106	80	120	0.9	20	
Sample ID: C12040804-002ADIL	8	Serial Dilution				Run: ICPMS2-C_120420A			04/20/12 13:00	
Arsenic		0.052	mg/L	0.0050		0	0	8.3	20	
Barium		4.0	mg/L	0.050		0	0	5.3	20	
Cadmium		0.0015	mg/L	0.0050		0	0		20	N
Chromium		0.044	mg/L	0.0050		0	0	9.3	20	
Lead		0.080	mg/L	0.0050		0	0	1.4	20	
Selenium		0.57	mg/L	0.0050		0	0	14	20	
Silver		ND	mg/L	0.010		0	0		20	
Uranium		5.3	mg/L	0.0030		0	0	1.4	20	
Sample ID: C12040804-001AMS3	8	Sample Matrix Spike				Run: ICPMS2-C_120420A			04/20/12 13:50	
Arsenic		0.49	mg/L	0.0010	96	75	125			
Barium		1.8	mg/L	0.050	303	75	125			S
Cadmium		0.25	mg/L	0.0010	99	75	125			
Chromium		0.49	mg/L	0.0050	96	75	125			
Lead		0.57	mg/L	0.0010	111	75	125			
Selenium		0.71	mg/L	0.0010	90	75	125			
Silver		0.054	mg/L	0.0020	22	75	125			S
Uranium		4.5	mg/L	0.00060		75	125			A
Method: SW6020										Batch: 33386
Sample ID: MB-33386	8	Method Blank				Run: ICPMS2-C_120420A			04/20/12 13:56	
Arsenic		0.0006	mg/L	6E-05						
Barium		0.003	mg/L	3E-05						
Cadmium		2E-05	mg/L	1E-05						
Chromium		0.006	mg/L	4E-05						
Lead		0.0001	mg/L	3E-05						
Selenium		0.0002	mg/L	0.0002						
Silver		0.0009	mg/L	3E-05						
Uranium		0.0004	mg/L	1E-05						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

MDC - Minimum detectable concentration

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 07/05/12

Client: Rio Grande Resources Corporation

Report Date: 06/13/12

Project: Mt. Taylor Mine Closure Plan

Work Order: C12040804

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Batch: 33386	
Sample ID: LCS3-33386	8	Laboratory Control Sample				Run: ICPMS2-C_120420A			04/20/12 13:58	
Arsenic		0.49	mg/L	0.0010	98	80	120			
Barium		0.51	mg/L	0.050	101	80	120			
Cadmium		0.25	mg/L	0.0010	100	80	120			
Chromium		0.50	mg/L	0.0050	100	80	120			
Lead		0.52	mg/L	0.0010	105	80	120			
Selenium		0.48	mg/L	0.0010	95	80	120			
Silver		0.054	mg/L	0.0020	105	80	120			
Uranium		0.53	mg/L	0.00060	106	80	120			
Sample ID: LCSD3-33386	8	Laboratory Control Sample Duplicate				Run: ICPMS2-C_120420A			04/20/12 14:01	
Arsenic		0.49	mg/L	0.0010	97	80	120	0.2	20	
Barium		0.51	mg/L	0.050	102	80	120	0.4	20	
Cadmium		0.25	mg/L	0.0010	100	80	120	0.1	20	
Chromium		0.50	mg/L	0.0050	100	80	120	0.0	20	
Lead		0.53	mg/L	0.0010	105	80	120	0.6	20	
Selenium		0.48	mg/L	0.0010	95	80	120	0.2	20	
Silver		0.055	mg/L	0.0020	107	80	120	2.1	20	
Uranium		0.54	mg/L	0.00060	107	80	120	0.9	20	
Sample ID: C12040804-012ADIL	8	Serial Dilution				Run: ICPMS2-C_120420A			04/20/12 14:09	
Arsenic		0.0075	mg/L	0.0050		0	0		20	N
Barium		0.094	mg/L	0.050		0	0	4.2	20	
Cadmium		0.00049	mg/L	0.0050		0	0		20	N
Chromium		0.013	mg/L	0.0050		0	0	4.1	20	
Lead		0.0069	mg/L	0.0050		0	0	9.6	20	
Selenium		0.0044	mg/L	0.0050		0	0		20	N
Silver		ND	mg/L	0.010		0	0		20	
Uranium		0.086	mg/L	0.0030		0	0	1.5	20	
Sample ID: C12040804-011AMS3	8	Sample Matrix Spike				Run: ICPMS2-C_120420A			04/20/12 14:43	
Arsenic		0.49	mg/L	0.0010	98	75	125			
Barium		0.61	mg/L	0.050	92	75	125			
Cadmium		0.25	mg/L	0.0010	101	75	125			
Chromium		0.49	mg/L	0.0050	95	75	125			
Lead		0.53	mg/L	0.0010	104	75	125			
Selenium		0.48	mg/L	0.0010	96	75	125			
Silver		0.053	mg/L	0.0020	21	75	125			S
Uranium		0.62	mg/L	0.00060	100	75	125			

Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 07/05/12

Client: Rio Grande Resources Corporation

Report Date: 06/13/12

Project: Mt. Taylor Mine Closure Plan

Work Order: C12040804

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Analytical Run: ICPMS2-C_120426A	
Sample ID: ICV	7	Initial Calibration Verification Standard							04/26/12 16:00	
Arsenic		0.0480	mg/L	0.0010	96	90	110			
Barium		0.0492	mg/L	0.0010	98	90	110			
Cadmium		0.0490	mg/L	0.0010	98	90	110			
Chromium		0.0481	mg/L	0.0010	96	90	110			
Lead		0.0491	mg/L	0.0010	98	90	110			
Selenium		0.0483	mg/L	0.0010	97	90	110			
Silver		0.0200	mg/L	0.0010	100	90	110			
Sample ID: ICSA	7	Interference Check Sample A							04/26/12 16:03	
Arsenic		7.41E-05	mg/L	0.0010						
Barium		5.47E-05	mg/L	0.0010						
Cadmium		4.03E-05	mg/L	0.0010						
Chromium		7.06E-05	mg/L	0.0010						
Lead		4.98E-05	mg/L	0.0010						
Selenium		0.000241	mg/L	0.0010						
Silver		0.000479	mg/L	0.0010						
Sample ID: ICSAB	7	Interference Check Sample AB							04/26/12 16:06	
Arsenic		0.0107	mg/L	0.0010	107	70	130			
Barium		2.06E-05	mg/L	0.0010						
Cadmium		0.0108	mg/L	0.0010	107	70	130			
Chromium		0.0106	mg/L	0.0010	106	70	130			
Lead		1.68E-05	mg/L	0.0010						
Selenium		0.000166	mg/L	0.0010						
Silver		0.0101	mg/L	0.0010	101	70	130			
Method: SW6020									Batch: 33455	
Sample ID: MB-33455	7	Method Blank				Run: ICPMS2-C_120426A			04/26/12 19:02	
Arsenic		0.0002	mg/L	6E-05						
Barium		0.007	mg/L	3E-05						
Cadmium		2E-05	mg/L	1E-05						
Chromium		0.005	mg/L	4E-05						
Lead		ND	mg/L	3E-05						
Selenium		ND	mg/L	0.0002						
Silver		0.001	mg/L	3E-05						
Sample ID: LCS3-33455	7	Laboratory Control Sample				Run: ICPMS2-C_120426A			04/26/12 19:05	
Arsenic		0.46	mg/L	0.0010	91	80	120			
Barium		0.50	mg/L	0.050	99	80	120			
Cadmium		0.23	mg/L	0.0010	92	80	120			
Chromium		0.49	mg/L	0.0050	96	80	120			
Lead		0.51	mg/L	0.0010	102	80	120			
Selenium		0.42	mg/L	0.0010	83	80	120			
Silver		0.050	mg/L	0.0020	97	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 07/05/12

Client: Rio Grande Resources Corporation

Report Date: 06/13/12

Project: Mt. Taylor Mine Closure Plan

Work Order: C12040804

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 33455
Sample ID: LCSD3-33455	7	Laboratory Control Sample Duplicate				Run: ICPMS2-C_120426A			04/26/12 19:07	
Arsenic		0.44	mg/L	0.0010	89	80	120	2.9	20	
Barium		0.49	mg/L	0.050	97	80	120	2.8	20	
Cadmium		0.23	mg/L	0.0010	90	80	120	1.6	20	
Chromium		0.47	mg/L	0.0050	94	80	120	2.4	20	
Lead		0.49	mg/L	0.0010	98	80	120	3.6	20	
Selenium		0.40	mg/L	0.0010	80	80	120	3.7	20	
Silver		0.050	mg/L	0.0020	96	80	120	1.0	20	
Sample ID: C12040804-020ADIL	7	Serial Dilution				Run: ICPMS2-C_120426A			04/26/12 19:16	
Arsenic		0.0094	mg/L	0.0050		0	0	7.4	20	
Barium		5.7	mg/L	0.050		0	0	4.0	20	
Cadmium		0.00065	mg/L	0.0050		0	0		20	N
Chromium		0.030	mg/L	0.0050		0	0	11	20	
Lead		0.027	mg/L	0.0050		0	0	1.5	20	
Selenium		0.011	mg/L	0.0050		0	0		20	N
Silver		ND	mg/L	0.010		0	0		20	
Sample ID: C12040804-019AMS3	7	Sample Matrix Spike				Run: ICPMS2-C_120426A			04/26/12 19:49	
Arsenic		0.45	mg/L	0.0010	89	75	125			
Barium		0.65	mg/L	0.050	100	75	125			
Cadmium		0.23	mg/L	0.0010	93	75	125			
Chromium		0.45	mg/L	0.0050	87	75	125			
Lead		0.51	mg/L	0.0010	102	75	125			
Selenium		0.41	mg/L	0.0010	81	75	125			
Silver		0.049	mg/L	0.0020	20	75	125			S

Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 07/05/12
Report Date: 06/13/12
Work Order: C12040804

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Analytical Run: ICPMS2-C_120501A	
Sample ID: ICV	8	Initial Calibration Verification Standard							05/01/12 13:14	
Arsenic		0.0490	mg/L	0.0010	98	90	110			
Barium		0.0486	mg/L	0.0010	97	90	110			
Cadmium		0.0491	mg/L	0.0010	98	90	110			
Chromium		0.0501	mg/L	0.0010	100	90	110			
Lead		0.0483	mg/L	0.0010	97	90	110			
Selenium		0.0501	mg/L	0.0010	100	90	110			
Silver		0.0207	mg/L	0.0010	103	90	110			
Uranium		0.0485	mg/L	0.00030	97	90	110			
Sample ID: ICSA	8	Interference Check Sample A							05/01/12 13:16	
Arsenic		0.0103	mg/L	0.0010						
Barium		3.16E-05	mg/L	0.0010						
Cadmium		0.0104	mg/L	0.0010						
Chromium		0.0104	mg/L	0.0010						
Lead		3.39E-05	mg/L	0.0010						
Selenium		8.30E-06	mg/L	0.0010						
Silver		0.0108	mg/L	0.0010						
Uranium		6.80E-05	mg/L	0.00030						
Sample ID: ICSAB	8	Interference Check Sample AB							05/01/12 13:19	
Arsenic		0.0103	mg/L	0.0010	103	70	130			
Barium		4.64E-05	mg/L	0.0010						
Cadmium		0.0106	mg/L	0.0010	106	70	130			
Chromium		0.0105	mg/L	0.0010	105	70	130			
Lead		3.92E-05	mg/L	0.0010						
Selenium		1.39E-05	mg/L	0.0010						
Silver		0.0107	mg/L	0.0010	107	70	130			
Uranium		1.47E-05	mg/L	0.00030						
Method: SW6020									Batch: 33487	
Sample ID: MB-33487	8	Method Blank				Run: ICPMS2-C_120501A			05/01/12 16:23	
Arsenic		0.0005	mg/L	6E-05						
Barium		0.008	mg/L	3E-05						
Cadmium		0.0001	mg/L	1E-05						
Chromium		0.006	mg/L	4E-05						
Lead		0.0006	mg/L	3E-05						
Selenium		0.0003	mg/L	0.0002						
Silver		0.001	mg/L	3E-05						
Uranium		0.002	mg/L	1E-05						
Sample ID: LCS3-33487	8	Laboratory Control Sample				Run: ICPMS2-C_120501A			05/01/12 16:37	
Arsenic		0.48	mg/L	0.0010	95	80	120			
Barium		0.52	mg/L	0.050	102	80	120			
Cadmium		0.25	mg/L	0.0010	99	80	120			
Chromium		0.50	mg/L	0.0050	98	80	120			
Lead		0.52	mg/L	0.0010	103	80	120			

Qualifiers:

RL - Analyte reporting limit.
MDC - Minimum detectable concentration
ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 07/05/12

Client: Rio Grande Resources Corporation

Report Date: 06/13/12

Project: Mt. Taylor Mine Closure Plan

Work Order: C12040804

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 33487
Sample ID: LCS3-33487	8	Laboratory Control Sample				Run: ICPMS2-C_120501A				05/01/12 16:37
Selenium		0.45	mg/L	0.0010	90	80	120			
Silver		0.058	mg/L	0.0020	113	80	120			
Uranium		0.52	mg/L	0.00060	105	80	120			
Sample ID: LCSD3-33487	8	Laboratory Control Sample Duplicate				Run: ICPMS2-C_120501A				05/01/12 16:40
Arsenic		0.47	mg/L	0.0010	93	80	120	2.4	20	
Barium		0.52	mg/L	0.050	102	80	120	0.7	20	
Cadmium		0.24	mg/L	0.0010	97	80	120	2.0	20	
Chromium		0.49	mg/L	0.0050	98	80	120	0.3	20	
Lead		0.51	mg/L	0.0010	101	80	120	1.6	20	
Selenium		0.44	mg/L	0.0010	89	80	120	1.9	20	
Silver		0.056	mg/L	0.0020	109	80	120	3.5	20	
Uranium		0.51	mg/L	0.00060	102	80	120	2.2	20	
Sample ID: C12040804-023ADIL	8	Serial Dilution				Run: ICPMS2-C_120501A				05/01/12 16:48
Arsenic		0.0014	mg/L	0.0050		0	0		20	N
Barium		0.060	mg/L	0.050		0	0	10	20	
Cadmium		0.00043	mg/L	0.0050		0	0		20	N
Chromium		0.011	mg/L	0.0050		0	0	19	20	
Lead		0.0016	mg/L	0.0050		0	0		20	N
Selenium		0.0027	mg/L	0.0050		0	0		20	N
Silver		ND	mg/L	0.010		0	0		20	
Uranium		0.0056	mg/L	0.0030		0	0	13	20	
Sample ID: C12040804-023AMS3	8	Sample Matrix Spike				Run: ICPMS2-C_120501A				05/01/12 16:51
Arsenic		0.56	mg/L	0.0010	112	75	125			
Barium		0.65	mg/L	0.050	119	75	125			
Cadmium		0.29	mg/L	0.0010	115	75	125			
Chromium		0.57	mg/L	0.0050	112	75	125			
Lead		0.60	mg/L	0.0010	119	75	125			
Selenium		0.53	mg/L	0.0010	105	75	125			
Silver		0.063	mg/L	0.0020	25	75	125			S
Uranium		0.52	mg/L	0.00060	102	75	125			

Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 07/05/12

Client: Rio Grande Resources Corporation

Report Date: 06/13/12

Project: Mt. Taylor Mine Closure Plan

Work Order: C12040804

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6020**									Analytical Run: ICPMS2-C_120502A	
Sample ID: **ICV**	Initial Calibration Verification Standard								05/02/12 11:37	
Uranium		0.0486	mg/L	0.00030	97	90	110			
Method: **SW6020**									Batch: 33505	
Sample ID: **MB-33505**	Method Blank					Run: ICPMS2-C_120502A			05/02/12 13:54	
Uranium		0.002	mg/L	1E-05						
Sample ID: **LCS3-33505**	Laboratory Control Sample					Run: ICPMS2-C_120502A			05/02/12 13:55	
Uranium		0.47	mg/L	0.00060	93	80	120			
Sample ID: **LCSD3-33505**	Laboratory Control Sample Duplicate					Run: ICPMS2-C_120502A			05/02/12 13:57	
Uranium		0.48	mg/L	0.00060	96	80	120	2.7	20	
Sample ID: **C12040804-020ADIL**	Serial Dilution					Run: ICPMS2-C_120502A			05/02/12 14:02	
Uranium		0.12	mg/L	0.0030		0	0	1.9	20	
Sample ID: **C12040804-019AMS3**	Sample Matrix Spike					Run: ICPMS2-C_120502A			05/02/12 14:22	
Uranium		0.50	mg/L	0.00060	98	75	125			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 07/05/12
Report Date: 06/13/12
Work Order: C12040804

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Analytical Run: ICPMS4-C_120425B	
Sample ID: ICV	8	Initial Calibration Verification Standard							04/25/12 11:08	
Arsenic		0.0486	mg/L	0.0010	97	90	110			
Barium		0.0497	mg/L	0.0010	99	90	110			
Cadmium		0.0501	mg/L	0.0010	100	90	110			
Chromium		0.0491	mg/L	0.0010	98	90	110			
Lead		0.0497	mg/L	0.0010	99	90	110			
Selenium		0.0485	mg/L	0.0010	97	90	110			
Silver		0.0193	mg/L	0.0010	97	90	110			
Uranium		0.0481	mg/L	0.00030	96	90	110			
Sample ID: ICSA	8	Interference Check Sample A							04/25/12 11:12	
Arsenic		2.21E-05	mg/L	0.0010						
Barium		2.39E-05	mg/L	0.0010						
Cadmium		4.21E-05	mg/L	0.0010						
Chromium		2.05E-05	mg/L	0.0010						
Lead		1.30E-05	mg/L	0.0010						
Selenium		7.84E-05	mg/L	0.0010						
Silver		-0.000229	mg/L	0.0010						
Uranium		2.36E-05	mg/L	0.00030						
Sample ID: ICSAB	8	Interference Check Sample AB							04/25/12 11:17	
Arsenic		0.0113	mg/L	0.0010	113	70	130			
Barium		1.46E-05	mg/L	0.0010						
Cadmium		0.0109	mg/L	0.0010	109	70	130			
Chromium		0.0115	mg/L	0.0010	115	70	130			
Lead		5.40E-06	mg/L	0.0010						
Selenium		7.00E-07	mg/L	0.0010						
Silver		0.00988	mg/L	0.0010	99	70	130			
Uranium		8.30E-06	mg/L	0.00030						
Method: SW6020									Batch: 33440	
Sample ID: MB-33440	8	Method Blank				Run: ICPMS4-C_120425B			04/25/12 19:38	
Arsenic		0.0004	mg/L	7E-05						
Barium		0.01	mg/L	0.0001						
Cadmium		0.0001	mg/L	4E-05						
Chromium		ND	mg/L	0.001						
Lead		0.0002	mg/L	3E-05						
Selenium		0.0001	mg/L	6E-05						
Silver		0.001	mg/L	2E-05						
Uranium		0.004	mg/L	5E-05						
Sample ID: LCS3-33440	8	Laboratory Control Sample				Run: ICPMS4-C_120425B			04/25/12 19:43	
Arsenic		0.46	mg/L	0.0010	91	80	120			
Barium		0.50	mg/L	0.050	98	80	120			
Cadmium		0.24	mg/L	0.0010	97	80	120			
Chromium		0.50	mg/L	0.0050	101	80	120			
Lead		0.51	mg/L	0.0010	103	80	120			

Qualifiers:

RL - Analyte reporting limit.
MDC - Minimum detectable concentration
ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 07/05/12

Client: Rio Grande Resources Corporation

Report Date: 06/13/12

Project: Mt. Taylor Mine Closure Plan

Work Order: C12040804

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 33440
Sample ID: LCS3-33440	8	Laboratory Control Sample				Run: ICPMS4-C_120425B			04/25/12 19:43	
Selenium		0.44	mg/L	0.0010	87	80	120			
Silver		0.053	mg/L	0.0010	104	80	120			
Uranium		0.50	mg/L	0.00030	99	80	120			
Sample ID: LCSD3-33440	8	Laboratory Control Sample Duplicate				Run: ICPMS4-C_120425B			04/25/12 20:05	
Arsenic		0.47	mg/L	0.0010	94	80	120	2.8	20	
Barium		0.50	mg/L	0.050	99	80	120	1.0	20	
Cadmium		0.25	mg/L	0.0010	98	80	120	1.0	20	
Chromium		0.52	mg/L	0.0050	104	80	120	3.4	20	
Lead		0.51	mg/L	0.0010	103	80	120	0.0	20	
Selenium		0.44	mg/L	0.0010	89	80	120	1.5	20	
Silver		0.054	mg/L	0.0010	106	80	120	1.7	20	
Uranium		0.51	mg/L	0.00030	100	80	120	1.0	20	
Sample ID: C12041044-002ADIL	8	Serial Dilution				Run: ICPMS4-C_120425B			04/25/12 20:19	
Arsenic		0.0017	mg/L	0.0010		0	0		20	N
Barium		0.065	mg/L	0.050		0	0	2.8	20	
Cadmium		ND	mg/L	0.0010		0	0		20	
Chromium		ND	mg/L	0.011		0	0		20	
Lead		0.0028	mg/L	0.0010		0	0		20	N
Selenium		ND	mg/L	0.0010		0	0		20	
Silver		ND	mg/L	0.0010		0	0		20	
Uranium		0.010	mg/L	0.00052		0	0	5.8	20	
Sample ID: C12040804-028AMS3	8	Sample Matrix Spike				Run: ICPMS4-C_120425B			04/25/12 20:28	
Arsenic		0.49	mg/L	0.0010	97	75	125			
Barium		0.77	mg/L	0.050	91	75	125			
Cadmium		0.25	mg/L	0.0010	101	75	125			
Chromium		0.54	mg/L	0.0050	107	75	125			
Lead		0.53	mg/L	0.0010	105	75	125			
Selenium		0.68	mg/L	0.0010	97	75	125			
Silver		0.054	mg/L	0.0010	22	75	125			S
Uranium		11	mg/L	0.00030		75	125			A
Sample ID: C12041044-001AMS3	8	Sample Matrix Spike				Run: ICPMS4-C_120425B			04/25/12 21:40	
Arsenic		0.48	mg/L	0.0010	94	75	125			
Barium		0.68	mg/L	0.050	102	75	125			
Cadmium		0.25	mg/L	0.0010	98	75	125			
Chromium		0.55	mg/L	0.0050	107	75	125			
Lead		0.54	mg/L	0.0010	105	75	125			
Selenium		0.46	mg/L	0.0010	92	75	125			
Silver		0.053	mg/L	0.0010	21	75	125			S
Uranium		0.60	mg/L	0.00030	104	75	125			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

MDC - Minimum detectable concentration

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 07/05/12

Client: Rio Grande Resources Corporation

Report Date: 06/13/12

Project: Mt. Taylor Mine Closure Plan

Work Order: C12040804

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW7470A										Analytical Run: CVAA_C203_120519A
Sample ID: ICV		Initial Calibration Verification Standard								05/19/12 07:43
Mercury		0.00500	mg/L	0.00010	100	90	110			
Method: SW7470A										Batch: 33699
Sample ID: MB-33699		Method Blank				Run: CVAA_C203_120519A				05/19/12 07:48
Mercury		ND	mg/L	3E-05						
Sample ID: LCS-33699		Laboratory Control Sample				Run: CVAA_C203_120519A				05/19/12 07:49
Mercury		0.0052	mg/L	0.0020	103	85	115			
Sample ID: LCSD-33699		Laboratory Control Sample Duplicate				Run: CVAA_C203_120519A				05/19/12 07:50
Mercury		0.0052	mg/L	0.0020	104	85	115	0.9	10	
Sample ID: C12040804-001ASD		Serial Dilution				Run: CVAA_C203_120519A				05/19/12 07:53
Mercury		ND	mg/L	0.0020					10	
Sample ID: C12040804-001AMS		Sample Matrix Spike				Run: CVAA_C203_120519A				05/19/12 07:54
Mercury		0.0051	mg/L	0.0020	102	85	115			
Method: SW7470A										Batch: 33700
Sample ID: MB-33700		Method Blank				Run: CVAA_C203_120519A				05/19/12 08:27
Mercury		ND	mg/L	3E-05						
Sample ID: LCS-33700		Laboratory Control Sample				Run: CVAA_C203_120519A				05/19/12 08:28
Mercury		0.0050	mg/L	0.0020	100	85	115			
Sample ID: LCSD-33700		Laboratory Control Sample Duplicate				Run: CVAA_C203_120519A				05/19/12 08:29
Mercury		0.0053	mg/L	0.0020	107	85	115	6.0	10	
Sample ID: C12040804-011ASD		Serial Dilution				Run: CVAA_C203_120519A				05/19/12 08:32
Mercury		ND	mg/L	0.0020					10	
Sample ID: C12040804-011AMS		Sample Matrix Spike				Run: CVAA_C203_120519A				05/19/12 08:36
Mercury		0.0050	mg/L	0.0020	101	85	115			
Method: SW7470A										Batch: 33701
Sample ID: MB-33701		Method Blank				Run: CVAA_C203_120519A				05/19/12 08:47
Mercury		ND	mg/L	3E-05						
Sample ID: LCS-33701		Laboratory Control Sample				Run: CVAA_C203_120519A				05/19/12 08:48
Mercury		0.0050	mg/L	0.0020	100	85	115			
Sample ID: LCSD-33701		Laboratory Control Sample Duplicate				Run: CVAA_C203_120519A				05/19/12 08:52
Mercury		0.0050	mg/L	0.0020	100	85	115	0.0	10	
Sample ID: C12040804-019ASD		Serial Dilution				Run: CVAA_C203_120519A				05/19/12 08:55
Mercury		ND	mg/L	0.0020					10	
Sample ID: C12040804-019AMS		Sample Matrix Spike				Run: CVAA_C203_120519A				05/19/12 08:56
Mercury		0.0053	mg/L	0.0020	105	85	115			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 07/05/12

Client: Rio Grande Resources Corporation

Report Date: 06/13/12

Project: Mt. Taylor Mine Closure Plan

Work Order: C12040804

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW7470A										Batch: 33702
Sample ID: MB-33702		Method Blank				Run: CVAA_C203_120519A				05/19/12 09:11
Mercury		ND	mg/L	3E-05						
Sample ID: LCS-33702		Laboratory Control Sample				Run: CVAA_C203_120519A				05/19/12 09:12
Mercury		0.0051	mg/L	0.0020	103	85	115			
Sample ID: LCSD-33702		Laboratory Control Sample Duplicate				Run: CVAA_C203_120519A				05/19/12 09:13
Mercury		0.0051	mg/L	0.0020	101	85	115	1.8	10	
Sample ID: C12040804-028ASD		Serial Dilution				Run: CVAA_C203_120519A				05/19/12 09:16
Mercury		ND	mg/L	0.0020					10	
Sample ID: C12040804-028AMS		Sample Matrix Spike				Run: CVAA_C203_120519A				05/19/12 09:17
Mercury		0.0052	mg/L	0.0020	103	85	115			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration

Standard Reporting Procedures

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Workorder Receipt Checklist

Rio Grande Resources Corporation C12040804

Login completed by: Kristy Gisse
Date Received: 4/13/2012

Reviewed by: BL2000\tedwards
Received by: kg

Reviewed Date: 4/24/2012
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Container/Temp Blank temperature:	18.2°C		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Contact and Corrective Action Comments:

None

Chain of Custody and Analytical Request Record

E3888 Page 1 of 4

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Grande Resources Corp	Project Name, PWS, Permit, Etc.: Mt. Taylor Mine Closure Plan	Sample Origin: State: NM	EPA/State Compliance: Yes ☒ No ☐
Report Mail Address: PO Box 1150, Grants, NM 87020. Additional e-mail copy to beverett@kleinfelder.com	Contact Name: Barbara Everett (Kleinfelder) Phone/Fax: (505) 344-7373 (505) 280-1079 (Cell)	Email: beverett@kleinfelder.com	Sampler: (Please Print) Barbara Everett, Ed Loescher
Invoice Address: PO Box 1150, Grants, NM 87020	Invoice Contact & Phone: Jeanette Lister 505-287-7971	Purchase Order:	Quote/Bottle Order: C3778. Kerry Schoeder 928-235-0515

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ GSA ☐ POTW/WWTP ☑ State: NM ☐ Other: _____
☐ A2LA ☒ EDD/EDT (Electronic Data) Format: excel ☐ LEVEL IV ☐ NELAC

Number of Containers. Sample Type: A Air, W Water, S Soils/Solids, V Vegetation, B Bioassay, O Other

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	SPLP Extract	RCRA Metals + Uranium	Ra226 & Ra228	Cl & SO4 by IC 300.0	~~TCL~~ BG 4/11/12	SEE ATTACHED	Normal Turnaround (TAT)
1 S1-01-01	4-10-12	10:45	Sediment	X	X	X				X
2 S1-01-02	4-10-12	10:50	Sediment	X	X	X				X
3 S1-01-03	4-10-12	11:00	Sediment	X	X	X				X
4 S1-02-01	4-10-12	11:40	Sediment	X	X	X				X
5 S1-02-02	4-10-12	11:43	Sediment	X	X	X				X
6 S1-02-03	4-10-12	11:45	Sediment	X	X	X				X
7 SA-01-01	4-10-12	11:30	Sediment	X	X	X				X
8 SA-01-02	4-10-12	11:35	Sediment	X	X	X				X
9 SA-01-03	4-10-12	11:45	Sediment	X	X	X				X
10 SA-02-01	4-10-12	11:48	Sediment	X	X	X				X

RUSH

Contact ELI prior to RUSH sample submittal for charges and scheduling – See Instruction Page

Comments: FED EX TRACK # 8735 9342 9785 (KW)

Shipped by: FED-EX
Cooler ID(s):
Receipt Temp: 18.2 °C
On Ice: Yes (No)
Custody Seal Y (N)
Intact Y N
Signature Match Y N

LABORATORY USE ONLY C12040804

Custody Record MUST be Signed

Relinquished by (print): BARBARA EVERETT Date/Time: 4/11/12 12:00 Signature:
Relinquished by (print): KENTON WATTS Date/Time: 4-12-12 @ 0930 Signature:
Sample Disposal: Return to Client: _____ Lab Disposal: X

Received by (print): KENTON WATTS Date/Time: 4-12-12 @ 0700 Signature:
Received by (print): Date/Time: Signature:
Received by Laboratory: Date/Time: Kris 6:55C 4-13-12 9:40 Signature:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, ...

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Chain of Custody and Analytical Request Record

C-3888

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Grande Resources Corp	Project Name, PWS, Permit, Etc.: Mt. Taylor Mine Closure Plan	Sample Origin: State: NM	EPA/State Compliance: Yes ☒ No ☐
Report Mail Address: PO Box 1150, Grants, NM 87020. Additional e-mail copy to beverett@kleinfelder.com	Contact Name: Barbara Everett (Kleinfelder) Phone/Fax: (505) 344-7373 (505) 280-1079 (Cell)	Email: beverett@kleinfelder.com	Sampler: (Please Print) Barbara Everett, Ed Loescher
Invoice Address: PO Box 1150, Grants, NM 87020	Invoice Contact & Phone: Jeanette Lister 505-287-7971	Purchase Order:	Quote/Bottle Order: C3778

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ A2LA
☐ GSA ☒ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: excel
☑ State: NM ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

RUSH — Contact ELI prior to RUSH sample submittal for charges and scheduling – See Instruction Page

Comments: FED EX TRACK # 8735 9342 9785 (KW)

Shipped by: FE-EX
Cooler ID(s):
Receipt Temp: 18.2 °C
On Ice: Yes (No)
Custody Seal Y (N) Intact Y N Signature Match Y N

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	Number of Containers (Sample Type: A Air, W Water, S Soils/Solids, V Vegetation, B Bioassay, O Other)	SPLP Extract	RCRA Metals + Uranium	Ra226 & Ra228	Cl & SO4 by IC 300.0	RCI	SEE ATTACHED	Normal Turnaround (TAT)
✓ 1 SA-02-02	4/10/12	11:48	Sediment		X	X	X				X
✓ 2 SA-02-03	4/10/12	11:48	Sediment		X	X	X				X
✓ 3 SB-01-01	4/10/12	13:00	Sediment		X	X	X	X			X
✓ 4 SB-01-02	4/10/12	13:09	Sediment		X	X	X	X			X
✓ 5 SB-01-03	4/10/12	13:09	Sediment		X	X	X	X			X
✓ 6 SB-02-01	4/10/12	13:26	Sediment		X	X	X	X			X
✓ 7 SB-02-02	4/10/12	13:36	Sediment		X	X	X	X			X
✓ 8 SB-02-03	4/10/12	13:36	Sediment		X	X	X	X			X
✓ 9 SB-02-04	4/10/12	13:39	Sediment		X	X	X	X			X
✓ 10 SS-01-01	4/10/12	14:05	Sediment		X	X	X	X			X

LABORATORY USE ONLY — L12040804

Custody Record MUST be Signed

Relinquished by (print): BARBARA EVERETT	Date/Time: 4/11/12 12:00	Signature:	Received by (print): KENTON WATTS	Date/Time: 4-12-12 @ 0700
Relinquished by (print): KENTON WATTS	Date/Time: 4-12-12 @ 0930	Signature:	Received by (print):	Date/Time:
Sample Disposal: Return to Client: _____ Lab Disposal: ✓			Received by Laboratory:	Date/Time: 4-13-12 9:40

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

Chain of Custody and Analytical Request Record

C2496

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Grande Resources Corp	Project Name, PWS, Permit, Etc. Mt. Taylor Mine Closure Plan	Sample Origin State: NM	EPA/State Compliance: Yes ☒ No ☐
Report Mail Address: PO Box 1150 Grants, NM 87020 Additional e-mail copy to beverett@kleinfelder.com	Contact Name: Barbara Everett (Kleinfelder) Phone/Fax: (505) 344-7373 (505) 280-1079 (Cell)	Email: beverett@kleinfelder.com	Sampler: (Please Print) Barbara Everett Ed Loescher
Invoice Address: PO Box 1150 Grants, NM 87020	Invoice Contact & Phone: Jeanette Lister 505-287-7971	Purchase Order:	Quote/Bottle Order: C3778

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

- ☐ DW
- ☐ GSA
- ☐ POTW/WWTP
- ☑ State: NM
- ☐ Other: _____
- ☐ A2LA
- ☒ EDD/EDT (Electronic Data) Format: excel
- ☐ LEVEL IV
- ☐ NELAC

Number of Containers
Sample Type: A Air W Water S Soils/Solids V Vegetation B Bioassay O Other

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	SPLP Extract	RCRA Metals + Uranium	Ra226 & Ra228	Cl & SO4 by IC 300.0	RCL	SEE ATTACHED	Normal Turnaround (TAT)
1 S7-01-01 •	4/10/12	15:12	Sediment	X	X	X				X
2 S7-01-02 •	4/10/12	15:17	Sediment	X	X	X				X
3 S7-01-03 •	4/10/12	15:22	Sediment	X	X	X				X
4 S5-02-02 •	4/10/12	14:15	Sediment	X	X	X	X			X
5 S5-02-03 •	4/10/12	14:20	Sediment	X	X	X	X			X
6 S5-02-01 •	4/10/12	14:30	Sediment	X	X	X	X			X
7 ~~S5-02~~			~~Sediment~~							X
8 S5-01-02 •	4/10/12	14:09	Sediment	X	X	X	X			X
9			Sediment							X
10			Sediment							X

R U S H — Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: FEDEX TRACK # 8747 6695 1300

Shipped by: FE-EX

Cooler ID(s):

Receipt Temp 18.2 °C

On Ice: Yes (No)

Custody Seal Y (N)
Intact Y N
Signature Match Y N

LABORATORY USE ONLY

C12040804

Custody Record MUST be Signed

Relinquished by (print): BARBARA EVERETT	Date/Time: 4/11/12 12:00	Signature:	Received by (print): KENTON WATTS
Relinquished by (print): KENTON WATTS	Date/Time: 4-12-12 @ 0930	Signature:	Received by (print):
Sample Disposal: Return to Client: _____ Lab Disposal: Y			Received by Laboratory: 4.13.12 9:40

Date/Time: 4-12-12 @ 0700 Signature:

Date/Time: Signature:

Signature:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

Chain of Custody and Analytical Request Record

C2496

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Grande Resources Corp	Project Name, PWS, Permit, Etc. Mt. Taylor Mine Closure Plan	Sample Origin State: NM	EPA/State Compliance: Yes ☒ No ☐
Report Mail Address: PO Box 1150 Grants, NM 87020 Additional e-mail copy to beverett@kleinfelder.com	Contact Name: Barbara Everett (Kleinfelder) Phone/Fax: (505) 344-7373 (505) 280-1079 (Cell)	Email: beverett@kleinfelder.com	Sampler: (Please Print) Barbara Everett Ed Loescher
Invoice Address: PO Box 1150 Grants, NM 87020	Invoice Contact & Phone: Jeanette Lister 505-287-7971	Purchase Order:	Quote/Bottle Order: C3778

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

- ☐ DW
- ☐ GSA
- ☐ POTW/WWTP
- ☑ State: NM
- ☐ Other: _____
- ☐ A2LA
- ☒ EDD/EDT (Electronic Data) Format: excel
- ☐ LEVEL IV
- ☐ NELAC

Number of Containers
Sample Type: A W S V B O
Air Water Soils/Solids Vegetation Bioassay Other

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	SPLP Extract	RCRA Metals + Uranium	Ra226 & Ra228	Cl & SO4 by IC 300.0	RCI					SEE ATTACHED	Normal Turnaround (TAT)
1 S3-01-01 •	4/10/12	0915	Sediment	X	X	X								X
2 S3-01-02 •	4/10/12	0850	Sediment	X	X	X								X
3 S3-01-03 •	4/10/12	0940	Sediment	X	X	X								X
4 S3-02-01 •	4/10/12	10:22	Sediment	X	X	X								X
5 S3-02-02	4/10/12	10:30	Sediment	X	X	X								X
6 S3-02-03 • (KW PER LABEL, BM)	4/10/12	10:30	Sediment	X	X	X								X
7 S7-02-01 •	4/10/12	15:45	Sediment	X	X	X								X
8 S7-02-02 •	4/10/12	15:50	Sediment	X	X	X								X
9 S7-02-03 •	4/10/12	15:55	Sediment	X	X	X								X
10 S3-01-04 •	4/10/12	0946	Sediment	X	X	X								X

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:

FED EX TRACK # 8747 6695 1300

HOLD PENDING (KW) CONFERM, BY B. EVERETT

Shipped by: FE-Ex

Cooler ID(s):

Receipt Temp: 12.2 °C

On Ice: Yes (No)

Custody Seal Y (N)
Intact Y N
Signature Match Y N

LABORATORY USE ONLY

(1204030)

Custody Record MUST be Signed

	Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
1	BARBARA EVERETT	4/11/12		KENTON WATTS	4-12-12 @ 0700	
2	KENTON WATTS	4-12-12 @ 0930		Received by (print):	Date/Time:	Signature:
	Sample Disposal: Return to Client: _____	Lab Disposal: X		Received by Laboratory:	Date/Time: 4-13-12 9:40	Signature:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

ANALYTICAL SUMMARY REPORT

July 10, 2012

Rio Grande Resources Corporation
PO Box 1150
Grants, NM 87020

Workorder No.: C12041044 Quote ID: C3778 - Mt Taylor Mine Closure Plan

Project Name: Mt. Taylor Mine Closure Plan

Energy Laboratories, Inc. Casper WY received the following 28 samples for Rio Grande Resources Corporation on 4/20/2012 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C12041044-001	MT-1-F (6" B.G.)	04/10/12 10:45	04/20/12	Sediment	Metals, SPLP Extractable Mercury, SPLP Mercury Analysis Prep Filterability Digestion, Total Metals Digestion For RadioChemistry Radium 226 Radium 228 SPLP Extraction, Regular
C12041044-002	MT-2-D (6" B.G.)	04/10/12 10:15	04/20/12	Sediment	Same As Above
C12041044-003	MT-3-F (6" B.G.)	04/10/12 11:10	04/20/12	Sediment	Same As Above
C12041044-004	MT-4-F (6" B.G.)	04/10/12 9:35	04/20/12	Sediment	Metals, SPLP Extractable Mercury, SPLP Mercury Analysis Prep Filterability E300.0 Anions Digestion, Total Metals Digestion For RadioChemistry DI Water Soil Extract Radium 226 Radium 228 SPLP Extraction, Regular
C12041044-005	MT-5-F (6" B.G.)	04/10/12 10:00	04/20/12	Sediment	Same As Above
C12041044-006	MT-7-C (6" B.G.)	04/10/12 9:45	04/20/12	Sediment	Metals, SPLP Extractable Mercury, SPLP Mercury Analysis Prep Filterability Digestion, Total Metals Digestion For RadioChemistry Radium 226 Radium 228 SPLP Extraction, Regular
C12041044-007	MT-OP-E (6" B.G.)	04/10/12 9:00	04/20/12	Sediment	Same As Above
C12041044-008	MT-A-C (6" B.G.)	04/10/12 10:55	04/20/12	Sediment	Same As Above
C12041044-009	MT-Borrow/Background	04/10/12 11:00	04/20/12	Sediment	Same As Above

ANALYTICAL SUMMARY REPORT

C12041044-010	MT-4-D-S1 (0-6" B.G.)	04/10/12 14:05	04/20/12	Sediment	Metals, SPLP Extractable Mercury, SPLP Mercury Analysis Prep Filterability E300.0 Anions Digestion, Total Metals Digestion For RadioChemistry DI Water Soil Extract Radium 226 Radium 228 SPLP Extraction, Regular
C12041044-011	MT-4-D-S2 (14" B.G.)	04/10/12 14:10	04/20/12	Sediment	Same As Above
C12041044-012	MT-4-D-S3 (48" B.G.)	04/10/12 14:20	04/20/12	Sediment	Same As Above
C12041044-013	MT-4-E-S1 (0-4" B.G.)	04/10/12 13:35	04/20/12	Sediment	Same As Above
C12041044-014	MT-4-E-S2 (10-12" B.G.)	04/10/12 13:40	04/20/12	Sediment	Same As Above
C12041044-015	MT-4-E-S3 (36" B.G.)	04/10/12 13:42	04/20/12	Sediment	Same As Above
C12041044-016	MT-4-E-S4 (48" B.G.)	04/10/12 13:45	04/20/12	Sediment	Same As Above
C12041044-017	MT-6-A-S1 (0-5" B.G.)	04/10/12 15:05	04/20/12	Sediment	Metals, SPLP Extractable Mercury, SPLP Mercury Analysis Prep Filterability Digestion, Total Metals Digestion For RadioChemistry Radium 226 Radium 228 SPLP Extraction, Regular
C12041044-018	MT-6-A-S2 (12-20" B.G.)	04/10/12 15:10	04/20/12	Sediment	Same As Above
C12041044-019	MT-6-B-S1 (8-10" B.G.)	04/10/12 14:30	04/20/12	Sediment	Same As Above
C12041044-020	MT-6-B-S2 (30" B.G.)	04/10/12 14:35	04/20/12	Sediment	Same As Above
C12041044-021	MT-OP-C-S1 (0-6" B.G.)	04/10/12 13:20	04/20/12	Sediment	Same As Above
C12041044-022	MT-OP-C-S2 (20" B.G.)	04/10/12 13:25	04/20/12	Sediment	Same As Above
C12041044-023	MT-OP-C-S3 (48-50' B.G.)	04/10/12 13:25	04/20/12	Sediment	Same As Above
C12041044-024	MT-OP-C-S4 (72" B.G.)	04/10/12 13:30	04/20/12	Sediment	Same As Above
C12041044-025	MT-OP-D-S1 (0-6" B.G.)	04/10/12 12:45	04/20/12	Sediment	Same As Above
C12041044-026	MT-OP-D-S2 (48-50" B.G.)	04/10/12 12:45	04/20/12	Sediment	Same As Above
C12041044-027	MT-OP-D-S3 (76" B.G.)	04/10/12 12:50	04/20/12	Sediment	Same As Above
C12041044-028	MT-8-F (6" B.G.)	04/10/12 9:25	04/20/12	Sediment	Metals, SPLP Extractable Mercury, SPLP Mercury Analysis Prep Filterability E300.0 Anions Digestion, Total Metals Digestion For RadioChemistry DI Water Soil Extract Radium 226 Radium 228 SPLP Extraction, Regular

ANALYTICAL SUMMARY REPORT

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

CLIENT: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Sample Delivery Group: C12041044

Revised Date: 07/10/12
Report Date: 06/13/12

CASE NARRATIVE

REVISED/SUPPLEMENTAL REPORT
The attached analytical report has been revised from a previously submitted report due to the request by the client for the analysis of Radium 226 and Radium 228 on the Sediment on all samples and Chloride and Sulfate on the Sediment on samples -004 through -005, -010 through -016, and -028. The data presented here is from that analysis.

PREP COMMENTS
The prep hold time for the SPLP extraction was exceeded by up to 6 days.
The prep hold time for Chloride and Sulfate analysis was exceeded by 39 days.

ORIGINAL SAMPLE SUBMITTAL(S)
All original sample submittals have been returned with the data package.

SAMPLE TEMPERATURE COMPLIANCE: 4°C (±2°C)
Temperature of samples received may not be considered properly preserved by accepted standards. Samples that are hand delivered immediately after collection shall be considered acceptable if there is evidence that the chilling process has begun.

GROSS ALPHA ANALYSIS
Method 900.0 for gross alpha and gross beta is intended as a drinking water method for low TDS waters. Data provided by this method for non potable waters should be viewed as inconsistent.

RADON IN AIR ANALYSIS
The desired exposure time is 48 hours (2 days). The time delay in returning the canister to the laboratory for processing should be as short as possible to avoid excessive decay. Maximum recommended delay between end of exposure to beginning of counting should not exceed 8 days.

SOIL/SOLID SAMPLES
All samples reported on an as received basis unless otherwise indicated.

ATRAZINE, SIMAZINE AND PCB ANALYSIS
Data for PCBs, Atrazine and Simazine are reported from EPA 525.2. PCB data reported by ELI reflects the results for seven individual Aroclors. When the results for all seven are ND (not detected), the sample meets EPA compliance criteria for PCB monitoring.

SUBCONTRACTING ANALYSIS
Subcontracting of sample analyses to an outside laboratory may be required. If so, ENERGY LABORATORIES will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

BRANCH LABORATORY LOCATIONS
eli-b - Energy Laboratories, Inc. - Billings, MT
eli-g - Energy Laboratories, Inc. - Gillette, WY
eli-h - Energy Laboratories, Inc. - Helena, MT
eli-r - Energy Laboratories, Inc. - Rapid City, SD
eli-t - Energy Laboratories, Inc. - College Station, TX

CERTIFICATIONS:
USEPA: WY00002, Radiochemical WY00937; FL-DOH NELAC: E87641, Radiochemical E871017; California: 02118CA; Oregon: WY200001, Radiochemical WY200002; Utah: WY00002; Virginia: 00057; Washington: C836

ISO 17025 DISCLAIMER:
The results of this Analytical Report relate only to the items submitted for analysis.

ENERGY LABORATORIES, INC. - CASPER,WY certifies that certain method selections contained in this report meet requirements as set forth by the above accrediting authorities. Some results requested by the client may not be covered under these certifications. All analysis data to be submitted for regulatory enforcement should be certified in the sample state of origin. Please verify ELI's certification coverage by visiting www.energylab.com

ELI appreciates the opportunity to provide you with this analytical service. For additional information and services visit our web page www.energylab.com.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12041044-001
Client Sample ID: MT-1-F (6" B.G.)

Revised Date: 07/10/12
Report Date: 06/13/12
Collection Date: 04/10/12 10:45
DateReceived: 04/20/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/24/12 16:14 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.006	mg/L		0.001		SW6020	04/25/12 21:35 / smm
Barium	0.17	mg/L		0.05		SW6020	04/25/12 21:35 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/25/12 21:35 / smm
Chromium	0.014	mg/L		0.005		SW6020	04/25/12 21:35 / smm
Lead	0.016	mg/L		0.001		SW6020	04/25/12 21:35 / smm
Mercury	ND	mg/L		0.002		SW7470A	04/26/12 12:36 / rdw
Selenium	0.005	mg/L		0.001		SW6020	04/25/12 21:35 / smm
Silver	ND	mg/L		0.001		SW6020	04/25/12 21:35 / smm
Uranium	0.077	mg/L	B	0.0003		SW6020	04/25/12 21:35 / smm
RADIONUCLIDES							
Radium 226	2.0	pCi/g-dry				E903.0	07/10/12 13:40 / trs
Radium 226 precision (±)	0.1	pCi/g-dry				E903.0	07/10/12 13:40 / trs
Radium 226 MDC	0.03	pCi/g-dry				E903.0	07/10/12 13:40 / trs
Radium 228	0.6	pCi/g-dry				RA-05	07/05/12 21:06 / gb
Radium 228 precision (±)	0.1	pCi/g-dry				RA-05	07/05/12 21:06 / gb
Radium 228 MDC	0.2	pCi/g-dry				RA-05	07/05/12 21:06 / gb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12041044-002
Client Sample ID: MT-2-D (6" B.G.)

Revised Date: 07/10/12
Report Date: 06/13/12
Collection Date: 04/10/12 10:15
DateReceived: 04/20/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/24/12 16:14 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.002	mg/L		0.001		SW6020	04/25/12 20:14 / smm
Barium	0.06	mg/L		0.05		SW6020	04/25/12 20:14 / smm
Cadmium	ND	mg/L		0.001		SW6020	04/25/12 20:14 / smm
Chromium	0.005	mg/L		0.005		SW6020	04/25/12 20:14 / smm
Lead	0.003	mg/L		0.001		SW6020	04/25/12 20:14 / smm
Mercury	ND	mg/L		0.002		SW7470A	04/26/12 12:43 / rdw
Selenium	ND	mg/L		0.001		SW6020	04/25/12 20:14 / smm
Silver	ND	mg/L		0.001		SW6020	04/25/12 20:14 / smm
Uranium	0.0098	mg/L	B	0.0003		SW6020	04/25/12 20:14 / smm
RADIONUCLIDES							
Radium 226	0.6	pCi/g-dry				E903.0	07/03/12 03:34 / plj
Radium 226 precision (±)	0.07	pCi/g-dry				E903.0	07/03/12 03:34 / plj
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/03/12 03:34 / plj
Radium 228	0.6	pCi/g-dry				RA-05	06/25/12 17:32 / plj
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	06/25/12 17:32 / plj
Radium 228 MDC	0.3	pCi/g-dry				RA-05	06/25/12 17:32 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12041044-003
Client Sample ID: MT-3-F (6" B.G.)

Revised Date: 07/10/12
Report Date: 06/13/12
Collection Date: 04/10/12 11:10
DateReceived: 04/20/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/24/12 16:14 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.002	mg/L		0.001		SW6020	05/01/12 14:24 / cp
Barium	ND	mg/L		0.05		SW6020	05/01/12 14:24 / cp
Cadmium	ND	mg/L		0.001		SW6020	05/01/12 14:24 / cp
Chromium	ND	mg/L		0.005		SW6020	05/01/12 14:24 / cp
Lead	0.001	mg/L		0.001		SW6020	05/01/12 14:24 / cp
Mercury	ND	mg/L		0.002		SW7470A	04/30/12 15:16 / rdw
Selenium	0.001	mg/L		0.001		SW6020	05/01/12 14:24 / cp
Silver	ND	mg/L	D	0.002		SW6020	05/01/12 14:24 / cp
Uranium	0.0090	mg/L	D	0.0006		SW6020	05/01/12 14:24 / cp
RADIONUCLIDES							
Radium 226	0.9	pCi/g-dry				E903.0	07/03/12 03:34 / plj
Radium 226 precision (±)	0.08	pCi/g-dry				E903.0	07/03/12 03:34 / plj
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/03/12 03:34 / plj
Radium 228	0.5	pCi/g-dry				RA-05	06/25/12 15:52 / plj
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	06/25/12 15:52 / plj
Radium 228 MDC	0.3	pCi/g-dry				RA-05	06/25/12 15:52 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12041044-004
Client Sample ID: MT-4-F (6" B.G.)

Revised Date: 07/10/12
Report Date: 06/13/12
Collection Date: 04/10/12 09:35
DateReceived: 04/20/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
SATURATED PASTE EXTRACT							
Chloride	51.2	mg/kg		1.00		E300.0	06/28/12 03:22 / ljl
Chloride, 1:1	1.44	meq/L		0.0282		E300.0	06/28/12 03:22 / ljl
Sulfate	405	mg/kg		1.00		E300.0	06/28/12 03:22 / ljl
Sulfate, 1:1	8.43	meq/L		0.0208		E300.0	06/28/12 03:22 / ljl
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/24/12 16:14 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.005	mg/L		0.001		SW6020	05/01/12 13:55 / cp
Barium	ND	mg/L		0.05		SW6020	05/01/12 13:55 / cp
Cadmium	ND	mg/L		0.001		SW6020	05/01/12 13:55 / cp
Chromium	ND	mg/L		0.005		SW6020	05/02/12 21:42 / smm
Lead	0.003	mg/L		0.001		SW6020	05/01/12 13:55 / cp
Mercury	ND	mg/L		0.002		SW7470A	04/30/12 15:20 / rdw
Selenium	0.002	mg/L		0.001		SW6020	05/01/12 13:55 / cp
Silver	ND	mg/L	D	0.002		SW6020	05/01/12 13:55 / cp
Uranium	0.0027	mg/L	D	0.0006		SW6020	05/01/12 13:55 / cp
RADIONUCLIDES							
Radium 226	0.8	pCi/g-dry				E903.0	07/10/12 13:40 / trs
Radium 226 precision (±)	0.08	pCi/g-dry				E903.0	07/10/12 13:40 / trs
Radium 226 MDC	0.03	pCi/g-dry				E903.0	07/10/12 13:40 / trs
Radium 228	1.0	pCi/g-dry				RA-05	07/05/12 21:06 / gb
Radium 228 precision (±)	0.1	pCi/g-dry				RA-05	07/05/12 21:06 / gb
Radium 228 MDC	0.2	pCi/g-dry				RA-05	07/05/12 21:06 / gb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12041044-005
Client Sample ID: MT-5-F (6" B.G.)

Revised Date: 07/10/12
Report Date: 06/13/12
Collection Date: 04/10/12 10:00
DateReceived: 04/20/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
SATURATED PASTE EXTRACT							
Chloride	37.0	mg/kg		1.00		E300.0	06/28/12 03:39 / ljl
Chloride, 1:1	1.04	meq/L		0.0282		E300.0	06/28/12 03:39 / ljl
Sulfate	183	mg/kg		1.00		E300.0	06/28/12 03:39 / ljl
Sulfate, 1:1	3.82	meq/L		0.0208		E300.0	06/28/12 03:39 / ljl
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/24/12 16:14 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.002	mg/L		0.001		SW6020	05/01/12 14:12 / cp
Barium	ND	mg/L		0.05		SW6020	05/01/12 14:12 / cp
Cadmium	ND	mg/L		0.001		SW6020	05/01/12 14:12 / cp
Chromium	ND	mg/L		0.005		SW6020	05/02/12 22:05 / smm
Lead	0.001	mg/L		0.001		SW6020	05/01/12 14:12 / cp
Mercury	ND	mg/L		0.002		SW7470A	04/30/12 15:22 / rdw
Selenium	0.001	mg/L		0.001		SW6020	05/01/12 14:12 / cp
Silver	0.003	mg/L	D	0.002		SW6020	05/01/12 14:12 / cp
Uranium	0.0029	mg/L	D	0.0006		SW6020	05/01/12 14:12 / cp
RADIONUCLIDES							
Radium 226	2.0	pCi/g-dry				E903.0	07/10/12 13:40 / trs
Radium 226 precision (±)	0.1	pCi/g-dry				E903.0	07/10/12 13:40 / trs
Radium 226 MDC	0.03	pCi/g-dry				E903.0	07/10/12 13:40 / trs
Radium 228	0.8	pCi/g-dry				RA-05	07/05/12 21:06 / gb
Radium 228 precision (±)	0.1	pCi/g-dry				RA-05	07/05/12 21:06 / gb
Radium 228 MDC	0.2	pCi/g-dry				RA-05	07/05/12 21:06 / gb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12041044-006
Client Sample ID: MT-7-C (6" B.G.)

Revised Date: 07/10/12
Report Date: 06/13/12
Collection Date: 04/10/12 09:45
DateReceived: 04/20/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/24/12 16:14 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.002	mg/L		0.001		SW6020	05/01/12 14:15 / cp
Barium	ND	mg/L		0.05		SW6020	05/01/12 14:15 / cp
Cadmium	ND	mg/L		0.001		SW6020	05/01/12 14:15 / cp
Chromium	0.006	mg/L		0.005		SW6020	05/01/12 14:15 / cp
Lead	0.002	mg/L		0.001		SW6020	05/01/12 14:15 / cp
Mercury	ND	mg/L		0.002		SW7470A	04/30/12 15:23 / rdw
Selenium	ND	mg/L		0.001		SW6020	05/01/12 14:15 / cp
Silver	ND	mg/L	D	0.002		SW6020	05/01/12 14:15 / cp
Uranium	0.0023	mg/L	D	0.0006		SW6020	05/01/12 14:15 / cp
RADIONUCLIDES							
Radium 226	0.6	pCi/g-dry				E903.0	07/10/12 13:40 / trs
Radium 226 precision (±)	0.07	pCi/g-dry				E903.0	07/10/12 13:40 / trs
Radium 226 MDC	0.03	pCi/g-dry				E903.0	07/10/12 13:40 / trs
Radium 228	0.8	pCi/g-dry				RA-05	07/05/12 21:06 / gb
Radium 228 precision (±)	0.1	pCi/g-dry				RA-05	07/05/12 21:06 / gb
Radium 228 MDC	0.1	pCi/g-dry				RA-05	07/05/12 21:06 / gb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12041044-007
Client Sample ID: MT-OP-E (6" B.G.)

Revised Date: 07/10/12
Report Date: 06/13/12
Collection Date: 04/10/12 09:00
DateReceived: 04/20/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/24/12 16:14 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.004	mg/L		0.001		SW6020	05/01/12 14:18 / cp
Barium	0.05	mg/L		0.05		SW6020	05/01/12 14:18 / cp
Cadmium	ND	mg/L		0.001		SW6020	05/01/12 14:18 / cp
Chromium	0.006	mg/L		0.005		SW6020	05/01/12 14:18 / cp
Lead	0.003	mg/L		0.001		SW6020	05/01/12 14:18 / cp
Mercury	ND	mg/L		0.002		SW7470A	04/30/12 15:24 / rdw
Selenium	0.005	mg/L		0.001		SW6020	05/01/12 14:18 / cp
Silver	ND	mg/L	D	0.002		SW6020	05/01/12 14:18 / cp
Uranium	0.0056	mg/L	D	0.0006		SW6020	05/01/12 14:18 / cp
RADIONUCLIDES							
Radium 226	1.1	pCi/g-dry				E903.0	07/10/12 13:40 / trs
Radium 226 precision (±)	0.1	pCi/g-dry				E903.0	07/10/12 13:40 / trs
Radium 226 MDC	0.03	pCi/g-dry				E903.0	07/10/12 13:40 / trs
Radium 228	0.8	pCi/g-dry				RA-05	07/05/12 21:06 / gb
Radium 228 precision (±)	0.1	pCi/g-dry				RA-05	07/05/12 21:06 / gb
Radium 228 MDC	0.2	pCi/g-dry				RA-05	07/05/12 21:06 / gb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12041044-008
Client Sample ID: MT-A-C (6" B.G.)

Revised Date: 07/10/12
Report Date: 06/13/12
Collection Date: 04/10/12 10:55
DateReceived: 04/20/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/24/12 16:14 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.003	mg/L		0.001		SW6020	05/01/12 14:21 / cp
Barium	ND	mg/L		0.05		SW6020	05/01/12 14:21 / cp
Cadmium	ND	mg/L		0.001		SW6020	05/01/12 14:21 / cp
Chromium	ND	mg/L		0.005		SW6020	05/01/12 14:21 / cp
Lead	0.001	mg/L		0.001		SW6020	05/01/12 14:21 / cp
Mercury	ND	mg/L		0.002		SW7470A	04/30/12 15:28 / rdw
Selenium	0.044	mg/L		0.001		SW6020	05/01/12 14:21 / cp
Silver	ND	mg/L	D	0.002		SW6020	05/01/12 14:21 / cp
Uranium	0.14	mg/L	D	0.0006		SW6020	05/01/12 14:21 / cp
RADIONUCLIDES							
Radium 226	1.7	pCi/g-dry				E903.0	07/10/12 13:40 / trs
Radium 226 precision (±)	0.1	pCi/g-dry				E903.0	07/10/12 13:40 / trs
Radium 226 MDC	0.03	pCi/g-dry				E903.0	07/10/12 13:40 / trs
Radium 228	0.5	pCi/g-dry				RA-05	07/05/12 21:06 / gb
Radium 228 precision (±)	0.1	pCi/g-dry				RA-05	07/05/12 21:06 / gb
Radium 228 MDC	0.2	pCi/g-dry				RA-05	07/05/12 21:06 / gb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12041044-009
Client Sample ID: MT-Borrow/Background

Revised Date: 07/10/12
Report Date: 06/13/12
Collection Date: 04/10/12 11:00
DateReceived: 04/20/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/24/12 16:14 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.001	mg/L		0.001		SW6020	05/01/12 15:27 / cp
Barium	ND	mg/L		0.05		SW6020	05/01/12 15:27 / cp
Cadmium	ND	mg/L		0.001		SW6020	05/01/12 15:27 / cp
Chromium	ND	mg/L		0.005		SW6020	05/01/12 15:27 / cp
Lead	ND	mg/L		0.001		SW6020	05/01/12 15:27 / cp
Mercury	ND	mg/L		0.002		SW7470A	04/30/12 15:34 / rdw
Selenium	0.001	mg/L		0.001		SW6020	05/01/12 15:27 / cp
Silver	ND	mg/L	D	0.002		SW6020	05/01/12 15:27 / cp
Uranium	0.0007	mg/L	D	0.0006		SW6020	05/01/12 15:27 / cp
RADIONUCLIDES							
Radium 226	0.7	pCi/g-dry				E903.0	07/10/12 13:40 / trs
Radium 226 precision (±)	0.07	pCi/g-dry				E903.0	07/10/12 13:40 / trs
Radium 226 MDC	0.03	pCi/g-dry				E903.0	07/10/12 13:40 / trs
Radium 228	0.7	pCi/g-dry				RA-05	07/05/12 22:57 / gb
Radium 228 precision (±)	0.1	pCi/g-dry				RA-05	07/05/12 22:57 / gb
Radium 228 MDC	0.2	pCi/g-dry				RA-05	07/05/12 22:57 / gb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12041044-010
Client Sample ID: MT-4-D-S1 (0-6" B.G.)

Revised Date: 07/10/12
Report Date: 06/13/12
Collection Date: 04/10/12 14:05
DateReceived: 04/20/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
SATURATED PASTE EXTRACT							
Chloride	7.76	mg/kg		1.00		E300.0	06/28/12 03:55 / ljl
Chloride, 1:1	0.219	meq/L		0.0282		E300.0	06/28/12 03:55 / ljl
Sulfate	77.0	mg/kg		1.00		E300.0	06/28/12 03:55 / ljl
Sulfate, 1:1	1.60	meq/L		0.0208		E300.0	06/28/12 03:55 / ljl
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/24/12 16:14 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.008	mg/L		0.001		SW6020	05/01/12 14:56 / cp
Barium	1.0	mg/L		0.05		SW6020	05/01/12 14:56 / cp
Cadmium	ND	mg/L		0.001		SW6020	05/01/12 14:56 / cp
Chromium	0.008	mg/L		0.005		SW6020	05/01/12 14:56 / cp
Lead	0.003	mg/L		0.001		SW6020	05/01/12 14:56 / cp
Mercury	ND	mg/L		0.002		SW7470A	04/30/12 15:38 / rdw
Selenium	0.015	mg/L		0.001		SW6020	05/01/12 14:56 / cp
Silver	ND	mg/L	D	0.002		SW6020	05/01/12 14:56 / cp
Uranium	0.033	mg/L	D	0.0006		SW6020	05/01/12 14:56 / cp
RADIONUCLIDES							
Radium 226	18.1	pCi/g-dry				E903.0	07/10/12 13:40 / trs
Radium 226 precision (±)	0.3	pCi/g-dry				E903.0	07/10/12 13:40 / trs
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/10/12 13:40 / trs
Radium 228	0.9	pCi/g-dry				RA-05	07/05/12 22:57 / gb
Radium 228 precision (±)	0.1	pCi/g-dry				RA-05	07/05/12 22:57 / gb
Radium 228 MDC	0.2	pCi/g-dry				RA-05	07/05/12 22:57 / gb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12041044-011
Client Sample ID: MT-4-D-S2 (14" B.G.)

Revised Date: 07/10/12
Report Date: 06/13/12
Collection Date: 04/10/12 14:10
DateReceived: 04/20/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
SATURATED PASTE EXTRACT							
Chloride	92.0	mg/kg		1.00		E300.0	06/28/12 04:12 / ljl
Chloride, 1:1	2.60	meq/L		0.0282		E300.0	06/28/12 04:12 / ljl
Sulfate	1840	mg/kg		1.00		E300.0	06/28/12 04:12 / ljl
Sulfate, 1:1	38.2	meq/L		0.0208		E300.0	06/28/12 04:12 / ljl
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/24/12 16:14 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.007	mg/L		0.001		SW6020	05/01/12 15:02 / cp
Barium	ND	mg/L		0.05		SW6020	05/01/12 15:02 / cp
Cadmium	ND	mg/L		0.001		SW6020	05/01/12 15:02 / cp
Chromium	0.006	mg/L		0.005		SW6020	05/01/12 15:02 / cp
Lead	0.001	mg/L		0.001		SW6020	05/01/12 15:02 / cp
Mercury	ND	mg/L		0.002		SW7470A	04/30/12 15:39 / rdw
Selenium	0.39	mg/L		0.001		SW6020	05/01/12 15:02 / cp
Silver	ND	mg/L	D	0.002		SW6020	05/01/12 15:02 / cp
Uranium	0.20	mg/L	D	0.0006		SW6020	05/01/12 15:02 / cp
RADIONUCLIDES							
Radium 226	2.8	pCi/g-dry				E903.0	07/10/12 13:40 / trs
Radium 226 precision (±)	0.1	pCi/g-dry				E903.0	07/10/12 13:40 / trs
Radium 226 MDC	0.03	pCi/g-dry				E903.0	07/10/12 13:40 / trs
Radium 228	0.2	pCi/g-dry				RA-05	07/05/12 22:57 / gb
Radium 228 precision (±)	0.1	pCi/g-dry				RA-05	07/05/12 22:57 / gb
Radium 228 MDC	0.2	pCi/g-dry				RA-05	07/05/12 22:57 / gb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12041044-012
Client Sample ID: MT-4-D-S3 (48" B.G.)

Revised Date: 07/10/12
Report Date: 06/13/12
Collection Date: 04/10/12 14:20
DateReceived: 04/20/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
SATURATED PASTE EXTRACT							
Chloride	6.49	mg/kg		1.00		E300.0	06/28/12 04:44 / ljl
Chloride, 1:1	0.183	meq/L		0.0282		E300.0	06/28/12 04:44 / ljl
Sulfate	132	mg/kg		1.00		E300.0	06/28/12 04:44 / ljl
Sulfate, 1:1	2.74	meq/L		0.0208		E300.0	06/28/12 04:44 / ljl
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/24/12 16:14 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.003	mg/L		0.001		SW6020	05/01/12 15:05 / cp
Barium	0.88	mg/L		0.05		SW6020	05/01/12 15:05 / cp
Cadmium	ND	mg/L		0.001		SW6020	05/01/12 15:05 / cp
Chromium	0.009	mg/L		0.005		SW6020	05/01/12 15:05 / cp
Lead	0.003	mg/L		0.001		SW6020	05/01/12 15:05 / cp
Mercury	ND	mg/L		0.002		SW7470A	04/30/12 15:41 / rdw
Selenium	0.020	mg/L		0.001		SW6020	05/01/12 15:05 / cp
Silver	ND	mg/L	D	0.002		SW6020	05/01/12 15:05 / cp
Uranium	0.013	mg/L	D	0.0006		SW6020	05/01/12 15:05 / cp
RADIONUCLIDES							
Radium 226	6.7	pCi/g-dry				E903.0	07/10/12 14:44 / trs
Radium 226 precision (±)	0.2	pCi/g-dry				E903.0	07/10/12 14:44 / trs
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/10/12 14:44 / trs
Radium 228	0.8	pCi/g-dry				RA-05	07/05/12 22:57 / gb
Radium 228 precision (±)	0.1	pCi/g-dry				RA-05	07/05/12 22:57 / gb
Radium 228 MDC	0.2	pCi/g-dry				RA-05	07/05/12 22:57 / gb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12041044-013
Client Sample ID: MT-4-E-S1 (0-4" B.G.)

Revised Date: 07/10/12
Report Date: 06/13/12
Collection Date: 04/10/12 13:35
DateReceived: 04/20/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
SATURATED PASTE EXTRACT							
Chloride	46.4	mg/kg		1.00		E300.0	06/28/12 05:01 / ljl
Chloride, 1:1	1.31	meq/L		0.0282		E300.0	06/28/12 05:01 / ljl
Sulfate	853	mg/kg		1.00		E300.0	06/28/12 05:01 / ljl
Sulfate, 1:1	17.8	meq/L		0.0208		E300.0	06/28/12 05:01 / ljl
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/24/12 16:14 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.034	mg/L		0.001		SW6020	05/01/12 15:08 / cp
Barium	34	mg/L		0.05		SW6020	05/01/12 15:08 / cp
Cadmium	ND	mg/L		0.001		SW6020	05/01/12 15:08 / cp
Chromium	0.007	mg/L		0.005		SW6020	05/02/12 22:19 / smm
Lead	0.008	mg/L		0.001		SW6020	05/01/12 15:08 / cp
Mercury	ND	mg/L		0.002		SW7470A	04/30/12 15:48 / rdw
Selenium	0.15	mg/L		0.001		SW6020	05/01/12 15:08 / cp
Silver	ND	mg/L	D	0.002		SW6020	05/01/12 15:08 / cp
Uranium	0.39	mg/L	D	0.0006		SW6020	05/01/12 15:08 / cp
RADIONUCLIDES							
Radium 226	8.7	pCi/g-dry				E903.0	07/10/12 14:44 / trs
Radium 226 precision (±)	0.2	pCi/g-dry				E903.0	07/10/12 14:44 / trs
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/10/12 14:44 / trs
Radium 228	1.5	pCi/g-dry				RA-05	07/05/12 22:57 / gb
Radium 228 precision (±)	0.1	pCi/g-dry				RA-05	07/05/12 22:57 / gb
Radium 228 MDC	0.1	pCi/g-dry				RA-05	07/05/12 22:57 / gb

- Sample matrix interference resulted in high chemical recoveries which has likely biased the Ra226 and Ra228 results low.

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12041044-014
Client Sample ID: MT-4-E-S2 (10-12" B.G.)

Revised Date: 07/10/12
Report Date: 06/13/12
Collection Date: 04/10/12 13:40
DateReceived: 04/20/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
SATURATED PASTE EXTRACT							
Chloride	34.1	mg/kg		1.00		E300.0	06/28/12 05:17 / ljl
Chloride, 1:1	0.963	meq/L		0.0282		E300.0	06/28/12 05:17 / ljl
Sulfate	1150	mg/kg		1.00		E300.0	06/28/12 05:17 / ljl
Sulfate, 1:1	23.8	meq/L		0.0208		E300.0	06/28/12 05:17 / ljl
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/24/12 16:14 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.005	mg/L		0.001		SW6020	05/01/12 15:10 / cp
Barium	0.22	mg/L		0.05		SW6020	05/01/12 15:10 / cp
Cadmium	ND	mg/L		0.001		SW6020	05/01/12 15:10 / cp
Chromium	0.011	mg/L		0.005		SW6020	05/01/12 15:10 / cp
Lead	0.005	mg/L		0.001		SW6020	05/01/12 15:10 / cp
Mercury	ND	mg/L		0.002		SW7470A	04/30/12 15:49 / rdw
Selenium	0.072	mg/L		0.001		SW6020	05/01/12 15:10 / cp
Silver	ND	mg/L	D	0.002		SW6020	05/01/12 15:10 / cp
Uranium	0.014	mg/L	D	0.0006		SW6020	05/01/12 15:10 / cp
RADIONUCLIDES							
Radium 226	4.8	pCi/g-dry				E903.0	07/10/12 14:44 / trs
Radium 226 precision (±)	0.2	pCi/g-dry				E903.0	07/10/12 14:44 / trs
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/10/12 14:44 / trs
Radium 228	0.4	pCi/g-dry				RA-05	07/05/12 22:57 / gb
Radium 228 precision (±)	0.1	pCi/g-dry				RA-05	07/05/12 22:57 / gb
Radium 228 MDC	0.2	pCi/g-dry				RA-05	07/05/12 22:57 / gb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12041044-015
Client Sample ID: MT-4-E-S3 (36" B.G.)

Revised Date: 07/10/12
Report Date: 06/13/12
Collection Date: 04/10/12 13:42
DateReceived: 04/20/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
SATURATED PASTE EXTRACT							
Chloride	13.1	mg/kg		1.00		E300.0	06/28/12 05:34 / ljl
Chloride, 1:1	0.371	meq/L		0.0282		E300.0	06/28/12 05:34 / ljl
Sulfate	184	mg/kg		1.00		E300.0	06/28/12 05:34 / ljl
Sulfate, 1:1	3.84	meq/L		0.0208		E300.0	06/28/12 05:34 / ljl
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/24/12 16:14 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.003	mg/L		0.001		SW6020	05/01/12 15:24 / cp
Barium	0.13	mg/L		0.05		SW6020	05/01/12 15:24 / cp
Cadmium	ND	mg/L		0.001		SW6020	05/01/12 15:24 / cp
Chromium	0.007	mg/L		0.005		SW6020	05/01/12 15:24 / cp
Lead	0.003	mg/L		0.001		SW6020	05/01/12 15:24 / cp
Mercury	ND	mg/L		0.002		SW7470A	04/30/12 15:51 / rdw
Selenium	0.026	mg/L		0.001		SW6020	05/01/12 15:24 / cp
Silver	0.003	mg/L	D	0.002		SW6020	05/01/12 15:24 / cp
Uranium	0.0043	mg/L	D	0.0006		SW6020	05/01/12 15:24 / cp
RADIONUCLIDES							
Radium 226	2.9	pCi/g-dry				E903.0	07/10/12 14:44 / trs
Radium 226 precision (±)	0.1	pCi/g-dry				E903.0	07/10/12 14:44 / trs
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/10/12 14:44 / trs
Radium 228	0.7	pCi/g-dry				RA-05	07/05/12 22:57 / gb
Radium 228 precision (±)	0.1	pCi/g-dry				RA-05	07/05/12 22:57 / gb
Radium 228 MDC	0.2	pCi/g-dry				RA-05	07/05/12 22:57 / gb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12041044-016
Client Sample ID: MT-4-E-S4 (48" B.G.)

Revised Date: 07/10/12
Report Date: 06/13/12
Collection Date: 04/10/12 13:45
DateReceived: 04/20/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
SATURATED PASTE EXTRACT							
Chloride	4.51	mg/kg		1.00		E300.0	06/28/12 05:50 / ljl
Chloride, 1:1	0.127	meq/L		0.0282		E300.0	06/28/12 05:50 / ljl
Sulfate	131	mg/kg		1.00		E300.0	06/28/12 05:50 / ljl
Sulfate, 1:1	2.72	meq/L		0.0208		E300.0	06/28/12 05:50 / ljl
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/24/12 16:14 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.005	mg/L	B	0.001		SW6020	05/02/12 21:10 / smm
Barium	0.06	mg/L		0.05		SW6020	05/02/12 21:10 / smm
Cadmium	ND	mg/L		0.001		SW6020	05/02/12 21:10 / smm
Chromium	0.006	mg/L		0.005		SW6020	05/02/12 21:10 / smm
Lead	0.002	mg/L		0.001		SW6020	05/02/12 21:10 / smm
Mercury	ND	mg/L		0.002		SW7470A	04/30/12 16:01 / rdw
Selenium	0.011	mg/L		0.001		SW6020	05/02/12 21:10 / smm
Silver	ND	mg/L		0.001		SW6020	05/02/12 21:10 / smm
Uranium	0.027	mg/L		0.0003		SW6020	05/02/12 21:10 / smm
RADIONUCLIDES							
Radium 226	6.2	pCi/g-dry				E903.0	07/10/12 14:44 / trs
Radium 226 precision (±)	0.2	pCi/g-dry				E903.0	07/10/12 14:44 / trs
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/10/12 14:44 / trs
Radium 228	0.4	pCi/g-dry				RA-05	07/05/12 22:57 / gb
Radium 228 precision (±)	0.1	pCi/g-dry				RA-05	07/05/12 22:57 / gb
Radium 228 MDC	0.1	pCi/g-dry				RA-05	07/05/12 22:57 / gb

- Sample matrix interference resulted in high chemical recoveries which has likely biased the Ra226 and Ra228 results low.

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12041044-017
Client Sample ID: MT-6-A-S1 (0-5" B.G.)

Revised Date: 07/10/12
Report Date: 06/13/12
Collection Date: 04/10/12 15:05
DateReceived: 04/20/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/24/12 16:14 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.012	mg/L		0.001		SW6020	05/02/12 20:29 / smm
Barium	7.3	mg/L		0.05		SW6020	05/02/12 20:29 / smm
Cadmium	ND	mg/L		0.001		SW6020	05/02/12 20:29 / smm
Chromium	0.007	mg/L		0.005		SW6020	05/02/12 20:29 / smm
Lead	0.016	mg/L		0.001		SW6020	05/02/12 20:29 / smm
Mercury	ND	mg/L		0.002		SW7470A	04/30/12 16:05 / rdw
Selenium	0.007	mg/L		0.001		SW6020	05/02/12 20:29 / smm
Silver	ND	mg/L		0.001		SW6020	05/02/12 20:29 / smm
Uranium	0.044	mg/L		0.0003		SW6020	05/02/12 20:29 / smm
RADIONUCLIDES							
Radium 226	6.4	pCi/g-dry				E903.0	07/10/12 14:44 / trs
Radium 226 precision (±)	0.2	pCi/g-dry				E903.0	07/10/12 14:44 / trs
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/10/12 14:44 / trs
Radium 228	0.2	pCi/g-dry				RA-05	07/05/12 22:56 / gb
Radium 228 precision (±)	0.1	pCi/g-dry				RA-05	07/05/12 22:56 / gb
Radium 228 MDC	0.1	pCi/g-dry				RA-05	07/05/12 22:56 / gb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12041044-018
Client Sample ID: MT-6-A-S2 (12-20" B.G.)

Revised Date: 07/10/12
Report Date: 06/13/12
Collection Date: 04/10/12 15:10
DateReceived: 04/20/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/24/12 16:14 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.003	mg/L	B	0.001		SW6020	05/02/12 20:33 / smm
Barium	0.05	mg/L		0.05		SW6020	05/02/12 20:33 / smm
Cadmium	ND	mg/L		0.001		SW6020	05/02/12 20:33 / smm
Chromium	0.007	mg/L		0.005		SW6020	05/02/12 20:33 / smm
Lead	ND	mg/L		0.001		SW6020	05/02/12 20:33 / smm
Mercury	ND	mg/L		0.002		SW7470A	04/30/12 16:06 / rdw
Selenium	0.15	mg/L		0.001		SW6020	05/02/12 20:33 / smm
Silver	ND	mg/L		0.001		SW6020	05/02/12 20:33 / smm
Uranium	0.26	mg/L		0.0003		SW6020	05/02/12 20:33 / smm
RADIONUCLIDES							
Radium 226	0.4	pCi/g-dry				E903.0	07/10/12 14:44 / trs
Radium 226 precision (±)	0.05	pCi/g-dry				E903.0	07/10/12 14:44 / trs
Radium 226 MDC	0.03	pCi/g-dry				E903.0	07/10/12 14:44 / trs
Radium 228	0.1	pCi/g-dry	U			RA-05	07/05/12 22:56 / gb
Radium 228 precision (±)	0.1	pCi/g-dry				RA-05	07/05/12 22:56 / gb
Radium 228 MDC	0.2	pCi/g-dry				RA-05	07/05/12 22:56 / gb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
U - Not detected at minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12041044-019
Client Sample ID: MT-6-B-S1 (8-10" B.G.)

Revised Date: 07/10/12
Report Date: 06/13/12
Collection Date: 04/10/12 14:30
DateReceived: 04/20/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/24/12 16:14 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.004	mg/L	B	0.001		SW6020	05/02/12 20:38 / smm
Barium	0.05	mg/L		0.05		SW6020	05/02/12 20:38 / smm
Cadmium	ND	mg/L		0.001		SW6020	05/02/12 20:38 / smm
Chromium	0.007	mg/L		0.005		SW6020	05/02/12 20:38 / smm
Lead	ND	mg/L		0.001		SW6020	05/02/12 20:38 / smm
Mercury	ND	mg/L		0.002		SW7470A	04/30/12 16:08 / rdw
Selenium	0.16	mg/L		0.001		SW6020	05/02/12 20:38 / smm
Silver	ND	mg/L		0.001		SW6020	05/02/12 20:38 / smm
Uranium	0.26	mg/L		0.0003		SW6020	05/02/12 20:38 / smm
RADIONUCLIDES							
Radium 226	0.8	pCi/g-dry				E903.0	07/10/12 14:44 / trs
Radium 226 precision (±)	0.08	pCi/g-dry				E903.0	07/10/12 14:44 / trs
Radium 226 MDC	0.03	pCi/g-dry				E903.0	07/10/12 14:44 / trs
Radium 228	0.2	pCi/g-dry				RA-05	07/05/12 22:56 / gb
Radium 228 precision (±)	0.1	pCi/g-dry				RA-05	07/05/12 22:56 / gb
Radium 228 MDC	0.2	pCi/g-dry				RA-05	07/05/12 22:56 / gb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12041044-020
Client Sample ID: MT-6-B-S2 (30" B.G.)

Revised Date: 07/10/12
Report Date: 06/13/12
Collection Date: 04/10/12 14:35
DateReceived: 04/20/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/24/12 16:14 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.002	mg/L	B	0.001		SW6020	05/02/12 20:43 / smm
Barium	0.06	mg/L		0.05		SW6020	05/02/12 20:43 / smm
Cadmium	ND	mg/L		0.001		SW6020	05/02/12 20:43 / smm
Chromium	ND	mg/L		0.005		SW6020	05/02/12 20:43 / smm
Lead	ND	mg/L		0.001		SW6020	05/02/12 20:43 / smm
Mercury	ND	mg/L		0.002		SW7470A	04/30/12 16:09 / rdw
Selenium	0.003	mg/L		0.001		SW6020	05/02/12 20:43 / smm
Silver	ND	mg/L		0.001		SW6020	05/02/12 20:43 / smm
Uranium	0.014	mg/L		0.0003		SW6020	05/02/12 20:43 / smm
RADIONUCLIDES							
Radium 226	4.1	pCi/g-dry				E903.0	07/10/12 14:44 / trs
Radium 226 precision (±)	0.2	pCi/g-dry				E903.0	07/10/12 14:44 / trs
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/10/12 14:44 / trs
Radium 228	0.8	pCi/g-dry				RA-05	07/05/12 22:56 / gb
Radium 228 precision (±)	0.1	pCi/g-dry				RA-05	07/05/12 22:56 / gb
Radium 228 MDC	0.2	pCi/g-dry				RA-05	07/05/12 22:56 / gb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
B - The analyte was detected in the method blank.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12041044-021
Client Sample ID: MT-OP-C-S1 (0-6" B.G.)

Revised Date: 07/10/12
Report Date: 06/13/12
Collection Date: 04/10/12 13:20
DateReceived: 04/20/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/24/12 16:14 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.015	mg/L		0.001		SW6020	05/02/12 21:06 / smm
Barium	0.05	mg/L		0.05		SW6020	05/02/12 21:06 / smm
Cadmium	ND	mg/L		0.001		SW6020	05/02/12 21:06 / smm
Chromium	0.010	mg/L		0.005		SW6020	05/02/12 21:06 / smm
Lead	0.001	mg/L		0.001		SW6020	05/02/12 21:06 / smm
Mercury	ND	mg/L		0.002		SW7470A	04/30/12 16:10 / rdw
Selenium	0.052	mg/L		0.001		SW6020	05/02/12 21:06 / smm
Silver	ND	mg/L		0.001		SW6020	05/02/12 21:06 / smm
Uranium	1.8	mg/L		0.0003		SW6020	05/02/12 21:06 / smm
RADIONUCLIDES							
Radium 226	53.3	pCi/g-dry				E903.0	07/10/12 14:44 / trs
Radium 226 precision (±)	0.6	pCi/g-dry				E903.0	07/10/12 14:44 / trs
Radium 226 MDC	0.03	pCi/g-dry				E903.0	07/10/12 14:44 / trs
Radium 228	2.1	pCi/g-dry				RA-05	07/05/12 22:56 / gb
Radium 228 precision (±)	0.2	pCi/g-dry				RA-05	07/05/12 22:56 / gb
Radium 228 MDC	0.2	pCi/g-dry				RA-05	07/05/12 22:56 / gb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12041044-022
Client Sample ID: MT-OP-C-S2 (20" B.G.)

Revised Date: 07/10/12
Report Date: 06/13/12
Collection Date: 04/10/12 13:25
DateReceived: 04/20/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/24/12 16:14 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.005	mg/L		0.001		SW6020	05/04/12 14:22 / cp
Barium	0.05	mg/L		0.05		SW6020	05/04/12 14:22 / cp
Cadmium	ND	mg/L		0.001		SW6020	05/04/12 14:22 / cp
Chromium	0.007	mg/L		0.005		SW6020	05/04/12 14:22 / cp
Lead	0.002	mg/L		0.001		SW6020	05/04/12 14:22 / cp
Mercury	ND	mg/L		0.002		SW7470A	05/02/12 11:26 / rdw
Selenium	0.018	mg/L		0.001		SW6020	05/04/12 14:22 / cp
Silver	ND	mg/L	D	0.002		SW6020	05/04/12 14:22 / cp
Uranium	0.14	mg/L	D	0.0006		SW6020	05/04/12 14:22 / cp
RADIONUCLIDES							
Radium 226	1.7	pCi/g-dry				E903.0	07/10/12 16:03 / trs
Radium 226 precision (±)	0.1	pCi/g-dry				E903.0	07/10/12 16:03 / trs
Radium 226 MDC	0.03	pCi/g-dry				E903.0	07/10/12 16:03 / trs
Radium 228	0.6	pCi/g-dry				RA-05	07/05/12 21:05 / gb
Radium 228 precision (±)	0.1	pCi/g-dry				RA-05	07/05/12 21:05 / gb
Radium 228 MDC	0.2	pCi/g-dry				RA-05	07/05/12 21:05 / gb

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12041044-023
Client Sample ID: MT-OP-C-S3 (48-50' B.G.)

Revised Date: 07/10/12
Report Date: 06/13/12
Collection Date: 04/10/12 13:25
DateReceived: 04/20/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/24/12 16:14 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.004	mg/L		0.001		SW6020	05/04/12 14:41 / cp
Barium	ND	mg/L		0.05		SW6020	05/04/12 14:41 / cp
Cadmium	ND	mg/L		0.001		SW6020	05/04/12 14:41 / cp
Chromium	ND	mg/L		0.005		SW6020	05/04/12 14:41 / cp
Lead	ND	mg/L		0.001		SW6020	05/04/12 14:41 / cp
Mercury	ND	mg/L		0.002		SW7470A	05/02/12 11:29 / rdw
Selenium	0.028	mg/L		0.001		SW6020	05/04/12 14:41 / cp
Silver	ND	mg/L	D	0.002		SW6020	05/04/12 14:41 / cp
Uranium	0.049	mg/L	D	0.0006		SW6020	05/04/12 14:41 / cp
RADIONUCLIDES							
Radium 226	0.8	pCi/g-dry				E903.0	07/03/12 05:26 / trs
Radium 226 precision (±)	0.07	pCi/g-dry				E903.0	07/03/12 05:26 / trs
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/03/12 05:26 / trs
Radium 228	0.8	pCi/g-dry				RA-05	06/26/12 17:02 / plj
Radium 228 precision (±)	0.09	pCi/g-dry				RA-05	06/26/12 17:02 / plj
Radium 228 MDC	0.1	pCi/g-dry				RA-05	06/26/12 17:02 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12041044-024
Client Sample ID: MT-OP-C-S4 (72" B.G.)

Revised Date: 07/10/12
Report Date: 06/13/12
Collection Date: 04/10/12 13:30
DateReceived: 04/20/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/24/12 16:14 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.004	mg/L		0.001		SW6020	05/04/12 14:44 / cp
Barium	ND	mg/L		0.05		SW6020	05/04/12 14:44 / cp
Cadmium	ND	mg/L		0.001		SW6020	05/04/12 14:44 / cp
Chromium	ND	mg/L		0.005		SW6020	05/04/12 14:44 / cp
Lead	ND	mg/L		0.001		SW6020	05/04/12 14:44 / cp
Mercury	ND	mg/L		0.002		SW7470A	05/02/12 11:30 / rdw
Selenium	0.025	mg/L		0.001		SW6020	05/04/12 14:44 / cp
Silver	ND	mg/L	D	0.002		SW6020	05/04/12 14:44 / cp
Uranium	0.0064	mg/L	D	0.0006		SW6020	05/04/12 14:44 / cp
RADIONUCLIDES							
Radium 226	1.5	pCi/g-dry				E903.0	07/03/12 05:26 / trs
Radium 226 precision (±)	0.1	pCi/g-dry				E903.0	07/03/12 05:26 / trs
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/03/12 05:26 / trs
Radium 228	0.6	pCi/g-dry				RA-05	06/26/12 17:02 / plj
Radium 228 precision (±)	0.09	pCi/g-dry				RA-05	06/26/12 17:02 / plj
Radium 228 MDC	0.1	pCi/g-dry				RA-05	06/26/12 17:02 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12041044-025
Client Sample ID: MT-OP-D-S1 (0-6" B.G.)

Revised Date: 07/10/12
Report Date: 06/13/12
Collection Date: 04/10/12 12:45
DateReceived: 04/20/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/24/12 16:14 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.013	mg/L		0.001		SW6020	05/04/12 14:47 / cp
Barium	1.3	mg/L		0.05		SW6020	05/04/12 14:47 / cp
Cadmium	ND	mg/L		0.001		SW6020	05/04/12 14:47 / cp
Chromium	0.007	mg/L		0.005		SW6020	05/04/12 14:47 / cp
Lead	0.008	mg/L		0.001		SW6020	05/04/12 14:47 / cp
Mercury	ND	mg/L		0.002		SW7470A	05/02/12 11:31 / rdw
Selenium	0.009	mg/L		0.001		SW6020	05/04/12 14:47 / cp
Silver	ND	mg/L	D	0.002		SW6020	05/04/12 14:47 / cp
Uranium	0.23	mg/L	D	0.0006		SW6020	05/04/12 14:47 / cp
RADIONUCLIDES							
Radium 226	51.9	pCi/g-dry				E903.0	07/03/12 05:26 / trs
Radium 226 precision (±)	0.5	pCi/g-dry				E903.0	07/03/12 05:26 / trs
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/03/12 05:26 / trs
Radium 228	0.5	pCi/g-dry				RA-05	06/26/12 17:02 / plj
Radium 228 precision (±)	0.07	pCi/g-dry				RA-05	06/26/12 17:02 / plj
Radium 228 MDC	0.09	pCi/g-dry				RA-05	06/26/12 17:02 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12041044-026
Client Sample ID: MT-OP-D-S2 (48-50" B.G.)

Revised Date: 07/10/12
Report Date: 06/13/12
Collection Date: 04/10/12 12:45
DateReceived: 04/20/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/24/12 16:14 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.001	mg/L		0.001		SW6020	05/04/12 14:49 / cp
Barium	0.05	mg/L		0.05		SW6020	05/04/12 14:49 / cp
Cadmium	ND	mg/L		0.001		SW6020	05/04/12 14:49 / cp
Chromium	ND	mg/L		0.005		SW6020	05/04/12 14:49 / cp
Lead	ND	mg/L		0.001		SW6020	05/04/12 14:49 / cp
Mercury	ND	mg/L		0.002		SW7470A	05/02/12 11:35 / rdw
Selenium	0.005	mg/L		0.001		SW6020	05/04/12 14:49 / cp
Silver	ND	mg/L	D	0.002		SW6020	05/04/12 14:49 / cp
Uranium	0.10	mg/L	D	0.0006		SW6020	05/04/12 14:49 / cp
RADIONUCLIDES							
Radium 226	1.9	pCi/g-dry				E903.0	07/03/12 05:26 / trs
Radium 226 precision (±)	0.1	pCi/g-dry				E903.0	07/03/12 05:26 / trs
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/03/12 05:26 / trs
Radium 228	0.6	pCi/g-dry				RA-05	06/26/12 17:02 / plj
Radium 228 precision (±)	0.09	pCi/g-dry				RA-05	06/26/12 17:02 / plj
Radium 228 MDC	0.1	pCi/g-dry				RA-05	06/26/12 17:02 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12041044-027
Client Sample ID: MT-OP-D-S3 (76" B.G.)

Revised Date: 07/10/12
Report Date: 06/13/12
Collection Date: 04/10/12 12:50
DateReceived: 04/20/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/24/12 16:14 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.006	mg/L		0.001		SW6020	05/04/12 14:52 / cp
Barium	0.11	mg/L		0.05		SW6020	05/04/12 14:52 / cp
Cadmium	ND	mg/L		0.001		SW6020	05/04/12 14:52 / cp
Chromium	0.012	mg/L		0.005		SW6020	05/04/12 14:52 / cp
Lead	0.009	mg/L		0.001		SW6020	05/04/12 14:52 / cp
Mercury	ND	mg/L		0.002		SW7470A	05/02/12 11:37 / rdw
Selenium	0.002	mg/L		0.001		SW6020	05/04/12 14:52 / cp
Silver	ND	mg/L	D	0.002		SW6020	05/04/12 14:52 / cp
Uranium	0.0034	mg/L	D	0.0006		SW6020	05/04/12 14:52 / cp
RADIONUCLIDES							
Radium 226	0.6	pCi/g-dry				E903.0	07/03/12 05:26 / trs
Radium 226 precision (±)	0.06	pCi/g-dry				E903.0	07/03/12 05:26 / trs
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/03/12 05:26 / trs
Radium 228	0.5	pCi/g-dry				RA-05	06/26/12 17:02 / plj
Radium 228 precision (±)	0.08	pCi/g-dry				RA-05	06/26/12 17:02 / plj
Radium 228 MDC	0.1	pCi/g-dry				RA-05	06/26/12 17:02 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine Closure Plan
Lab ID: C12041044-028
Client Sample ID: MT-8-F (6" B.G.)

Revised Date: 07/10/12
Report Date: 06/13/12
Collection Date: 04/10/12 09:25
DateReceived: 04/20/12
Matrix: Sediment

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
SATURATED PASTE EXTRACT							
Chloride	14.2	mg/kg		1.00		E300.0	06/28/12 06:07 / ljl
Chloride, 1:1	0.402	meq/L		0.0282		E300.0	06/28/12 06:07 / ljl
Sulfate	28.9	mg/kg		1.00		E300.0	06/28/12 06:07 / ljl
Sulfate, 1:1	0.602	meq/L		0.0208		E300.0	06/28/12 06:07 / ljl
PHYSICAL CHARACTERISTICS							
Filterable	No					SW1311	04/24/12 16:14 / dcj
METALS - SPLP EXTRACTABLE							
Arsenic	0.003	mg/L		0.001		SW6020	05/04/12 14:55 / cp
Barium	ND	mg/L		0.05		SW6020	05/04/12 14:55 / cp
Cadmium	ND	mg/L		0.001		SW6020	05/04/12 14:55 / cp
Chromium	ND	mg/L		0.005		SW6020	05/04/12 14:55 / cp
Lead	0.002	mg/L		0.001		SW6020	05/04/12 14:55 / cp
Mercury	ND	mg/L		0.002		SW7470A	05/02/12 11:38 / rdw
Selenium	0.002	mg/L		0.001		SW6020	05/04/12 14:55 / cp
Silver	ND	mg/L	D	0.002		SW6020	05/04/12 14:55 / cp
Uranium	0.010	mg/L	D	0.0006		SW6020	05/04/12 14:55 / cp
RADIONUCLIDES							
Radium 226	2.3	pCi/g-dry				E903.0	07/03/12 05:26 / trs
Radium 226 precision (±)	0.1	pCi/g-dry				E903.0	07/03/12 05:26 / trs
Radium 226 MDC	0.02	pCi/g-dry				E903.0	07/03/12 05:26 / trs
Radium 228	0.6	pCi/g-dry				RA-05	06/26/12 17:02 / plj
Radium 228 precision (±)	0.09	pCi/g-dry				RA-05	06/26/12 17:02 / plj
Radium 228 MDC	0.1	pCi/g-dry				RA-05	06/26/12 17:02 / plj

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 07/10/12

Client: Rio Grande Resources Corporation **Report Date:** 06/13/12

Project: Mt. Taylor Mine Closure Plan **Work Order:** C12041044

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC2-C_120626A	
Sample ID: ICV-062612-10	2	Initial Calibration Verification Standard							06/26/12 15:31	
Chloride		9.60	mg/L	1.0	96	90	110			
Sulfate		38.7	mg/L	1.0	97	90	110			
Method: E300.0									Batch: 34007	
Sample ID: MB-34007	2	Method Blank				Run: IC2-C_120626A			06/28/12 02:17	
Chloride		ND	mg/kg	0.04						
Sulfate		0.08	mg/kg	0.06						
Sample ID: LCS1-34007	2	Laboratory Control Sample				Run: IC2-C_120626A			06/28/12 02:33	
Chloride		35.9	mg/kg	1.0	101	70	130			
Sulfate		1730	mg/kg	1.0	95	70	130			
Sample ID: C12041044-011CPDS	2	Post Digestion/Distillation Spike				Run: IC2-C_120626A			06/28/12 04:28	
Chloride		280	mg/kg	1.0	94	80	120			
Sulfate		2570	mg/kg	1.0	92	80	120			
Sample ID: C12041044-028CDUP	2	Sample Duplicate				Run: IC2-C_120626A			06/28/12 06:23	
Chloride		14.0	mg/kg	1.0				1.8	20	
Sulfate		28.1	mg/kg	1.0				2.9	20	

Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 07/10/12

Client: Rio Grande Resources Corporation

Report Date: 06/13/12

Project: Mt. Taylor Mine Closure Plan

Work Order: C12041044

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E903.0										Batch: 34025
Sample ID: C12041044-023BMS		Sample Matrix Spike				Run: BERTHOLD 770-1_120621B				07/03/12 05:26
Radium 226		2.9	pCi/g-dry		85	70	130			
Sample ID: C12041044-023BMSD		Sample Matrix Spike Duplicate				Run: BERTHOLD 770-1_120621B				07/03/12 05:26
Radium 226		2.8	pCi/g-dry		85	70	130	3.6	22.9	
Sample ID: LCS-34025		Laboratory Control Sample				Run: BERTHOLD 770-1_120621B				07/03/12 05:26
Radium 226		0.41	pCi/g-dry		85	70	130			
Sample ID: MB-34025	3	Method Blank				Run: BERTHOLD 770-1_120621B				07/03/12 07:45
Radium 226		0.0009	pCi/g-dry							U
Radium 226 precision (±)		0.004	pCi/g-dry							
Radium 226 MDC		0.006	pCi/g-dry							
Method: E903.0										Batch: 34023
Sample ID: C12041044-022BMS		Sample Matrix Spike				Run: BERTHOLD 770-1_120621C				07/10/12 16:03
Radium 226		3.6	pCi/g-dry		80	70	130			
Sample ID: C12041044-022BMSD		Sample Matrix Spike Duplicate				Run: BERTHOLD 770-1_120621C				07/10/12 16:03
Radium 226		3.7	pCi/g-dry		85	70	130	2.9	22.7	
Sample ID: LCS-34023		Laboratory Control Sample				Run: BERTHOLD 770-1_120621C				07/10/12 16:03
Radium 226		0.33	pCi/g-dry		69	70	130			S
- LCS response is outside of the acceptance range for this analysis. Since the MB, MS, and MSD are acceptable the batch is approved.										
Sample ID: MB-34023	3	Method Blank				Run: BERTHOLD 770-1_120621C				07/10/12 16:03
Radium 226		-0.002	pCi/g-dry							U
Radium 226 precision (±)		0.006	pCi/g-dry							
Radium 226 MDC		0.01	pCi/g-dry							
Method: E903.0										Batch: 34004
Sample ID: MB-34004	3	Method Blank				Run: BERTHOLD 770-2_120620A				07/02/12 23:59
Radium 226		0.1	pCi/g-dry							
Radium 226 precision (±)		0.03	pCi/g-dry							
Radium 226 MDC		0.02	pCi/g-dry							
Sample ID: LCS-34004		Laboratory Control Sample				Run: BERTHOLD 770-2_120620A				07/02/12 23:59
Radium 226		1.4	pCi/g-dry		87	70	130			
Sample ID: C12041044-003BMS		Sample Matrix Spike				Run: BERTHOLD 770-2_120620A				07/03/12 03:34
Radium 226		2.5	pCi/g-dry		104	70	130			
Sample ID: C12041044-003BMSD		Sample Matrix Spike Duplicate				Run: BERTHOLD 770-2_120620A				07/03/12 03:34
Radium 226		2.2	pCi/g-dry		87	70	130	12	20.8	

Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

U - Not detected at minimum detectable concentration

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 07/10/12

Client: Rio Grande Resources Corporation

Report Date: 06/13/12

Project: Mt. Taylor Mine Closure Plan

Work Order: C12041044

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: RA-05										Batch: 34004
Sample ID: LCS-34004		Laboratory Control Sample				Run: TENNELEC-3_120620B				06/25/12 15:52
Radium 228		1.5	pCi/g-dry		104	70	130			
Sample ID: MB-34004	3	Method Blank				Run: TENNELEC-3_120620B				06/25/12 15:52
Radium 228		0.07	pCi/g-dry							U
Radium 228 precision (±)		0.2	pCi/g-dry							
Radium 228 MDC		0.3	pCi/g-dry							
Sample ID: C12041044-003BMS		Sample Matrix Spike				Run: TENNELEC-3_120620B				06/25/12 15:52
Radium 228		1.8	pCi/g-dry		93	70	130			
Sample ID: C12041044-003BMSD		Sample Matrix Spike Duplicate				Run: TENNELEC-3_120620B				06/25/12 15:52
Radium 228		1.9	pCi/g-dry		101	70	130	6.0	33.5	
Method: RA-05										Batch: 34025
Sample ID: LCS-34025		Laboratory Control Sample				Run: TENNELEC-3_120621B				06/26/12 17:02
Radium 228		0.24	pCi/g-dry		83	70	130			
Sample ID: MB-34025	3	Method Blank				Run: TENNELEC-3_120621B				06/26/12 17:02
Radium 228		0.002	pCi/g-dry							U
Radium 228 precision (±)		0.03	pCi/g-dry							
Radium 228 MDC		0.04	pCi/g-dry							
Sample ID: C12041044-028BMS		Sample Matrix Spike				Run: TENNELEC-3_120621B				06/26/12 17:02
Radium 228		1.7	pCi/g-dry		71	70	130			
Sample ID: C12041044-028BMSD		Sample Matrix Spike Duplicate				Run: TENNELEC-3_120621B				06/26/12 17:02
Radium 228		1.7	pCi/g-dry		78	70	130	3.0	32.3	
Method: RA-05										Batch: Ra228-4136
Sample ID: LCS-34023		Laboratory Control Sample				Run: TENNELEC-3_120621D				07/05/12 21:05
Radium 228		0.36	pCi/g-dry		129	70	130			
Sample ID: MB-34023	3	Method Blank				Run: TENNELEC-3_120621D				07/05/12 21:05
Radium 228		-0.010	pCi/g-dry							U
Radium 228 precision (±)		0.04	pCi/g-dry							
Radium 228 MDC		0.06	pCi/g-dry							
Sample ID: C12041044-022BMS		Sample Matrix Spike				Run: TENNELEC-3_120621D				07/05/12 21:06
Radium 228		1.7	pCi/g-dry		80	70	130			
Sample ID: C12041044-022BMSD		Sample Matrix Spike Duplicate				Run: TENNELEC-3_120621D				07/05/12 21:06
Radium 228		2.1	pCi/g-dry		110	70	130	19	36.9	

Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 07/10/12

Client: Rio Grande Resources Corporation

Report Date: 06/13/12

Project: Mt. Taylor Mine Closure Plan

Work Order: C12041044

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Analytical Run: ICPMS2-C_120501A	
Sample ID: ICV	8	Initial Calibration Verification Standard							05/01/12 13:14	
Arsenic		0.0490	mg/L	0.0010	98	90	110			
Barium		0.0486	mg/L	0.0010	97	90	110			
Cadmium		0.0491	mg/L	0.0010	98	90	110			
Chromium		0.0501	mg/L	0.0010	100	90	110			
Lead		0.0483	mg/L	0.0010	97	90	110			
Selenium		0.0501	mg/L	0.0010	100	90	110			
Silver		0.0207	mg/L	0.0010	103	90	110			
Uranium		0.0485	mg/L	0.00030	97	90	110			
Sample ID: ICSA	8	Interference Check Sample A							05/01/12 13:16	
Arsenic		0.0103	mg/L	0.0010						
Barium		3.16E-05	mg/L	0.0010						
Cadmium		0.0104	mg/L	0.0010						
Chromium		0.0104	mg/L	0.0010						
Lead		3.39E-05	mg/L	0.0010						
Selenium		8.30E-06	mg/L	0.0010						
Silver		0.0108	mg/L	0.0010						
Uranium		6.80E-05	mg/L	0.00030						
Sample ID: ICSAB	8	Interference Check Sample AB							05/01/12 13:19	
Arsenic		0.0103	mg/L	0.0010	103	70	130			
Barium		4.64E-05	mg/L	0.0010						
Cadmium		0.0106	mg/L	0.0010	106	70	130			
Chromium		0.0105	mg/L	0.0010	105	70	130			
Lead		3.92E-05	mg/L	0.0010						
Selenium		1.39E-05	mg/L	0.0010						
Silver		0.0107	mg/L	0.0010	107	70	130			
Uranium		1.47E-05	mg/L	0.00030						
Method: SW6020									Batch: 33469	
Sample ID: MB-33469	8	Method Blank				Run: ICPMS2-C_120501A			05/01/12 13:45	
Arsenic		ND	mg/L	6E-05						
Barium		0.005	mg/L	3E-05						
Cadmium		0.0001	mg/L	1E-05						
Chromium		0.002	mg/L	4E-05						
Lead		0.0001	mg/L	3E-05						
Selenium		0.0002	mg/L	0.0002						
Silver		0.002	mg/L	3E-05						
Uranium		0.001	mg/L	1E-05						
Sample ID: LCS3-33469	8	Laboratory Control Sample				Run: ICPMS2-C_120501A			05/01/12 13:47	
Arsenic		0.47	mg/L	0.0010	93	80	120			
Barium		0.51	mg/L	0.050	100	80	120			
Cadmium		0.24	mg/L	0.0010	96	80	120			
Chromium		0.49	mg/L	0.0050	98	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 07/10/12

Client: Rio Grande Resources Corporation

Report Date: 06/13/12

Project: Mt. Taylor Mine Closure Plan

Work Order: C12041044

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 33469
Sample ID: LCS3-33469	8	Laboratory Control Sample				Run: ICPMS2-C_120501A				05/01/12 13:47
Lead		0.51	mg/L	0.0010	101	80	120			
Selenium		0.43	mg/L	0.0010	86	80	120			
Silver		0.054	mg/L	0.0020	104	80	120			
Uranium		0.51	mg/L	0.00060	101	80	120			
Sample ID: LCSD3-33469	8	Laboratory Control Sample Duplicate				Run: ICPMS2-C_120501A				05/01/12 13:50
Arsenic		0.47	mg/L	0.0010	94	80	120	0.9	20	
Barium		0.51	mg/L	0.050	101	80	120	1.1	20	
Cadmium		0.24	mg/L	0.0010	96	80	120	0.1	20	
Chromium		0.49	mg/L	0.0050	97	80	120	0.4	20	
Lead		0.51	mg/L	0.0010	102	80	120	0.8	20	
Selenium		0.43	mg/L	0.0010	86	80	120	0.6	20	
Silver		0.055	mg/L	0.0020	106	80	120	2.1	20	
Uranium		0.51	mg/L	0.00060	101	80	120	0.0	20	
Sample ID: C12041044-004ADIL	8	Serial Dilution				Run: ICPMS2-C_120501A				05/01/12 13:58
Arsenic		0.0054	mg/L	0.0050		0	0		20	N
Barium		0.037	mg/L	0.050		0	0		20	
Cadmium		0.00042	mg/L	0.0050		0	0		20	N
Chromium		0.0071	mg/L	0.0050		0	0	5.0	20	
Lead		0.0028	mg/L	0.0050		0	0		20	N
Selenium		0.0026	mg/L	0.0050		0	0		20	N
Silver		0.00070	mg/L	0.010		0	0		20	N
Uranium		0.0029	mg/L	0.0030		0	0		20	
Sample ID: C12041044-003AMS3	8	Sample Matrix Spike				Run: ICPMS2-C_120501A				05/01/12 14:26
Arsenic		0.47	mg/L	0.0010	94	75	125			
Barium		0.53	mg/L	0.050	103	75	125			
Cadmium		0.24	mg/L	0.0010	98	75	125			
Chromium		0.50	mg/L	0.0050	98	75	125			
Lead		0.52	mg/L	0.0010	103	75	125			
Selenium		0.44	mg/L	0.0010	88	75	125			
Silver		0.054	mg/L	0.0020	22	75	125			S
Uranium		0.54	mg/L	0.00060	106	75	125			
Method: SW6020										Batch: 33470
Sample ID: MB-33470	8	Method Blank				Run: ICPMS2-C_120501A				05/01/12 14:35
Arsenic		0.0003	mg/L	6E-05						
Barium		0.005	mg/L	3E-05						
Cadmium		0.0001	mg/L	1E-05						
Chromium		0.004	mg/L	4E-05						
Lead		9E-05	mg/L	3E-05						
Selenium		0.0003	mg/L	0.0002						
Silver		0.0006	mg/L	3E-05						
Uranium		0.0006	mg/L	1E-05						

Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 07/10/12

Client: Rio Grande Resources Corporation

Report Date: 06/13/12

Project: Mt. Taylor Mine Closure Plan

Work Order: C12041044

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 33470
Sample ID: LCS3-33470	8	Laboratory Control Sample				Run: ICPMS2-C_120501A				05/01/12 14:49
Arsenic		0.47	mg/L	0.0010	95	80	120			
Barium		0.52	mg/L	0.050	102	80	120			
Cadmium		0.24	mg/L	0.0010	98	80	120			
Chromium		0.49	mg/L	0.0050	97	80	120			
Lead		0.51	mg/L	0.0010	103	80	120			
Selenium		0.45	mg/L	0.0010	89	80	120			
Silver		0.057	mg/L	0.0020	112	80	120			
Uranium		0.52	mg/L	0.00060	104	80	120			
Sample ID: LCSD3-33470	8	Laboratory Control Sample Duplicate				Run: ICPMS2-C_120501A				05/01/12 14:51
Arsenic		0.47	mg/L	0.0010	94	80	120	1.1	20	
Barium		0.52	mg/L	0.050	103	80	120	0.4	20	
Cadmium		0.24	mg/L	0.0010	98	80	120	0.0	20	
Chromium		0.49	mg/L	0.0050	98	80	120	1.0	20	
Lead		0.51	mg/L	0.0010	103	80	120	0.2	20	
Selenium		0.44	mg/L	0.0010	89	80	120	0.3	20	
Silver		0.056	mg/L	0.0020	110	80	120	1.9	20	
Uranium		0.52	mg/L	0.00060	103	80	120	0.7	20	
Sample ID: C12041044-010ADIL	8	Serial Dilution				Run: ICPMS2-C_120501A				05/01/12 14:59
Arsenic		0.0083	mg/L	0.0050		0	0	8.8	20	
Barium		1.1	mg/L	0.050		0	0	3.4	20	
Cadmium		0.00051	mg/L	0.0050		0	0		20	N
Chromium		0.0088	mg/L	0.0050		0	0	10	20	
Lead		0.0032	mg/L	0.0050		0	0		20	N
Selenium		0.019	mg/L	0.0050		0	0		20	N
Silver		ND	mg/L	0.010		0	0		20	
Uranium		0.033	mg/L	0.0030		0	0	0.5	20	
Sample ID: C12041044-009AMS3	8	Sample Matrix Spike				Run: ICPMS2-C_120501A				05/01/12 15:30
Arsenic		0.47	mg/L	0.0010	95	75	125			
Barium		0.54	mg/L	0.050	103	75	125			
Cadmium		0.25	mg/L	0.0010	99	75	125			
Chromium		0.49	mg/L	0.0050	98	75	125			
Lead		0.51	mg/L	0.0010	102	75	125			
Selenium		0.45	mg/L	0.0010	90	75	125			
Silver		0.054	mg/L	0.0020	21	75	125			S
Uranium		0.52	mg/L	0.00060	105	75	125			

Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 07/10/12

Client: Rio Grande Resources Corporation

Report Date: 06/13/12

Project: Mt. Taylor Mine Closure Plan

Work Order: C12041044

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Analytical Run: ICPMS2-C_120504A	
Sample ID: ICV	8	Initial Calibration Verification Standard							05/04/12 13:40	
Arsenic		0.0494	mg/L	0.0010	99	90	110			
Barium		0.0500	mg/L	0.0010	100	90	110			
Cadmium		0.0497	mg/L	0.0010	99	90	110			
Chromium		0.0490	mg/L	0.0010	98	90	110			
Lead		0.0497	mg/L	0.0010	99	90	110			
Selenium		0.0498	mg/L	0.0010	100	90	110			
Silver		0.0209	mg/L	0.0010	105	90	110			
Uranium		0.0510	mg/L	0.00030	102	90	110			
Sample ID: ICSA	8	Interference Check Sample A							05/04/12 13:43	
Arsenic		0.0106	mg/L	0.0010						
Barium		8.40E-06	mg/L	0.0010						
Cadmium		0.0106	mg/L	0.0010						
Chromium		0.0105	mg/L	0.0010						
Lead		3.57E-05	mg/L	0.0010						
Selenium		0.000221	mg/L	0.0010						
Silver		0.0109	mg/L	0.0010						
Uranium		6.77E-05	mg/L	0.00030						
Sample ID: ICSAB	8	Interference Check Sample AB							05/04/12 13:46	
Arsenic		0.0104	mg/L	0.0010	104	70	130			
Barium		7.45E-05	mg/L	0.0010						
Cadmium		0.0104	mg/L	0.0010	104	70	130			
Chromium		0.0104	mg/L	0.0010	104	70	130			
Lead		3.87E-05	mg/L	0.0010						
Selenium		3.16E-05	mg/L	0.0010						
Silver		0.0106	mg/L	0.0010	105	70	130			
Uranium		1.56E-05	mg/L	0.00030						
Method: SW6020									Batch: 33541	
Sample ID: MB-33541	8	Method Blank				Run: ICPMS2-C_120504A			05/04/12 14:11	
Arsenic		0.0005	mg/L	6E-05						
Barium		0.006	mg/L	3E-05						
Cadmium		0.0001	mg/L	1E-05						
Chromium		0.003	mg/L	4E-05						
Lead		0.0002	mg/L	3E-05						
Selenium		ND	mg/L	0.0002						
Silver		0.002	mg/L	3E-05						
Uranium		0.0003	mg/L	1E-05						
Sample ID: LCS3-33541	8	Laboratory Control Sample				Run: ICPMS2-C_120504A			05/04/12 14:14	
Arsenic		0.46	mg/L	0.0010	93	80	120			
Barium		0.49	mg/L	0.050	96	80	120			
Cadmium		0.23	mg/L	0.0010	94	80	120			
Chromium		0.48	mg/L	0.0050	95	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 07/10/12

Client: Rio Grande Resources Corporation

Report Date: 06/13/12

Project: Mt. Taylor Mine Closure Plan

Work Order: C12041044

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 33541
Sample ID: LCS3-33541	8	Laboratory Control Sample				Run: ICPMS2-C_120504A				05/04/12 14:14
Lead		0.49	mg/L	0.0010	97	80	120			
Selenium		0.44	mg/L	0.0010	89	80	120			
Silver		0.051	mg/L	0.0020	97	80	120			
Uranium		0.50	mg/L	0.00060	99	80	120			
Sample ID: LCSD3-33541	8	Laboratory Control Sample Duplicate				Run: ICPMS2-C_120504A				05/04/12 14:16
Arsenic		0.48	mg/L	0.0010	95	80	120	2.6	20	
Barium		0.50	mg/L	0.050	98	80	120	1.9	20	
Cadmium		0.24	mg/L	0.0010	96	80	120	2.3	20	
Chromium		0.49	mg/L	0.0050	98	80	120	3.7	20	
Lead		0.50	mg/L	0.0010	100	80	120	2.8	20	
Selenium		0.46	mg/L	0.0010	91	80	120	2.4	20	
Silver		0.053	mg/L	0.0020	101	80	120	4.0	20	
Uranium		0.50	mg/L	0.00060	99	80	120	0.1	20	
Sample ID: C12041044-022AMS3	8	Sample Matrix Spike				Run: ICPMS2-C_120504A				05/04/12 14:25
Arsenic		0.48	mg/L	0.0010	94	75	125			
Barium		0.55	mg/L	0.050	100	75	125			
Cadmium		0.24	mg/L	0.0010	96	75	125			
Chromium		0.48	mg/L	0.0050	95	75	125			
Lead		0.50	mg/L	0.0010	100	75	125			
Selenium		0.47	mg/L	0.0010	91	75	125			
Silver		0.050	mg/L	0.0020	20	75	125			S
Uranium		0.64	mg/L	0.00060	100	75	125			
Sample ID: C12041044-028ADIL	8	Serial Dilution				Run: ICPMS2-C_120504A				05/04/12 14:58
Arsenic		0.0038	mg/L	0.0050		0	0		20	N
Barium		0.029	mg/L	0.050		0	0		20	
Cadmium		0.00016	mg/L	0.0050		0	0		20	N
Chromium		0.0040	mg/L	0.0050		0	0		20	N
Lead		0.0018	mg/L	0.0050		0	0		20	N
Selenium		0.0079	mg/L	0.0050		0	0		20	N
Silver		ND	mg/L	0.010		0	0		20	
Uranium		0.011	mg/L	0.0030		0	0	5.0	20	

Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

S - Spike recovery outside of advisory limits.

ND - Not detected at the reporting limit.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 07/10/12

Client: Rio Grande Resources Corporation

Report Date: 06/13/12

Project: Mt. Taylor Mine Closure Plan

Work Order: C12041044

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Analytical Run: ICPMS4-C_120425B	
Sample ID: ICV	8	Initial Calibration Verification Standard							04/25/12 11:08	
Arsenic		0.0486	mg/L	0.0010	97	90	110			
Barium		0.0497	mg/L	0.0010	99	90	110			
Cadmium		0.0501	mg/L	0.0010	100	90	110			
Chromium		0.0491	mg/L	0.0010	98	90	110			
Lead		0.0497	mg/L	0.0010	99	90	110			
Selenium		0.0485	mg/L	0.0010	97	90	110			
Silver		0.0193	mg/L	0.0010	97	90	110			
Uranium		0.0481	mg/L	0.00030	96	90	110			
Sample ID: ICSA	8	Interference Check Sample A							04/25/12 11:12	
Arsenic		2.21E-05	mg/L	0.0010						
Barium		2.39E-05	mg/L	0.0010						
Cadmium		4.21E-05	mg/L	0.0010						
Chromium		2.05E-05	mg/L	0.0010						
Lead		1.30E-05	mg/L	0.0010						
Selenium		7.84E-05	mg/L	0.0010						
Silver		-0.000229	mg/L	0.0010						
Uranium		2.36E-05	mg/L	0.00030						
Sample ID: ICSAB	8	Interference Check Sample AB							04/25/12 11:17	
Arsenic		0.0113	mg/L	0.0010	113	70	130			
Barium		1.46E-05	mg/L	0.0010						
Cadmium		0.0109	mg/L	0.0010	109	70	130			
Chromium		0.0115	mg/L	0.0010	115	70	130			
Lead		5.40E-06	mg/L	0.0010						
Selenium		7.00E-07	mg/L	0.0010						
Silver		0.00988	mg/L	0.0010	99	70	130			
Uranium		8.30E-06	mg/L	0.00030						
Method: SW6020									Batch: 33440	
Sample ID: MB-33440	8	Method Blank				Run: ICPMS4-C_120425B			04/25/12 19:38	
Arsenic		0.0004	mg/L	7E-05						
Barium		0.01	mg/L	0.0001						
Cadmium		0.0001	mg/L	4E-05						
Chromium		ND	mg/L	0.001						
Lead		0.0002	mg/L	3E-05						
Selenium		0.0001	mg/L	6E-05						
Silver		0.001	mg/L	2E-05						
Uranium		0.004	mg/L	5E-05						
Sample ID: LCS3-33440	8	Laboratory Control Sample				Run: ICPMS4-C_120425B			04/25/12 19:43	
Arsenic		0.46	mg/L	0.0010	91	80	120			
Barium		0.50	mg/L	0.050	98	80	120			
Cadmium		0.24	mg/L	0.0010	97	80	120			
Chromium		0.50	mg/L	0.0050	101	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 07/10/12

Client: Rio Grande Resources Corporation

Report Date: 06/13/12

Project: Mt. Taylor Mine Closure Plan

Work Order: C12041044

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 33440
Sample ID: LCS3-33440	8	Laboratory Control Sample				Run: ICPMS4-C_120425B			04/25/12 19:43	
Lead		0.51	mg/L	0.0010	103	80	120			
Selenium		0.44	mg/L	0.0010	87	80	120			
Silver		0.053	mg/L	0.0010	104	80	120			
Uranium		0.50	mg/L	0.00030	99	80	120			
Sample ID: LCSD3-33440	8	Laboratory Control Sample Duplicate				Run: ICPMS4-C_120425B			04/25/12 20:05	
Arsenic		0.47	mg/L	0.0010	94	80	120	2.8	20	
Barium		0.50	mg/L	0.050	99	80	120	1.0	20	
Cadmium		0.25	mg/L	0.0010	98	80	120	1.0	20	
Chromium		0.52	mg/L	0.0050	104	80	120	3.4	20	
Lead		0.51	mg/L	0.0010	103	80	120	0.0	20	
Selenium		0.44	mg/L	0.0010	89	80	120	1.5	20	
Silver		0.054	mg/L	0.0010	106	80	120	1.7	20	
Uranium		0.51	mg/L	0.00030	100	80	120	1.0	20	
Sample ID: C12041044-002ADIL	8	Serial Dilution				Run: ICPMS4-C_120425B			04/25/12 20:19	
Arsenic		0.0017	mg/L	0.0010		0	0		20	N
Barium		0.065	mg/L	0.050		0	0	2.8	20	
Cadmium		ND	mg/L	0.0010		0	0		20	
Chromium		ND	mg/L	0.011		0	0		20	
Lead		0.0028	mg/L	0.0010		0	0		20	N
Selenium		ND	mg/L	0.0010		0	0		20	
Silver		ND	mg/L	0.0010		0	0		20	
Uranium		0.010	mg/L	0.00052		0	0	5.8	20	
Sample ID: C12041044-001AMS3	8	Sample Matrix Spike				Run: ICPMS4-C_120425B			04/25/12 21:40	
Arsenic		0.48	mg/L	0.0010	94	75	125			
Barium		0.68	mg/L	0.050	102	75	125			
Cadmium		0.25	mg/L	0.0010	98	75	125			
Chromium		0.55	mg/L	0.0050	107	75	125			
Lead		0.54	mg/L	0.0010	105	75	125			
Selenium		0.46	mg/L	0.0010	92	75	125			
Silver		0.053	mg/L	0.0010	21	75	125			S
Uranium		0.60	mg/L	0.00030	104	75	125			

Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 07/10/12

Client: Rio Grande Resources Corporation

Report Date: 06/13/12

Project: Mt. Taylor Mine Closure Plan

Work Order: C12041044

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Analytical Run: ICPMS4-C_120502A	
Sample ID: ICV	8	Initial Calibration Verification Standard							05/02/12 11:40	
Arsenic		0.0474	mg/L	0.0010	95	90	110			
Barium		0.0493	mg/L	0.0010	99	90	110			
Cadmium		0.0496	mg/L	0.0010	99	90	110			
Chromium		0.0478	mg/L	0.0010	96	90	110			
Lead		0.0491	mg/L	0.0010	98	90	110			
Selenium		0.0481	mg/L	0.0010	96	90	110			
Silver		0.0199	mg/L	0.0010	99	90	110			
Uranium		0.0480	mg/L	0.00030	96	90	110			
Sample ID: ICSA	8	Interference Check Sample A							05/02/12 11:44	
Arsenic		0.00936	mg/L	0.0010						
Barium		2.85E-05	mg/L	0.0010						
Cadmium		0.00986	mg/L	0.0010						
Chromium		0.00959	mg/L	0.0010						
Lead		2.17E-05	mg/L	0.0010						
Selenium		5.69E-05	mg/L	0.0010						
Silver		0.00979	mg/L	0.0010						
Uranium		2.50E-05	mg/L	0.00030						
Sample ID: ICSAB	8	Interference Check Sample AB							05/02/12 11:49	
Arsenic		0.0100	mg/L	0.0010	100	70	130			
Barium		4.90E-05	mg/L	0.0010						
Cadmium		0.00995	mg/L	0.0010	99	70	130			
Chromium		0.0102	mg/L	0.0010	102	70	130			
Lead		8.90E-06	mg/L	0.0010						
Selenium		1.01E-05	mg/L	0.0010						
Silver		0.00963	mg/L	0.0010	96	70	130			
Uranium		4.30E-06	mg/L	0.00030						
Method: SW6020									Batch: 33486	
Sample ID: MB-33486	8	Method Blank				Run: ICPMS4-C_120502A			05/02/12 20:11	
Arsenic		0.001	mg/L	7E-05						
Barium		0.004	mg/L	0.0001						
Cadmium		0.0001	mg/L	4E-05						
Chromium		0.003	mg/L	0.001						
Lead		0.0001	mg/L	3E-05						
Selenium		0.0001	mg/L	6E-05						
Silver		0.0002	mg/L	2E-05						
Uranium		0.0004	mg/L	5E-05						
Sample ID: LCS3-33486	8	Laboratory Control Sample				Run: ICPMS4-C_120502A			05/02/12 20:16	
Arsenic		0.47	mg/L	0.0010	94	80	120			
Barium		0.52	mg/L	0.050	102	80	120			
Cadmium		0.26	mg/L	0.0010	103	80	120			
Chromium		0.53	mg/L	0.0050	104	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 07/10/12

Client: Rio Grande Resources Corporation

Report Date: 06/13/12

Project: Mt. Taylor Mine Closure Plan

Work Order: C12041044

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 33486
Sample ID: LCS3-33486	8	Laboratory Control Sample				Run: ICPMS4-C_120502A				05/02/12 20:16
Lead		0.54	mg/L	0.0010	108	80	120			
Selenium		0.45	mg/L	0.0010	90	80	120			
Silver		0.052	mg/L	0.0010	104	80	120			
Uranium		0.51	mg/L	0.00030	101	80	120			
Sample ID: LCSD3-33486	8	Laboratory Control Sample Duplicate				Run: ICPMS4-C_120502A				05/02/12 20:20
Arsenic		0.50	mg/L	0.0010	101	80	120	6.7	20	
Barium		0.54	mg/L	0.050	107	80	120	4.1	20	
Cadmium		0.27	mg/L	0.0010	106	80	120	3.5	20	
Chromium		0.58	mg/L	0.0050	115	80	120	9.7	20	
Lead		0.57	mg/L	0.0010	114	80	120	4.6	20	
Selenium		0.48	mg/L	0.0010	96	80	120	7.2	20	
Silver		0.055	mg/L	0.0010	110	80	120	5.5	20	
Uranium		0.52	mg/L	0.00030	104	80	120	3.0	20	
Sample ID: C12041044-016AMS3	8	Sample Matrix Spike				Run: ICPMS4-C_120502A				05/02/12 21:15
Arsenic		0.50	mg/L	0.0010	99	75	125			
Barium		0.60	mg/L	0.050	108	75	125			
Cadmium		0.26	mg/L	0.0010	106	75	125			
Chromium		0.57	mg/L	0.0050	113	75	125			
Lead		0.56	mg/L	0.0010	112	75	125			
Selenium		0.49	mg/L	0.0010	96	75	125			
Silver		0.054	mg/L	0.0010	21	75	125			S
Uranium		0.56	mg/L	0.00030	106	75	125			

Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 07/10/12

Client: Rio Grande Resources Corporation

Report Date: 06/13/12

Project: Mt. Taylor Mine Closure Plan

Work Order: C12041044

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW7470A										Analytical Run: CVAA_C203_120426A
Sample ID: ICV	Initial Calibration Verification Standard									04/26/12 11:49
Mercury		0.00526	mg/L	0.00010	105	90	110			
Method: SW7470A										Batch: 33421
Sample ID: MB-33421	Method Blank					Run: CVAA_C203_120426A				04/26/12 12:32
Mercury		ND	mg/L	3E-05						
Sample ID: LCS-33421	Laboratory Control Sample					Run: CVAA_C203_120426A				04/26/12 12:33
Mercury		0.0053	mg/L	0.0020	106	85	115			
Sample ID: LCSD-33421	Laboratory Control Sample Duplicate					Run: CVAA_C203_120426A				04/26/12 12:35
Mercury		0.0054	mg/L	0.0020	108	85	115	1.1	10	
Sample ID: C12041044-001ASD	Serial Dilution					Run: CVAA_C203_120426A				04/26/12 12:37
Mercury		ND	mg/L	0.0020						
Method: SW7470A										Analytical Run: CVAA_C203_120430A
Sample ID: ICV	Initial Calibration Verification Standard									04/30/12 13:50
Mercury		0.00522	mg/L	0.00010	104	90	110			
Method: SW7470A										Batch: 33433
Sample ID: MB-33433	Method Blank					Run: CVAA_C203_120430A				04/30/12 15:12
Mercury		ND	mg/L	3E-05						
Sample ID: LCS-33433	Laboratory Control Sample					Run: CVAA_C203_120430A				04/30/12 15:14
Mercury		0.00520	mg/L	0.0020	104	85	115			
Sample ID: C12041044-003AMS	Sample Matrix Spike					Run: CVAA_C203_120430A				04/30/12 15:19
Mercury		0.00519	mg/L	0.0020	104	85	115			
Method: SW7470A										Batch: 33434
Sample ID: MB-33434	Method Blank					Run: CVAA_C203_120430A				04/30/12 15:30
Mercury		ND	mg/L	3E-05						
Sample ID: C12041044-009AMS	Sample Matrix Spike					Run: CVAA_C203_120430A				04/30/12 15:36
Mercury		0.00996	mg/L	0.0020	100	85	115			
Sample ID: LCS-33434	Laboratory Control Sample					Run: CVAA_C203_120430A				04/30/12 15:45
Mercury		0.00504	mg/L	0.0020	101	85	115			
Method: SW7470A										Batch: 33465
Sample ID: MB-33465	Method Blank					Run: CVAA_C203_120430A				04/30/12 15:52
Mercury		ND	mg/L	3E-05						
Sample ID: LCS-33465	Laboratory Control Sample					Run: CVAA_C203_120430A				04/30/12 15:55
Mercury		0.00497	mg/L	0.0020	99	85	115			
Sample ID: C12041044-016AMS	Sample Matrix Spike					Run: CVAA_C203_120430A				04/30/12 16:04
Mercury		0.0105	mg/L	0.0020	105	85	115			

Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 07/10/12

Client: Rio Grande Resources Corporation **Report Date:** 06/13/12

Project: Mt. Taylor Mine Closure Plan **Work Order:** C12041044

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW7470A									Analytical Run: CVAA_C203_120502A	
Sample ID: ICV	Initial Calibration Verification Standard								05/02/12 10:05	
Mercury		0.00516	mg/L	0.00010	103	90	110			
Method: SW7470A									Batch: 33523	
Sample ID: MB-33523	Method Blank					Run: CVAA_C203_120502A			05/02/12 11:22	
Mercury		ND	mg/L	3E-05						
Sample ID: LCS-33523	Laboratory Control Sample					Run: CVAA_C203_120502A			05/02/12 11:23	
Mercury		0.00530	mg/L	0.0020	106	85	115			
Sample ID: LCSD-33523	Laboratory Control Sample Duplicate					Run: CVAA_C203_120502A			05/02/12 11:25	
Mercury		0.00541	mg/L	0.0020	108	85	115	2.1	10	
Sample ID: C12041044-022AMS	Sample Matrix Spike					Run: CVAA_C203_120502A			05/02/12 11:27	
Mercury		0.00534	mg/L	0.0020	107	85	115			
Sample ID: C12041044-028ADIL	Serial Dilution					Run: CVAA_C203_120502A			05/02/12 11:39	
Mercury		ND	mg/L	0.0020					10	

Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

Standard Reporting Procedures

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Workorder Receipt Checklist

Rio Grande Resources Corporation C12041044

Login completed by: Kristy Gisse
Date Received: 4/20/2012
Reviewed by: BL2000\kschroeder
Received by: kg
Reviewed Date: 4/26/2012
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☐	No ☑	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Container/Temp Blank temperature:	11.2°C No Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Contact and Corrective Action Comments:

Sample MT-6-A-S3 insufficient volume for testing. Cancelled per phone conversation with Barbara Everett.

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Grande Resources Corp	Project Name, PWS, Permit, Etc.: Mt. Taylor Mine Closure Plan	Sample Origin: State: NM	EPA/State Compliance: Yes ☒ No ☐
Report Mail Address: PO Box 1150, Grants, NM 87020. Additional e-mail copy to beverett@kleinfelder.com	Contact Name: Barbara Everett (Kleinfelder) Phone/Fax: (505) 344-7373, (505) 280-1079 (Cell)	Email: beverett@kleinfelder.com	Sampler: (Please Print) Barbara Everett, Ed Loescher
Invoice Address: PO Box 1150, Grants, NM 87020	Invoice Contact & Phone: Jeanette Lister 505-287-7971	Purchase Order:	Quote/Bottle Order: C3778

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

- ☐ DW
- ☐ GSA
- ☐ POTW/WWTP
- ☐ State: NM
- ☐ Other: _____
- ☐ A2LA
- ☒ EDD/EDT (Electronic Data) Format: excel
- ☐ LEVEL IV
- ☐ NELAC

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	Number of Containers (Sample Type: A Air, W Water, S Soils/Solids, V Vegetation, B Biossay, O Other)	SPLP Extract	RCRA Metals + Uranium	Ra226 & Ra228	Cl & SO4 by IC 300.0	RCI	SEE ATTACHED	Normal Turnaround (TAT)	RUSH	Comments
1 MT-1-F	4-10-12	10:45	Soil Sediment		X	X	X				X		6" B.G.
2 MT-2-D	4-10-12	10:15	Soil Sediment		X	X	X				X		6' B.G.
3 MT-3-F	4-10-12	11:10	Soil Sediment		X	X	X				X		6" B.G
4 MT-4-F	4-10-12	9:35	Soil Sediment		X	X	X	X			X		6" B.G
5 MT-5-F	4-10-12	10:00	Soil Sediment		X	X	X	X			X		6" B.G.
6 MT-7-C	4-10-12	9:45	Soil Sediment		X	X	X				X		6" B.G.
7 MT-UP-E	4-10-12	9:00	Soil Sediment		X	X	X				X		6" B.G.
8 MT-A-C	4-10-12	10:55	Soil Sediment		X	X	X				X		6" B.G.
9 MT-Borrow/Backyard	4-10-12	14:00	Soil Sediment		X	X	X				X		6" B.G.
10			Soil Sediment								X		6" B.G.

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Shipped by: FE-NOA

Cooler ID(s): 6 Buckets

Receipt Temp: 11.2 °C

On Ice: Yes (No)

Custody Seal Y (N) Intact Y N Signature Match Y N

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): ED LOESCHER	Date/Time: 4/11/2012	Signature:
Relinquished by (print): BARBARA EVERETT	Date/Time: 4/19/2012 16:00	Signature:
Received by (print): Barbara Everett	Date/Time: 4/11/2012 15:00	Signature:
Received by (print):	Date/Time:	Signature:
Received by Laboratory:	Date/Time: 4-20-12 9:45	Signature: Kris Gross

Sample Disposal: Return to Client: _____ Lab Disposal: X

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

Visit our web site at www.energylab.com for additional information.

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Grande Resources Corp	Project Name, PWS, Permit, Etc. Mt. Taylor Mine Closure Plan	Sample Origin State: NM	EPA/State Compliance: Yes ☒ No ☐
Report Mail Address: PO Box 1150 Grants, NM 87020 Additional e-mail copy to beverett@kleinfelder.com	Contact Name: Barbara Everett (Kleinfelder) Phone/Fax: (505) 344-7373 (505) 280-1079 (Cell)	Email: beverett@kleinfelder.com	Sampler: (Please Print) Barbara Everett Ed Loescher
Invoice Address: PO Box 1150 Grants, NM 87020	Invoice Contact & Phone: Jeanette Lister 505-287-7971	Purchase Order:	Quote/Bottle Order: C3778

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ GSA ☐ POTW/WWTP ☐ State: NM ☐ Other: _____

☐ A2LA ☒ EDD/EDT (Electronic Data) Format: excel ☐ LEVEL IV ☐ NELAC

Number of Containers
Sample Type: A W S V B O
Air Water Soils/Solids Vegetation Bioassay Other

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	SPLP Extract	RCRA Metals + Uranium	Ra226 & Ra228	Cl & SO4 by IC 300.0	RCI	SEE ATTACHED	Normal Turnaround (TAT)	RUSH	
2 1 MT-4-D-S1	4-10-12	2:05	Sediment	X	X	X	X			X		0-6" B.G.
2 2 MT-4-D-S2	4-10-12	2:10	Sediment	X	X	X	X			X		14" B.G.
2 3 MT-4-D-S3	4-10-12	2:20	Sediment	X	X	X	X			X		48" B.G.
3 4 MT-4-E-S1	4-10-12	1:35	Sediment	X	X	X	X			X		0-4" B.G.
3 5 MT-4-E-S2	4-10-12	1:40	Sediment	X	X	X	X			X		10-12" B.G.
3 6 MT-4-E-S3	4-10-12	1:42	Sediment	X	X	X	X			X		36" B.G.
3 7 MT-4-E-S4	4-10-12	1:45	Sediment	X	X	X	X			X		48" B.G.
4 8 MT-6-A-S1	4-10-12	3:05	Sediment	X	X	X				X		0-5" B.G.
4 9 MT-6-A-S2	4-10-12	3:10	Sediment	X	X	X				X		12"-20" B.G.
4 10 MT-6-A-S3	4-10-12	3:15	~~Sediment~~	X	X	X				X		Rock chip

Contact ELI prior to RUSH sample submittal for charges and scheduling – See Instruction Page

Comments:

Shipped by: FE-NOA

Cooler ID(s): 6 Coolers

Receipt Temp: 11.2 °C

On Ice: Yes (NO)

Custody Seal Y N

Intact Y N

Signature Match Y N

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): Ed Loescher	Date/Time: 4/11/12	Signature:	Received by (print): BARBARA EVERETT Date/Time: 4/11/12 15:00 Signature:
Relinquished by (print): BARBARA EVERETT	Date/Time: 4/19/1600	Signature:	Received by (print): Date/Time: Signature:
Sample Disposal: Return to Client: _____	Lab Disposal: X		Received by Laboratory: Date/Time: 4-20-12 T:45 Signature: Kris Gross

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

Visit our web site at www.energylab.com for additional information, price schedules and terms and conditions.

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Grande Resources Corp	Project Name, PWS, Permit, Etc.: Mt. Taylor Mine Closure Plan	Sample Origin: State: NM	EPA/State Compliance: Yes ☒ No ☐
Report Mail Address: PO Box 1150, Grants, NM 87020. Additional e-mail copy to beverett@kleinfelder.com	Contact Name: Barbara Everett (Kleinfelder) Phone/Fax: (505) 344-7373 (505) 280-1079 (Cell)	Email: beverett@kleinfelder.com	Sampler: (Please Print) Barbara Everett, Ed Loescher
Invoice Address: PO Box 1150, Grants, NM 87020	Invoice Contact & Phone: Jeanette Lister 505-287-7971	Purchase Order:	Quote/Bottle Order: C3778

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

- ☐ DW
- ☐ GSA
- ☐ POTW/WWTP
- ☐ State: NM
- ☐ Other:
- ☐ A2LA
- ☒ EDD/EDT (Electronic Data) Format: excel
- ☐ LEVEL IV
- ☐ NELAC

Number of Containers; Sample Type: A Air, W Water, S Soils/Solids, V Vegetation, B Bioassay, O Other

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	SPLP Extract	RCRA Metals + Uranium	Ra226 & Ra228	Cl & SO4 by IC 300.0	RCI	SEE ATTACHED	Normal Turnaround (TAT)	RUSH	Comments
1	MT-6-B-S1	4-10-12	2:30	Sediment	X	X	X				X		8"-10" B.G.
1	2 MT-6-B-S2	4-10-12	2:35	Sediment	X	X	X				X		30" B.G.
1	3 MT-OP-C-S1	4-10-12	1:20	Sediment	X	X	X				X		0"-6" B.G.
1	4 MT-OP-C-S2	4-10-12	1:25	Sediment	X	X	X				X		20" B.G.
1	5 MT-OP-C-S3	4-10-12	1:25	Sediment	X	X	X				X		48"-50" B.G.
1	6 MT-OP-C-S4	4-10-12	1:30	Sediment	X	X	X				X		72" B.G.
2	7 MT-OP-D-S1	4-10-12	12:45	Sediment	X	X	X				X		0-6" B.G.
2	8 MT-OP-D-S2	4-10-12	12:45	Sediment	X	X	X				X		48-50" B.G.
2	9 MT-OP-D-S3	4-10-12	12:50	Sediment	X	X	X				X		76" B.G.
4	10 MT-8-F	4-10-12	09:25	Sediment	X	X	X	X			X		6" B.G.

Page 50 of 50

Contact ELI prior to RUSH sample submittal for charges and scheduling – See Instruction Page

Shipped by: FE-MAIL

Cooler ID(s): 6 buckets

Receipt Temp: 11.2 °C

On Ice: Yes (No)

Custody Seal Intact: Y (N) / Signature Match: Y N

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): ED LOESCHER Date/Time: 4-11-12 Signature:

Relinquished by (print): BARBARA EVERETT Date/Time: 4/19/12 16:00 Signature:

Received by (print): BARBARA EVERETT Date/Time: 4/11/12 15:00 Signature:

Received by (print): Date/Time: Signature:

Sample Disposal: Return to Client: Lab Disposal: X

Received by Laboratory: Date/Time: 4-20-12 9:45 Signature:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

ANALYTICAL SUMMARY REPORT

July 05, 2012

Rio Grande Resources Corporation
PO Box 1150
Grants, NM 87020

Workorder No.: C12050924

Project Name: Mt. Taylor Mine

Energy Laboratories, Inc. Casper WY received the following 3 samples for Rio Grande Resources Corporation on 5/24/2012 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C12050924-001	MT-WP-SM1	05/18/12 9:30	05/24/12	Soil	Digestion For RadioChemistry Radium 226 Uranium, Isotopic
C12050924-002	MT-WP-SM2	05/18/12 9:40	05/24/12	Soil	Same As Above
C12050924-003	MT-WP-SM3	05/18/12 10:00	05/24/12	Soil	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

Stephanie D Waldrop
Reporting Supervisor

Digitally signed by
Stephanie Waldrop
Date: 2012.07.05 16:09:59 -06:00

CLIENT: Rio Grande Resources Corporation
Project: Mt. Taylor Mine
Sample Delivery Group: C12050924

Report Date: 07/05/12

CASE NARRATIVE

ORIGINAL SAMPLE SUBMITTAL(S)
All original sample submittals have been returned with the data package.

SAMPLE TEMPERATURE COMPLIANCE: 4°C (±2°C)
Temperature of samples received may not be considered properly preserved by accepted standards. Samples that are hand delivered immediately after collection shall be considered acceptable if there is evidence that the chilling process has begun.

GROSS ALPHA ANALYSIS
Method 900.0 for gross alpha and gross beta is intended as a drinking water method for low TDS waters. Data provided by this method for non potable waters should be viewed as inconsistent.

RADON IN AIR ANALYSIS
The desired exposure time is 48 hours (2 days). The time delay in returning the canister to the laboratory for processing should be as short as possible to avoid excessive decay. Maximum recommended delay between end of exposure to beginning of counting should not exceed 8 days.

SOIL/SOLID SAMPLES
All samples reported on an as received basis unless otherwise indicated.

ATRAZINE, SIMAZINE AND PCB ANALYSIS
Data for PCBs, Atrazine and Simazine are reported from EPA 525.2. PCB data reported by ELI reflects the results for seven individual Aroclors. When the results for all seven are ND (not detected), the sample meets EPA compliance criteria for PCB monitoring.

SUBCONTRACTING ANALYSIS
Subcontracting of sample analyses to an outside laboratory may be required. If so, ENERGY LABORATORIES will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

BRANCH LABORATORY LOCATIONS
eli-b - Energy Laboratories, Inc. - Billings, MT
eli-g - Energy Laboratories, Inc. - Gillette, WY
eli-h - Energy Laboratories, Inc. - Helena, MT
eli-r - Energy Laboratories, Inc. - Rapid City, SD
eli-t - Energy Laboratories, Inc. - College Station, TX

CERTIFICATIONS:
USEPA: WY00002, Radiochemical WY00937; FL-DOH NELAC: E87641, Radiochemical E871017; California: 02118CA; Oregon: WY200001, Radiochemical WY200002; Utah: WY00002; Virginia: 00057; Washington: C836

ISO 17025 DISCLAIMER:
The results of this Analytical Report relate only to the items submitted for analysis.

ENERGY LABORATORIES, INC. - CASPER,WY certifies that certain method selections contained in this report meet requirements as set forth by the above accrediting authorities. Some results requested by the client may not be covered under these certifications. All analysis data to be submitted for regulatory enforcement should be certified in the sample state of origin. Please verify ELI's certification coverage by visiting www.energylab.com

ELI appreciates the opportunity to provide you with this analytical service. For additional information and services visit our web page www.energylab.com.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine
Lab ID: C12050924-001
Client Sample ID: MT-WP-SM1

Report Date: 07/05/12
Collection Date: 05/18/12 09:30
DateReceived: 05/24/12
Matrix: Soil

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES							
Radium 226	0.7	pCi/g-dry				E903.0	06/20/12 01:37 / dmf
Radium 226 precision (±)	0.08	pCi/g-dry				E903.0	06/20/12 01:37 / dmf
Radium 226 MDC	0.04	pCi/g-dry				E903.0	06/20/12 01:37 / dmf
Uranium 234	0.6	pCi/g-dry				E908.0	06/18/12 08:39 / dmf
Uranium 234 precision (±)	0.3	pCi/g-dry				E908.0	06/18/12 08:39 / dmf
Uranium 234 MDC	0.3	pCi/g-dry				E908.0	06/18/12 08:39 / dmf
Uranium 235	0.03	pCi/g-dry	U			E908.0	06/18/12 08:39 / dmf
Uranium 235 precision (±)	0.09	pCi/g-dry				E908.0	06/18/12 08:39 / dmf
Uranium 235 MDC	0.2	pCi/g-dry				E908.0	06/18/12 08:39 / dmf
Uranium 238	0.6	pCi/g-dry				E908.0	06/18/12 08:39 / dmf
Uranium 238 precision (±)	0.2	pCi/g-dry				E908.0	06/18/12 08:39 / dmf
Uranium 238 MDC	0.2	pCi/g-dry				E908.0	06/18/12 08:39 / dmf

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine
Lab ID: C12050924-002
Client Sample ID: MT-WP-SM2

Report Date: 07/05/12
Collection Date: 05/18/12 09:40
DateReceived: 05/24/12
Matrix: Soil

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES							
Radium 226	0.7	pCi/g-dry				E903.0	06/20/12 01:37 / dmf
Radium 226 precision (±)	0.08	pCi/g-dry				E903.0	06/20/12 01:37 / dmf
Radium 226 MDC	0.03	pCi/g-dry				E903.0	06/20/12 01:37 / dmf
Uranium 234	0.8	pCi/g-dry				E908.0	06/18/12 08:39 / dmf
Uranium 234 precision (±)	0.3	pCi/g-dry				E908.0	06/18/12 08:39 / dmf
Uranium 234 MDC	0.3	pCi/g-dry				E908.0	06/18/12 08:39 / dmf
Uranium 235	0.1	pCi/g-dry	U			E908.0	06/18/12 08:39 / dmf
Uranium 235 precision (±)	0.2	pCi/g-dry				E908.0	06/18/12 08:39 / dmf
Uranium 235 MDC	0.3	pCi/g-dry				E908.0	06/18/12 08:39 / dmf
Uranium 238	0.4	pCi/g-dry				E908.0	06/18/12 08:39 / dmf
Uranium 238 precision (±)	0.2	pCi/g-dry				E908.0	06/18/12 08:39 / dmf
Uranium 238 MDC	0.3	pCi/g-dry				E908.0	06/18/12 08:39 / dmf

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation
Project: Mt. Taylor Mine
Lab ID: C12050924-003
Client Sample ID: MT-WP-SM3

Report Date: 07/05/12
Collection Date: 05/18/12 10:00
DateReceived: 05/24/12
Matrix: Soil

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES							
Radium 226	1.1	pCi/g-dry				E903.0	06/20/12 01:37 / dmf
Radium 226 precision (±)	0.09	pCi/g-dry				E903.0	06/20/12 01:37 / dmf
Radium 226 MDC	0.03	pCi/g-dry				E903.0	06/20/12 01:37 / dmf
Uranium 234	1.1	pCi/g-dry				E908.0	06/18/12 08:39 / dmf
Uranium 234 precision (±)	0.3	pCi/g-dry				E908.0	06/18/12 08:39 / dmf
Uranium 234 MDC	0.2	pCi/g-dry				E908.0	06/18/12 08:39 / dmf
Uranium 235	-0.02	pCi/g-dry	U			E908.0	06/18/12 08:39 / dmf
Uranium 235 precision (±)	0.09	pCi/g-dry				E908.0	06/18/12 08:39 / dmf
Uranium 235 MDC	0.2	pCi/g-dry				E908.0	06/18/12 08:39 / dmf
Uranium 238	0.9	pCi/g-dry				E908.0	06/18/12 08:39 / dmf
Uranium 238 precision (±)	0.3	pCi/g-dry				E908.0	06/18/12 08:39 / dmf
Uranium 238 MDC	0.2	pCi/g-dry				E908.0	06/18/12 08:39 / dmf

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation **Report Date:** 07/05/12

Project: Mt. Taylor Mine **Work Order:** C12050924

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E903.0										Batch: R161002
Sample ID: LCS-33822		Laboratory Control Sample				Run: BERTHOLD 770-1_120612A				06/20/12 01:37
Radium 226		0.29	pCi/g-dry		60	70	130			S
- LCS response is outside of the acceptance range for this analysis. Since the MB, MS, and MSD are acceptable the batch is approved.										
Sample ID: MB-33822	3	Method Blank				Run: BERTHOLD 770-1_120612A				06/20/12 01:37
Radium 226		-0.003	pCi/g-dry							U
Radium 226 precision (±)		0.003	pCi/g-dry							
Radium 226 MDC		0.006	pCi/g-dry							
Sample ID: C12050924-003AMS		Sample Matrix Spike				Run: BERTHOLD 770-1_120612A				06/20/12 01:37
Radium 226		4.6	pCi/g-dry		72	70	130			
Sample ID: C12050924-003AMSD		Sample Matrix Spike Duplicate				Run: BERTHOLD 770-1_120612A				06/20/12 01:37
Radium 226		4.5	pCi/g-dry		71	70	130	2.5	23.8	

Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

U - Not detected at minimum detectable concentration

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Grande Resources Corporation **Report Date:** 07/05/12

Project: Mt. Taylor Mine **Work Order:** C12050924

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E908.0										Batch: R160930
Sample ID: C12050924-003AMS	2	Sample Matrix Spike				Run: EGG-ORTEC_120614A				06/18/12 08:39
Uranium 234		52.2	pCi/g-dry		115	70	130			
Uranium 238		53.1	pCi/g-dry		115	70	130			
Sample ID: C12050924-003AMSD	2	Sample Matrix Spike Duplicate				Run: EGG-ORTEC_120614A				06/18/12 08:39
Uranium 234		51.9	pCi/g-dry		110	70	130	0.6	28	
Uranium 238		54.9	pCi/g-dry		114	70	130	3.3	27.8	
Sample ID: LCS-33822	2	Laboratory Control Sample				Run: EGG-ORTEC_120614A				06/18/12 08:39
Uranium 234		2.52	pCi/g-dry		108	80	120			
Uranium 238		2.59	pCi/g-dry		109	80	120			
Sample ID: MB-33822	9	Method Blank				Run: EGG-ORTEC_120614A				06/18/12 08:39
Uranium 234		0.01	pCi/g-dry							U
Uranium 234 precision (±)		0.02	pCi/g-dry							
Uranium 234 MDC		0.03	pCi/g-dry							
Uranium 235		0.0009	pCi/g-dry							U
Uranium 235 precision (±)		0.01	pCi/g-dry							
Uranium 235 MDC		0.03	pCi/g-dry							
Uranium 238		0.007	pCi/g-dry							U
Uranium 238 precision (±)		0.01	pCi/g-dry							
Uranium 238 MDC		0.03	pCi/g-dry							

Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration

Standard Reporting Procedures

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Workorder Receipt Checklist

Rio Grande Resources Corporation C12050924

Login completed by: Brian H. Cody
Date Received: 5/24/2012

Reviewed by: BL2000\kschroeder
Received by: kg

Reviewed Date: 5/25/2012
Carrier name: Ground

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Container/Temp Blank temperature:	22.3°C		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Contact and Corrective Action Comments:

None

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Grande Resources Corporation - NM #C11115	Project Name, PWS, Permit, Etc.: MT. TAYLOR MINE	Sample Origin State: NM	EPA/State Compliance: Yes ☑ No ☐
Report Mail Address: PO Box 1150 Grants, New Mexico 87020	Contact Name: Joe Lister - Mine Manage	Phone/Fax: (505)287-7971	Email: joe.lister@riograndereso
			Sampler: (Please Print) Joel Lister/AK
Invoice Address: Rio grande Resources Corporation PO Box 1150 Grants, new Mexico 87020	Invoice Contact & Phone: Joe Lister - Mine Managr	Purchase Order:	Quote/Bottle Order: Soil Samples

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ A2LA
☐ GSA ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: _____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers
Sample Type: A W S V B O
Air Water Soils/Solids Vegetation Bioassay Other

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	Isotopic Uranium	Radium 226	SEE ATTACHED	Normal Turnaround (TAT)
1 MT - WP - SM1	05/18/12	09:30	soil	X	X		
2 MT - WP - SM2	05/18/12	09:40	soil	X	X		
3 MT - WP - SM3	05/18/12	10:00	soil	X	X		
4							
5							
6							
7							
8							
9							
10							

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:

Shipped by: UPS- G
Cooler ID(s): BOX
Receipt Temp 22.3 °C
On Ice: Yes (No)
Custody Seal (Y) N
Intact (Y) N
Signature Match (Y) N

LABORATORY USE ONLY C12050924

Custody Record MUST be Signed

Relinquished by (print): Joe Lister	Date/Time: 05/22/12 09:19	Signature:	Received by (print):	Date/Time:	Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
Sample Disposal: Return to Client: _____	Lab Disposal: XXXXX		Received by Laboratory:	Date/Time: 5-24-12 9:15	Signature:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

MT. TAYLOR ORE CHEMICAL ANALYSIS
MARCH 18, 1986

	% BY WEIGHT
Sodium	1.62
Magnesium	0.605
Aluminum	< 0.01
Silicon	33.40
Sulfur	0.118
Chlorine	0.030
Calcium	1.06
Titanium	0.149
Vanadium	0.091
Chromium	< 0.01
Manganese	0.03
Iron	1.52
Cobalt	< 0.01
Nickel	< 0.01
Copper	< 0.01
Zinc	< 0.01
Arsenic	< 0.01
Selenium	0.009
Bromide	< 0.01
Rubidium	0.016
Strontium	0.012
Zirconium	0.009
Molybdenum	0.003
Lead	0.012
Thorium	0.009
Uranium	0.420

APPENDIX D.4

Field Sampling and Laboratory Test Data

Original Closeout Plan Soil Data

Vinyard & Associates, Inc.

4415-D Hawkins, NE
Albuquerque, New Mexico 87109
(505) 345-1937

Geotechnical Engineering • Materials Testing • Environmental Engineering

November 6, 1995

AK GeoConsult, Inc.
13212 Manitoba Drive, NE
Albuquerque, NM 87111

Attn: Mr. Alan K. Kuhn, PhD, PE

Subject: Mt. Taylor Mine Soil Samples
V & A Project No. 95-1-245

Gentlemen:

Attached are copies of the Proctor, Sieve Analysis and Atterberg Limits Test Results for the Mt. Taylor Mine Soil Samples.

Should you have any questions regarding this data, please do not hesitate to call.

Sincerely,

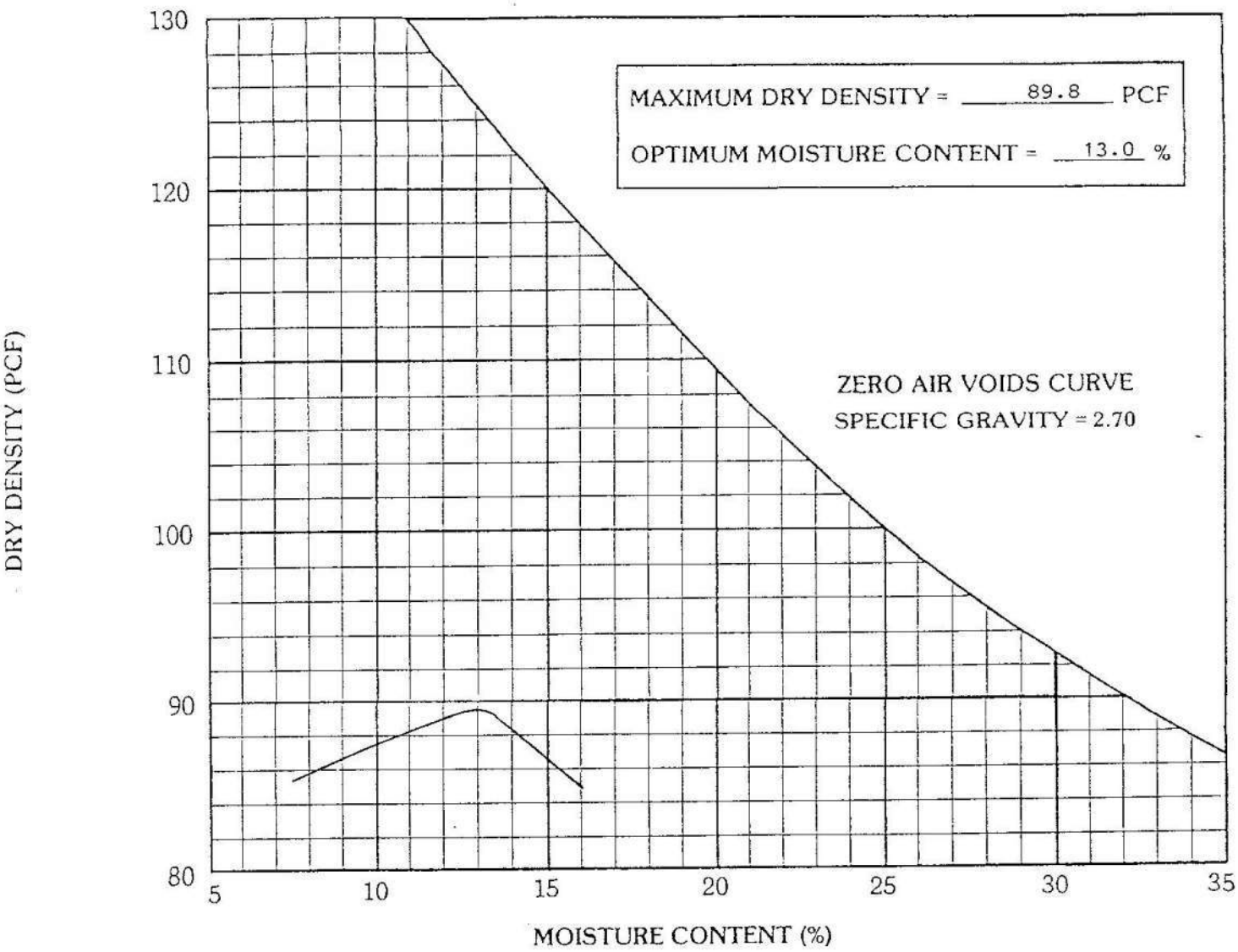
Martin D. Vinyard, PE

Attachments: Data Sheets (10)

cc: Addressee (1)

V & A

COMPACTION TEST RESULTS



SAMPLE LOCATION: TP-1

SOIL DESCRIPTION: CLAY, very sandy

UNIFIED SOIL CLASSIFICATION: (CL)

AASHTO SOIL CLASSIFICATION:

TEST METHOD: ASTM D-698

ATTERBERG LIMITS: LL 38 % PI 18 %

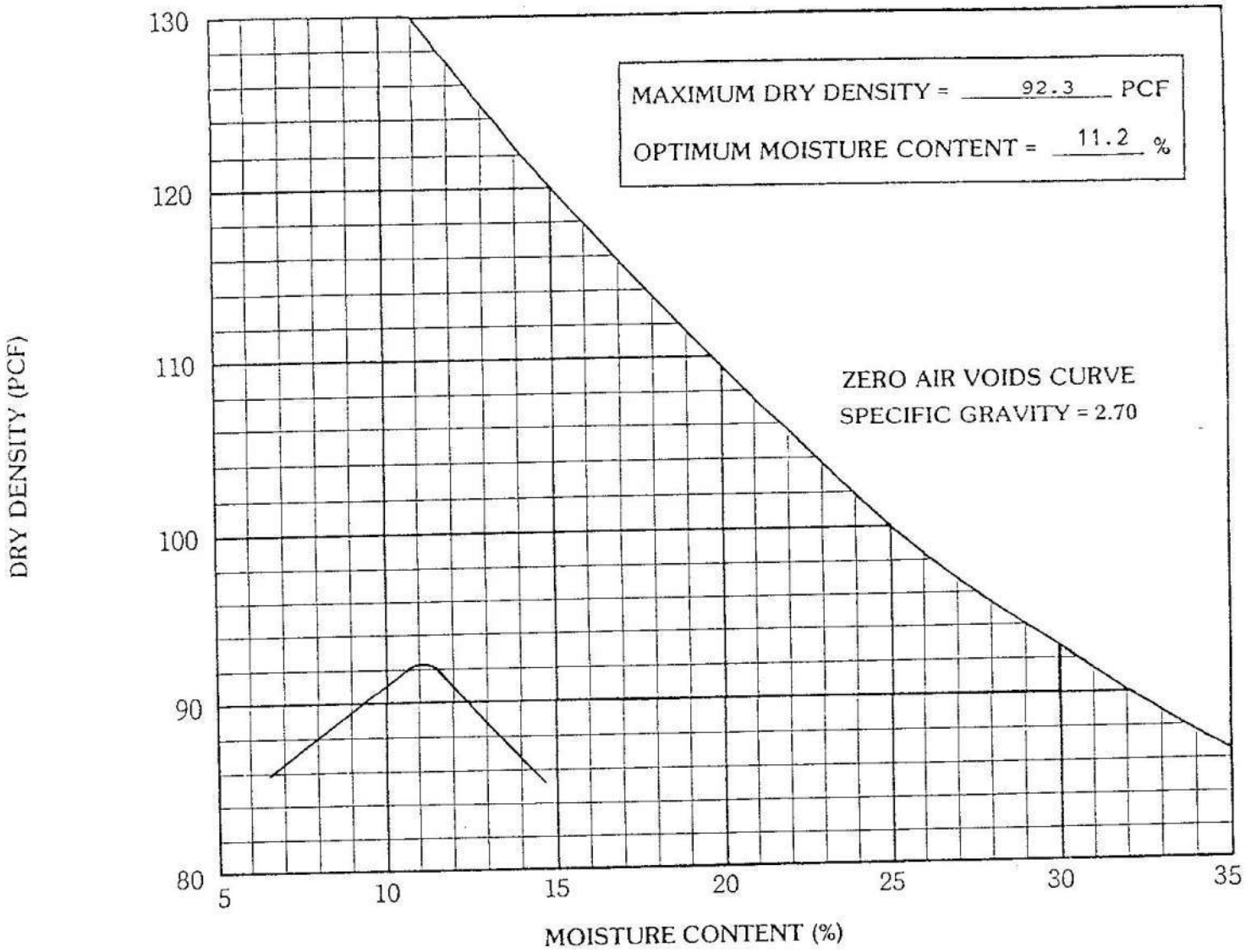
SIEVE ANALYSIS - % PASSING									
1 1/2"	3/4"	3/8"	No. 4	No. 8	No. 16	No. 30	No. 50	No. 100	No. 200
					100	99	96	79	66.4

Project No: 95-1-245

Figure

V & A

COMPACTION TEST RESULTS



SAMPLE LOCATION: TP-4A

SOIL DESCRIPTION: CLAY, very sandy

UNIFIED SOIL CLASSIFICATION: (CL)

AASHTO SOIL CLASSIFICATION:

TEST METHOD: ASTM D-698

ATTERBERG LIMITS: LL 39 % PI 21 %

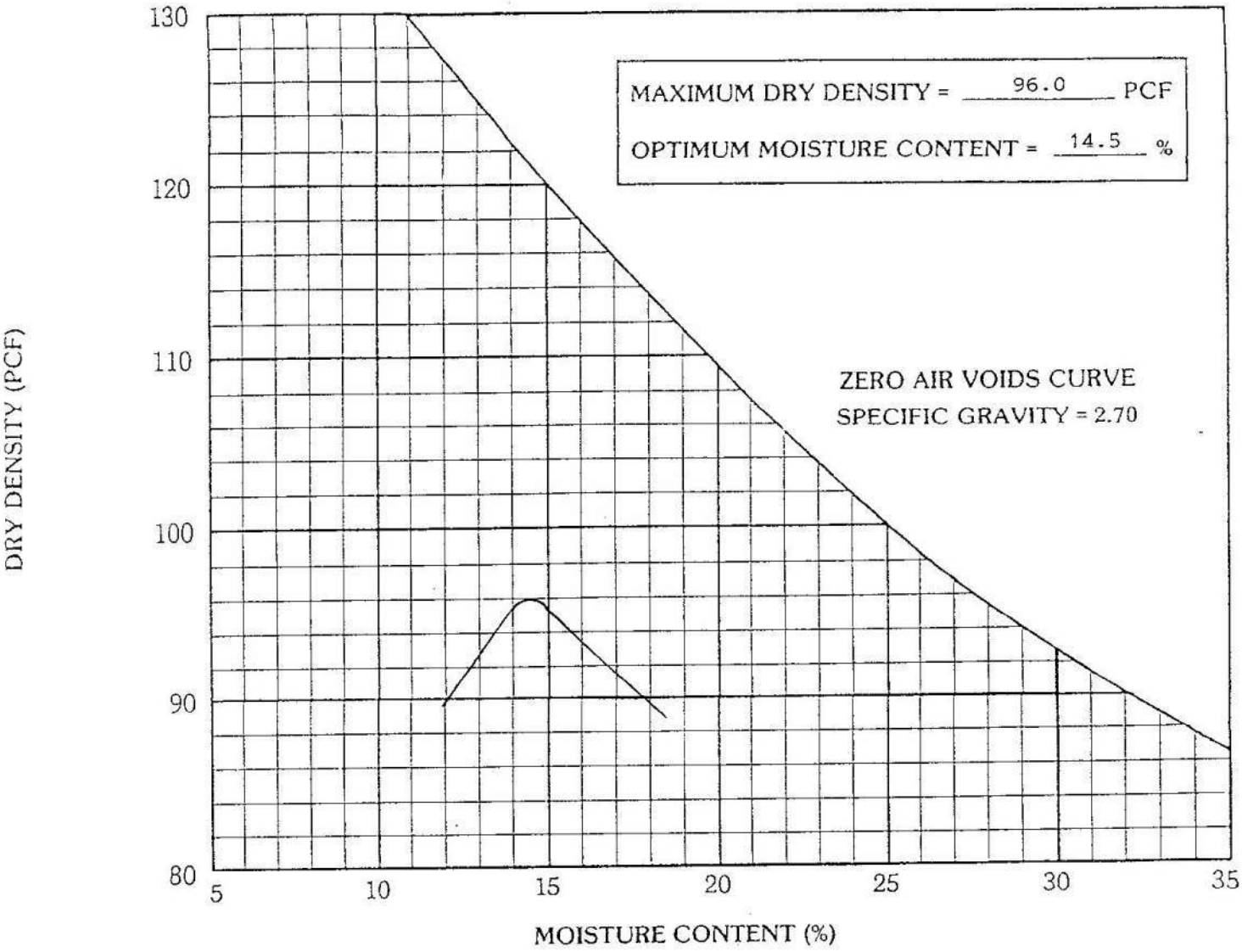
SIEVE ANALYSIS - % PASSING									
1 1/2"	3/4"	3/8"	No. 4	No. 8	No. 16	No. 30	No. 50	No. 100	No. 200
				100	99	97	94	80	69.4

Project No: 95-1-245

Figure

V & A

COMPACTION TEST RESULTS



SAMPLE LOCATION: TP-6

SOIL DESCRIPTION: SAND, very clayey

UNIFIED SOIL CLASSIFICATION: (SC)

AASHTO SOIL CLASSIFICATION:

TEST METHOD: ASTM D-698

ATTERBERG LIMITS: LL 29 % PI 14 %

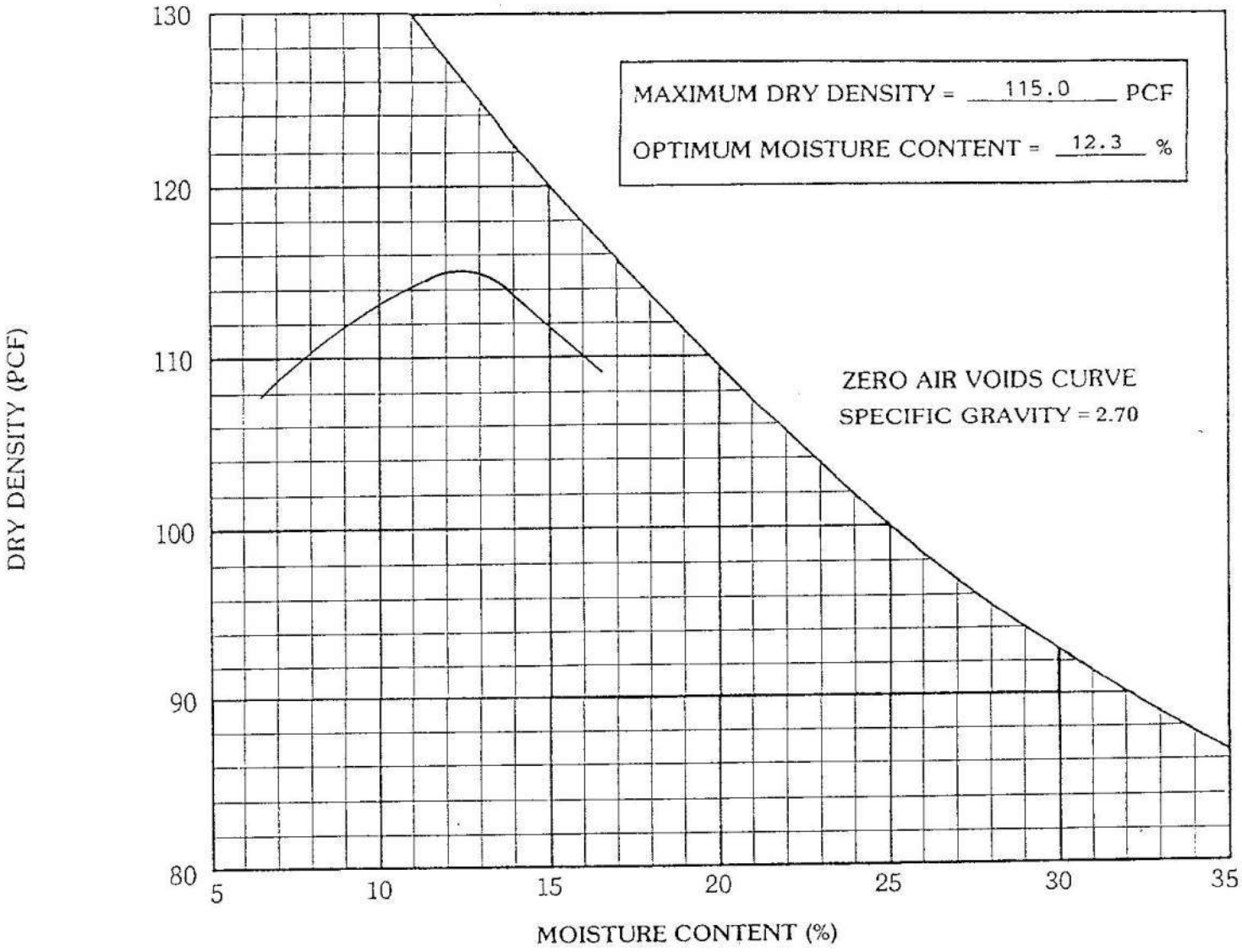
SIEVE ANALYSIS - % PASSING									
1 1/2"	3/4"	3/8"	No. 4	No. 8	No. 16	No. 30	No. 50	No. 100	No. 200
		100	99	98	95	93	89	63	48.5

Project No: 95-1-245

Figure

V & A

COMPACTION TEST RESULTS



SAMPLE LOCATION: TP-7

SOIL DESCRIPTION: CLAY, very sandy

UNIFIED SOIL CLASSIFICATION: (CL)

AASHTO SOIL CLASSIFICATION:

TEST METHOD: ASTM D-698

ATTERBERG LIMITS: LL 38 % PI 21 %

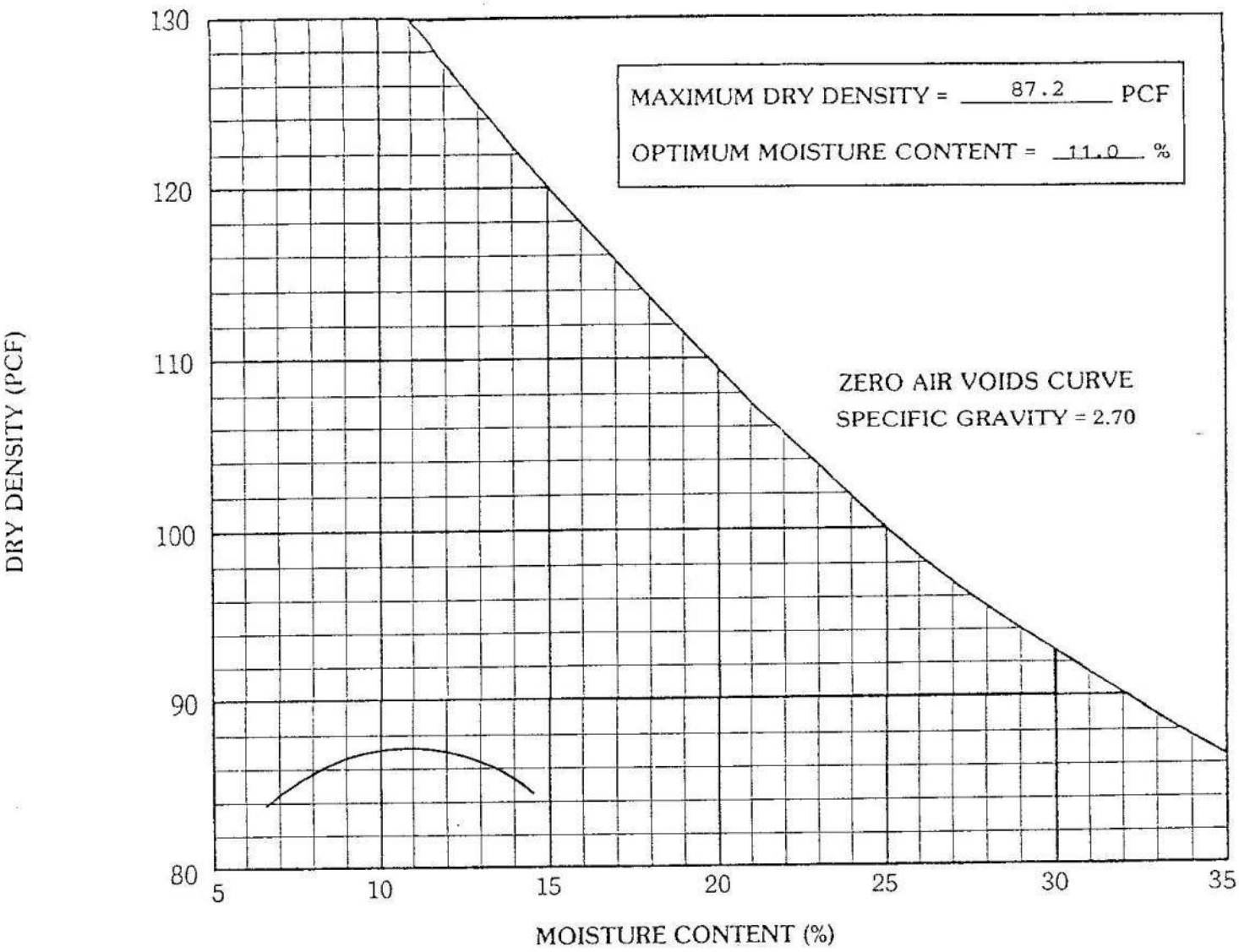
SIEVE ANALYSIS - % PASSING									
1 1/2"	3/4"	3/8"	No. 4	No. 8	No. 16	No. 30	No. 50	No. 100	No. 200
				100	99	96	92	76	67.3

Project No: 95-1-245

Figure

V & A

COMPACTION TEST RESULTS



SAMPLE LOCATION: TP-8

SOIL DESCRIPTION: CLAY, very sandy

UNIFIED SOIL CLASSIFICATION: (CL)

AASHTO SOIL CLASSIFICATION:

TEST METHOD: ASTM D-698

ATTERBERG LIMITS: LL 37 % PI 20 %

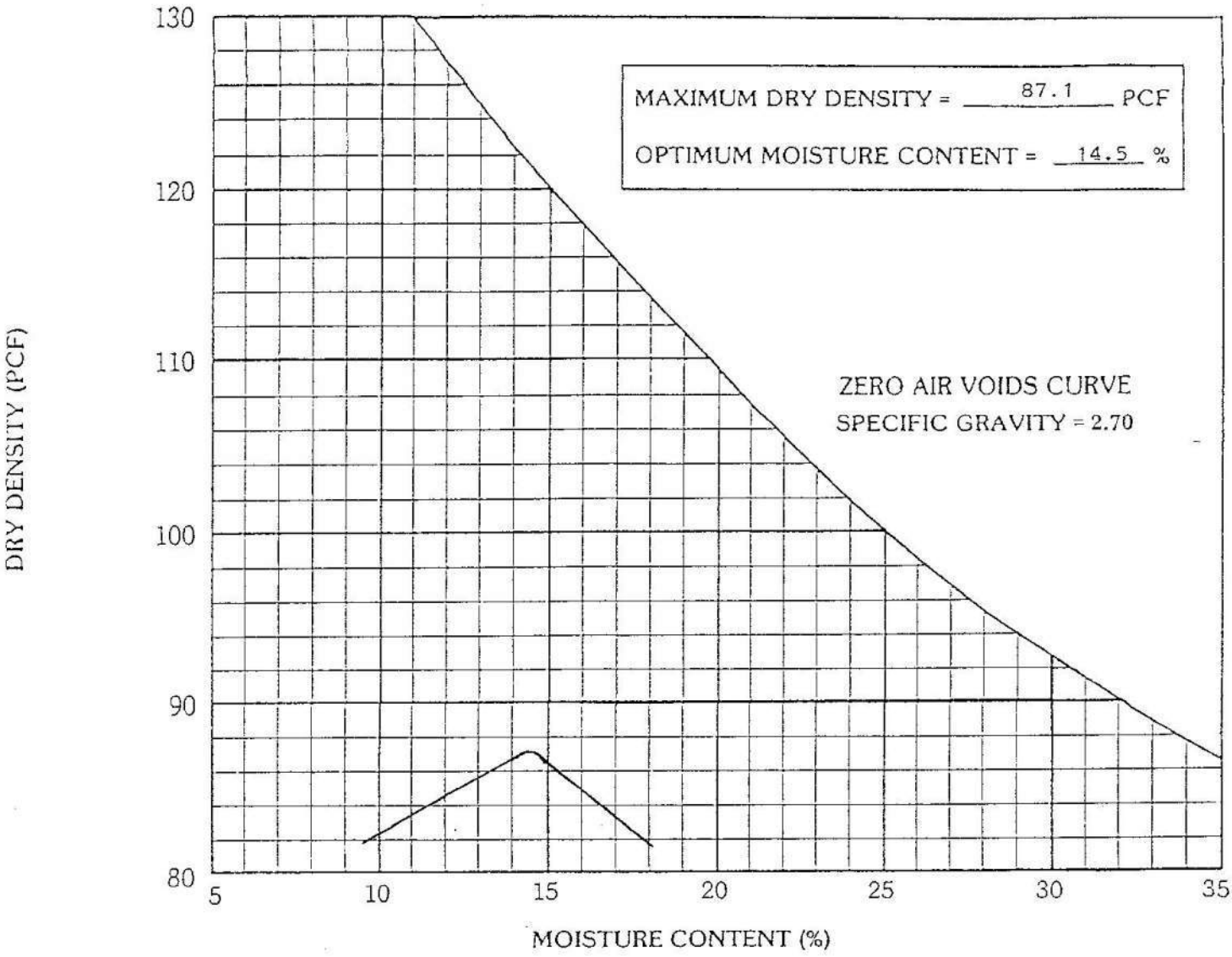
SIEVE ANALYSIS - % PASSING									
1 1/2"	3/4"	3/8"	No. 4	No. 8	No. 16	No. 30	No. 50	No. 100	No. 200
				100	99	97	94	78	63.3

Project No: 95-1-245

Figure

V & A

COMPACTION TEST RESULTS



SAMPLE LOCATION: TP-9

SOIL DESCRIPTION: CLAY, very sandy

UNIFIED SOIL CLASSIFICATION: (CL)

AASHTO SOIL CLASSIFICATION:

TEST METHOD: ASTM D-698

ATTERBERG LIMITS: LL 44 % PI 26 %

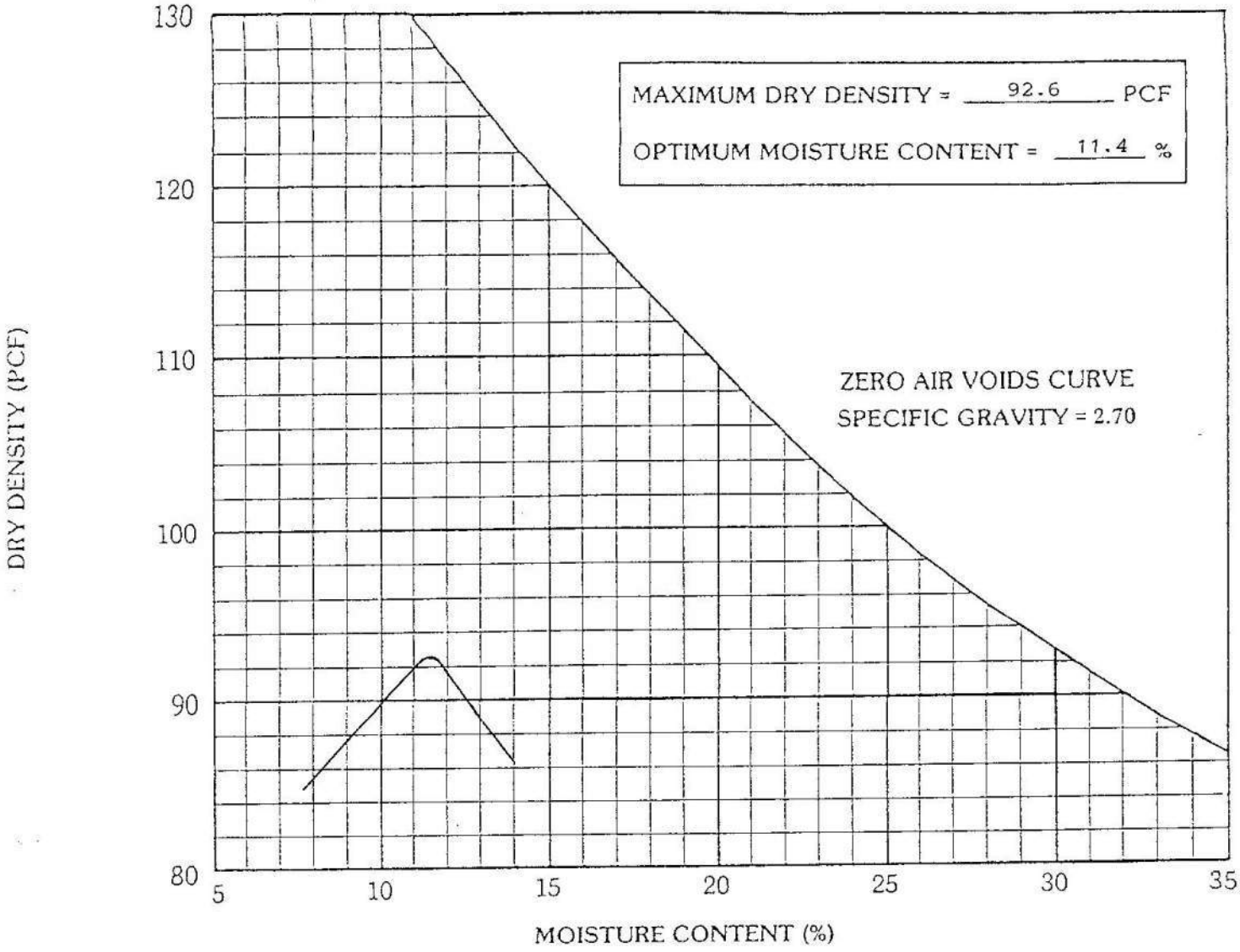
SIEVE ANALYSIS - % PASSING									
1 1/2"	3/4"	3/8"	No. 4	No. 8	No. 16	No. 30	No. 50	No. 100	No. 200
					100	99	97	90	79.5

Project No: 95-1-245

Figure

V & A

COMPACTION TEST RESULTS



SAMPLE LOCATION: TP-10

SOIL DESCRIPTION: CLAY, very sandy

UNIFIED SOIL CLASSIFICATION: (CL)

AASHTO SOIL CLASSIFICATION:

TEST METHOD: ASTM D-698

ATTERBERG LIMITS: LL 34 % PI 19 %

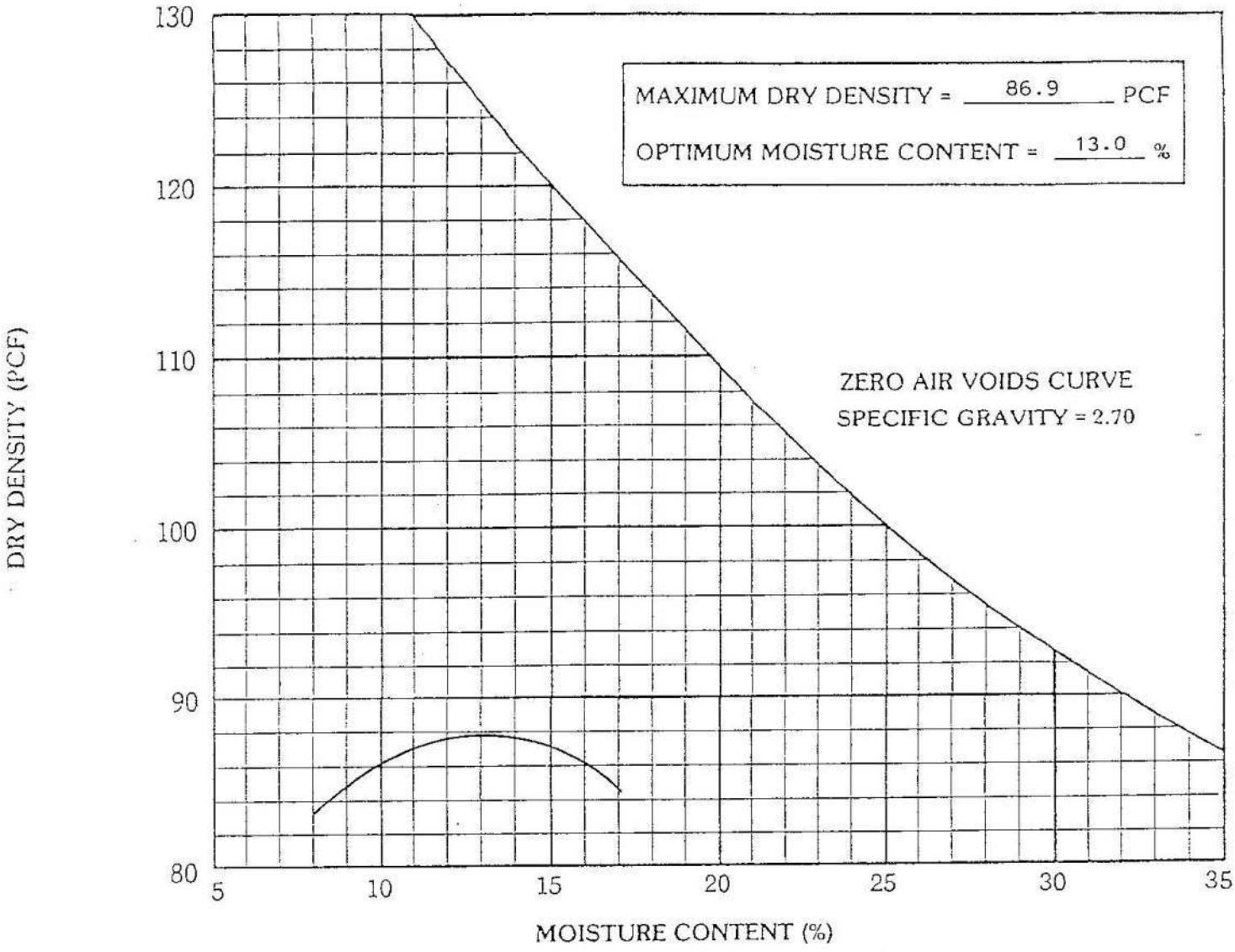
SIEVE ANALYSIS - % PASSING									
1 1/2"	3/4"	3/8"	No. 4	No. 8	No. 16	No. 30	No. 50	No. 100	No. 200
			100	99	99	98	95	82	72.8

Project No: 95-1-245

Figure

V & A

COMPACTION TEST RESULTS



SAMPLE LOCATION: TP-11

SOIL DESCRIPTION: CLAY, sandy

UNIFIED SOIL CLASSIFICATION: (CL)

AASHTO SOIL CLASSIFICATION:

TEST METHOD: ASTM D-698

ATTERBERG LIMITS: LL 44 % PI 25 %

SIEVE ANALYSIS - % PASSING									
1 1/2"	3/4"	3/8"	No. 4	No. 8	No. 16	No. 30	No. 50	No. 100	No. 200
					100	99	97	90	80.3

Project No: 95-1-245

Figure

V & A

SUMMARY OF LABORATORY TEST DATA

Test Hole No.	Depth (Feet)	Unified Classification	Natural Dry Density (pcf)	Natural Moisture Content (%)	Atterberg Limits		SIEVE ANALYSIS % PASSING BY WEIGHT										DESCRIPTION
					LL	PI	1½"	3/4"	3/8"	No. 4	No. 8	No. 16	No. 30	No. 50	No. 100	No. 200	
TP1	-	-	-	-	38	18	-	-	-	-	-	100	99	96	79	66.4	CLAY, very sandy
TP2	-	-	-	-	28	11	-	-	100	99	98	97	96	91	60	45.3	SAND, very clayey
TP3	-	-	-	-	28	13	-	-	-	100	99	99	98	94	68	51.9	CLAY, very sandy
TP4A	-	-	-	-	39	21	-	-	-	-	100	99	97	94	80	69.4	CLAY, very sandy
TP4B	-	-	-	-	38	21	-	-	-	-	100	99	98	97	88	75.7	CLAY, very sandy
TP5	-	-	-	-	30	16	-	-	-	-	100	99	98	94	77	65.0	CLAY, very sandy
TP6	-	-	-	-	29	14	-	-	100	99	98	95	93	89	63	48.5	SAND, very clayey
TP7	-	-	-	-	38	21	-	-	-	-	100	99	96	92	76	67.3	CLAY, very sandy
TP8	-	-	-	-	37	20	-	-	-	-	100	99	97	94	78	63.3	CLAY, very sandy
TP9	-	-	-	-	44	26	-	-	-	-	-	100	99	97	90	79.5	CLAY, very sandy
TP10	-	-	-	-	34	19	-	-	-	100	99	99	98	95	82	72.8	CLAY, very sandy
TP11	-	-	-	-	44	25	-	-	-	-	-	100	99	97	90	80.3	CLAY, very sandy

Project No. 95-1-245

Table

V & A

SIEVE ANALYSIS TEST RESULTS

Sieve Size	Percent Passing Following Scalping over a 3/4" Sieve WP-1	WP-2
3/4"	100	100
3/8"	94	98
No. 4	91	95
No. 8	89	93
No. 16	87	91
No. 30	81	87
No. 50	43	65
No. 100	23	37
No. 200	17.8	27.7

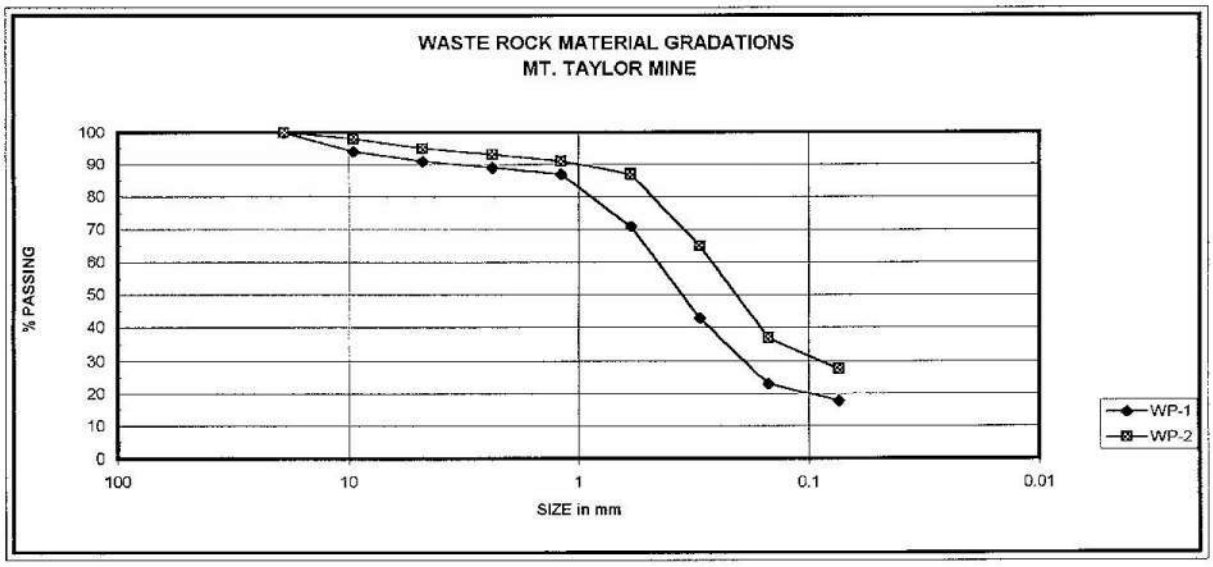
WP-1 + 3/4" material = 2.7% of total sample weight

WP-2 + 3/4" material = 6.8% of total sample weight

WASTE ROCK CHARACTERISTICS
MT. TAYLOR MINE

SIZE GRADATIONS

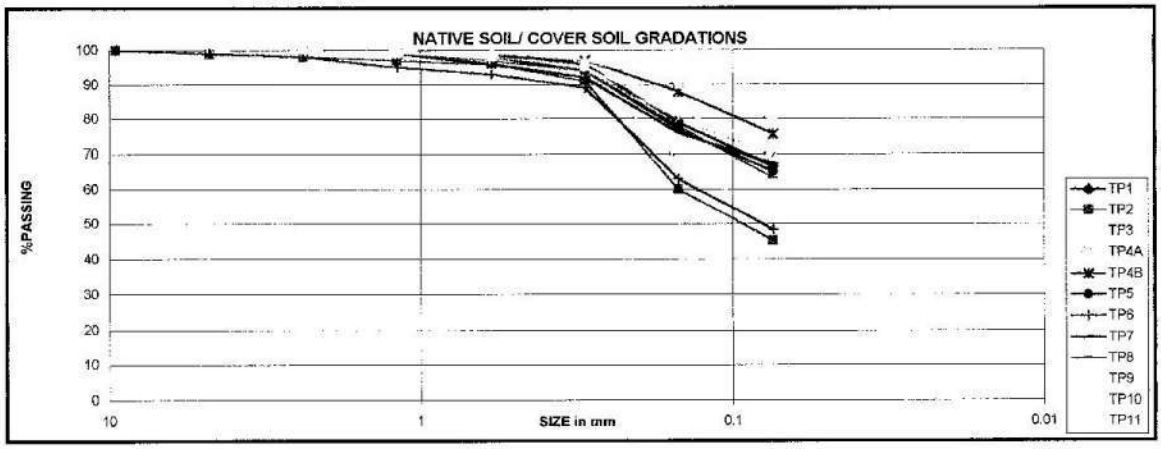
SIEVE #	SIZE in mm	% PASSING	
		WP-1	WP-2
3/4"	19.1	100	100
3/8"	9.52	94	98
4	4.76	91	95
8	2.38	89	93
16	1.19	87	91
30	0.59	71	87
50	0.297	43	65
100	0.149	23	37
200	0.074	17.8	27.7



NATIVE SOIL - COVER SOIL CHARACTERISTICS
MT. TAYLOR MINE

SIZE GRADATIONS

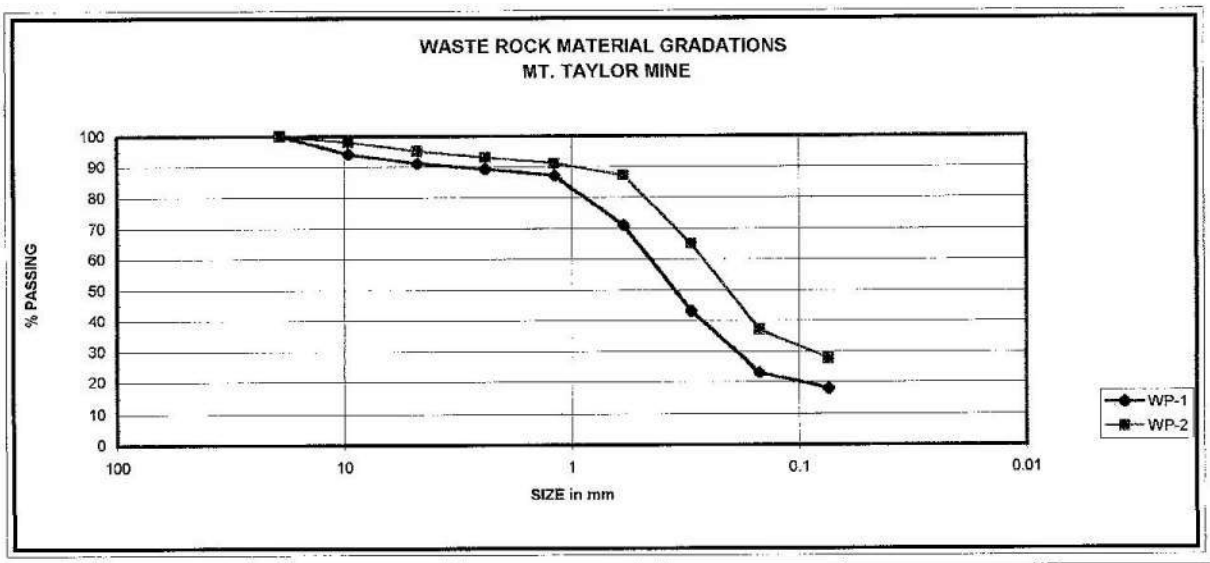
SIEVE #	SIZE in mm	% PASSING FOR SAMPLE #:												
		TP1	TP2	TP3	TP4A	TP4B	TP5	TP6	TP7	TP8	TP9	TP10	TP11	AVERAGE
3/4"	19.1													
3/8"	9.52		100					100						100
4	4.76		99	100				99						99
8	2.38		98	99	100	100	100	98	100	100		100		99
16	1.19	100	97	99	99	99	99	95	99	99	100	99	100	99
30	0.59	99	96	98	97	98	98	93	96	97	99	98	99	97
50	0.297	96	91	94	94	97	94	89	92	94	97	95	97	94
100	0.149	79	60	68	80	88	77	63	76	78	90	82	90	78
200	0.074	66.4	45.3	51.9	69.4	75.7	65	48.5	67.3	63.3	79.5	72.6	80.3	65
USCS =		CL	SC	CL	CL	CL	CL	SC	CL	CL	CL	CL	CL	CL
LL =		38	28	28	39	38	30	29	38	37	44	34	44	36
PI =		18	11	13	21	21	16	14	21	20	26	19	25	19
d75 =		0.15	0.2	0.19	0.1	0.06	0.13	0.2	0.14	0.15	0.05	0.09	0.18	0.14



WASTE ROCK CHARACTERISTICS
MT. TAYLOR MINE

SIZE GRADATIONS

SIEVE #	SIZE in mm	% PASSING			
		WP-1	WP-2	AVERAGE	
3/4"	19.1	100	100	100	
3/8"	9.52	94	98	96	d75 = 0.5mm
4	4.76	91	95	93	d50 = 0.3mm
8	2.38	89	93	91	
16	1.19	87	91	89	
30	0.59	71	87	79	
50	0.297	43	65	54	
100	0.149	23	37	30	
200	0.074	17.8	27.7	23	



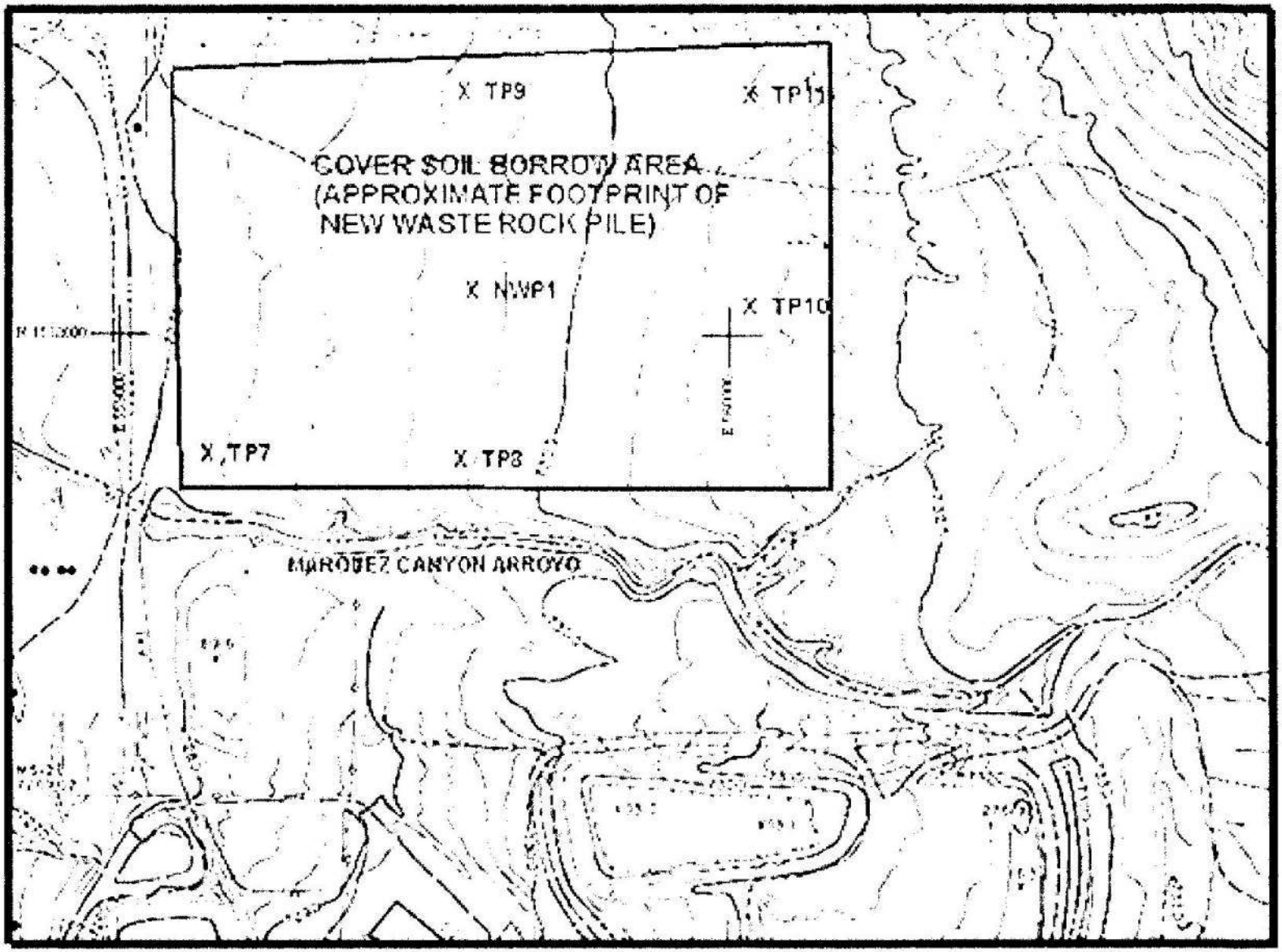


FIGURE A-1 LOCATIONS OF SOIL SAMPLES WITHIN DESIGNATED COVER SOIL BORROW AREA

Inter·Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

Client: Rio Grande Resources Corp.
Project: Mt. Taylor Mine
Sample ID: Composite
Lab ID: 0398S05459
Matrix:
Condition:

Date Received: 09/16/98
Date Reported: 09/17/98
Date Sampled: NG

Parameter	Analytical Result	Units	Units
PH	9.2	s.u.	
Solids - Total Dissolved	170	mg/L	
Nitrogen - Nitrate	0.17	mg/L	
Sulfate	11	mg/L	
Arsenic	0.013	mg/L	
Cadmium	<0.004	mg/L	
Chromium	<0.01	mg/L	
Iron	0.92	mg/L	
Lead	<0.05	mg/L	
Molybdenum	0.02	mg/L	
Selenium	0.034	mg/L	
Zinc	0.10	mg/L	

Reference: EPA - "Methods for Chemical Analysis of Water and Wastes (MCAWW)" - EPA/600/4-79-020 - March, 1983.

Reviewed By:

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

Client: Rio Grande Resources Corp.
Project: Mt. Taylor Mine
Sample ID: WP #3 NW
Lab ID: 0398S04751
Matrix: Soil
Condition: Cool/Intact

Date Received: 08/20/98
Date Reported: 09/17/98
Date Sampled: 08/19/98
Time Sampled: 1000

Parameter	Analytical Result	Units	Units
Sulfur forms - Total	0.00	%	
Acid Base-TS	0.0	t/kt	
Neutralization Potential (NP)	10	t/kt	
Acid Base Potential-TS	10.2	t/kt	

Reference:

Reviewed By:

Inter-Mountain Laboratories, Inc.

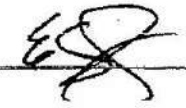
2506 W. Main Street
Farmington, New Mexico 87401

Client: Rio Grande Resources Corp.
Project: Mt. Taylor Mine
Sample ID: WP #1 SW
Lab ID: 0398S04749
Matrix: Soil
Condition: Cool/Intact

Date Received: 08/20/98
Date Reported: 09/17/98
Date Sampled: 08/19/98
Time Sampled: 0930

Parameter	Analytical Result	Units	Units
Sulfur forms - Total	0.01	%	
Acid Base-TS	0.31	t/kt	
Neutralization Potential (NP)	30	t/kt	
Acid Base Potential-TS	29.9	t/kt	

Reference:

Reviewed By: 

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

Client: Rio Grande Resources Corp.
Project: Mt. Taylor Mine
Sample ID: WP #2 Center
Lab ID: 0398S04750
Matrix: Soil
Condition: Cool/Intact

Date Received: 08/20/98
Date Reported: 09/17/98
Date Sampled: 08/19/98
Time Sampled: 0945

Parameter	Analytical Result	Units	Units
Sulfur forms - Total	0.03	%	
Acid Base-TS	0.94	t/kt	
Neutralization Potential (NP)	24	t/kt	
Acid Base Potential-TS	23.1	t/kt	

Reference:

Reviewed By: _____

APPENDIX E

Cost Estimate

To be supplied 60 days after CCP is approved

APPENDIX F

Revegetation Plan and Monitoring Protocols

Mt. Taylor Mine

REVEGETATION PLAN AND MONITORING PROTOCOLS

October 2025

Prepared by:

CEDAR CREEK ASSOCIATES, INC.

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1.0 INTRODUCTION

This plan, part of the Closeout/ Closure Plan (CCP) for the Mt. Taylor Mine, describes the measures that Rio Grande Resources (RGR) will take to re-establish vegetation on disturbed areas within the mine permit area that will minimize additional disturbance, mitigate impacts to affected environmental resources, rehabilitate disturbed areas to support post-mining land use (PMLU) of grazing, and provide protection of soil and runoff comparable to the natural conditions in the local area. The requirements of this Plan will be implemented primarily by a contractor at the time of mine closeout. The mine surface facilities are located on 285.6 acres, of which approximately 148 acres are currently disturbed land, and the remaining 137.9 acres are undisturbed. Closeout activities are anticipated to disturb an additional 27 acres, bringing the total land disturbance to 175 acres. Affected areas, to be identified before RGR commences final reclamation, will also be revegetated according to this plan. The affected areas known at this time to be revegetated include Borrow Area B and the areas of the Treated Water Discharge Pipeline outside of the Right-of-Way.

The areas to be revegetated include:

- Support (Service and Support) Facilities – 32 acres
- Mine Water Treatment Area - 28 acres
- Treated Water Discharge Pipeline beyond the mine surface area - 15 acres
- Ore Stockpile Pad and Runoff Retention Pond – 11.8 acres
- Expanded Disposal Cell - 13 acres
- Affected Areas
    - Borrow Area B (and access road) – 6.7 acres
    - Continental Divide Substation Area (depending on the Utility's wishes)
    - County Road 334 - 4.7 acres (non-driving surfaces of the Access Road)
    - Area of the Treated Water Discharge Pipeline outside of the Right-of-Way

The remainder of the disturbed area not to be revegetated includes the Continental Divide Substation, PMLU buildings, road surfaces, the south storm water pond, diversion channels, and rock slopes.

2.0 REVEGETATION PROTOCOLS

Revegetation protocols and performance criteria for Part 5 and Part 6 guidelines from the New Mexico Mining and Minerals Division. The particular guidance relevant to the project are the Self-Sustaining Ecosystem Guideline (December 2022), the Soil and Cover Material Handling and Suitability Guideline, and Revegetation Guideline (December 2022). This revegetation plan includes reasonable considerations growth media, seeding conditions, and site conditions including climate and post-mining use.

2.1 Grading

To prepare the mine site ground surfaces for revegetation, mine facilities not preserved for PMLU will be removed (CCP Technical Specification C.2) and the disturbed areas within the mine permit area will be regraded (CCP Section 4.4.7, Finish Grading and CCP Technical Specification C.4), including backfill of mine water treatment pond basins to approximate original grades.

Regraded material will be placed to minimize potential adverse effects to surface water, ground water and natural conditions of areas outside of the mine area. All surfaces will be graded to a final surface configuration which will support the approved post-mining land use, which will be grazing, or where appropriate, commercial. Temporary runoff and erosion controls, specified in the Stormwater Pollution Prevention Plan (SWPPP) will be employed to manage sediment generated during closeout earthwork. Grading operations will be performed by dozers, scrapers, graders or other equipment. An excavator with hydraulic hammer may be used to reduce high walls to 1H:1V slope, where appropriate. Finish grading will create the grades and slope directions shown on the CCP Appendix A drawings sheets CL 07A, CL 07B, CL 14, and CL 15, which may include shallow depressions and will have a roughened surface suitable for seed nesting and resistance to erosion.

2.2 Growth Media Considerations

At the Mt. Taylor Mine, the soil profile is typically 0-36 inches of silty sand over layers of interbedded inorganic clays of medium plasticity and sand-clay mixtures. The topsoil, referred to here as growth media, consists of fine grained sand, sand-clay mixtures, and medium plasticity clay. The agronomic descriptions of these soils are given in the CCP Section 4.4. The soil that is intended to be used for the growth media that will cover the radon barrier of the waste pile and disposal cell is classified as silty sand (SM), sand-clay mixtures (SC), and low to medium plasticity clay (CL) per the Unified Soil Classification System (USCS) and as sandy loam and clay loam per the USDA classification system (HEAL, 2014). It occurs as a residual soil derived from weathering of Mesa Verde sedimentary rock or colluvial/ alluvial soil from erosion of up-slope rock outcrops, including basalt. Based on Table 1 of the Closeout Plan

Guidelines for Existing Mines (MARB 1996) that are part of the State of New Mexico Energy, Minerals and Natural Resources Department (EMNRD) of Mining Act Reclamation Program (MARP) Attachment #1, Soil and Topsoil Suitability Ratings, this soil is rated as good to fair for texture.

During mine construction, site soils were excavated to create pond basins and other surficial features on the site. Most of the excavated soil was used to construct pond berms and to adjust grades for mine surface facilities. Local soils will be used for the growth media and will be obtained primarily from existing borrow areas, by excavations on site or borrow areas adjacent to the mine site, and regrading of pond berms or other grading performed during ground preparation. Table 4.3 (CCP) lists the available soil volumes versus borrow soil required for closeout; ample soil is available from these various sources, all within the mine permit boundaries.

2.2.1 Growth Media for Waste Rock Pile and Disposal Cell Cover

According to the latest design, a 33-inch layer of growth media (comprised of a piedmont soil) will be placed on top of the radon barrier, then a 12-inch rock mulch layer for erosion protection will be placed on the top surface of the cell cover. The rock mulch will be approximately 30% 2-inch minus and 70% pediment soils by volume. During placement, only light compaction of the piedmont soil will occur as a result of equipment movement used to place, spread, and grade the loam soil. Soil textures for the growth medium will follow the USDA classification system.

Growth media will be placed on the disposal cell by truck and spread primarily by dozer or motor-grader. The appropriate soil thickness will be achieved by GPS-guided equipment following the soil cover grading plan. The thickness of the placed loam cover is verified by sampling of soil depth using hand-augured holes through the completed growth medium. Thickness verification measurements will be made at least every ¼ acre. RGR will utilize an independent QA/QC contractor to obtain these measurements and validate the growth media layer thicknesses. For each location, the measurements will be documented and reviewed to ensure that the minimum thickness of growth media is attained. Where growth media layer thicknesses are insufficient, additional material will be placed to correct the deficiencies.

2.2.1.1 Biointrusion

Biointrusion can occur from plants, mammals, and insects. In general, upland plants in the region, even potentially deep-rooted shrubs, have the majority of their roots in the top 25 cm of the soil profile because the plants are primarily relying on precipitation to maintain. At the Homestake – Grant Reclamation Project, Cedar Creek observed a saltbush taproot growing laterally at approximately 20 cm depth. This is evidence that the plant rooting will develop where plant available water is. In the context

of the cover, the plant roots would not be expected to penetrate the radon barrier because plant available water would not be found in the radon barrier. If precipitation were to percolate deep into the soil profile, it would be expected to rest on top of the radon barrier. Due to the compaction, the plants would respond by forming fine dense roots in the vicinity to use the available water. Therefore, plant biointrusion is generally not a concern on the cover.

In general, it is likely that small mammals will inhabit the cover over time. High concentration of burrows and tunnels affect soil morphology and are likely to increase percolation rates. However, the majority of species with the potential to inhabit the area have shallow burrowing depths that leave them unlikely to interact with the radon barrier. Prairie dogs and badgers pose the highest risk to the cover as they may burrow deep enough to affect the radon barrier and form many wide burrows.

There are many species of insects that may be present on the cover. In general, the species of flies, wasps, crickets, and beetles, that have subterranean habits are unlikely to burrow more than a maximum of 12 inches into the ground and generally only burrow down to 6 inches. However, ants and termites, which can burrow upwards of 6 and 30 feet underground, respectively, are possible risks to the cover.

Overall, the cover design of using a rock mulch layer, with 30% 2-inch minus rock by volume, on the top surface generally discourages burrowing from insects and small mammals but the care and maintenance plan for the cover should include observations of small mammal burrows and insect mounds to ensure the effectiveness of the cover.

2.2.2 Growth Media for Contaminated Soil Clean-up Areas

When the excavation of contaminated soil has been finished, RGR will determine whether at least six inches of clean soil remains in place in areas to be revegetated. An agronomic assessment will be implemented to determine whether the remaining soils exhibit suitable physical, chemical, and fertility parameters to establish and sustain plant growth. Organic amendments or supplemental growth media may be used to address agronomic deficiencies.

2.3 Seedbed Preparation

Native arid vegetation is ecologically adapted to low fertility systems. Therefore, using standard agronomic fertility ranges designed for intensively managed, often heavily irrigated, and annually harvested agricultural systems is misrepresentative of the requirements for arid grassland and shrub systems in New Mexico.

When soil materials are disturbed (plowed, harvested, tilled), organic matter and associated fertility can be released (volatilized) by a subsequent increase in microbial activity. Incorporation of compost to

improve germination conditions for the revegetation surface is recommended. Soil organic matter serves as a reservoir of nutrients for vegetation, provides soil aggregation (providing structure), increases nutrient exchange, retains moisture, reduces compaction, reduces surface crusting, and increases water infiltration into soil. Organic matter increases the water holding capacity as it alters particle aggregation and pore size distribution. Water holding capacity of soil materials is an important consideration for land reclamation. Suitable soil water content is essential for seed germination, seedling establishment, and plant survival as desiccation is a major risk on disturbed sites, especially in arid environments.

Compost is a mixture of organic residues (manure or biosolids or green waste, straw, etc.) that have been piled, mixed and moistened to undergo thermophilic decomposition. Enough compost amendment should be incorporated into the project soils to add 1% organic matter to the top 3 inches of soil. Therefore, a general application rate of 8 cubic yards per acre incorporated to 3 inches depth of composted cow or green manure, or composted biosolids, should be sufficient for reclamation on the tailings site. Suitable material will have at least 25% organic matter, pH not to exceed 8.5, soluble salts less than 10 mmhos/cm, and carbon to nitrogen ratio between 10:1 and 20:1. Moisture content, salinity, and organic matter, of organic amendments need to be tested for by a certified laboratory. All testing should be conducted on representative samples of material from the same batch intended to be purchased. Given the potential for elevated salts in the soils, only low salt amendments should be used. Composted biosolids will be tested to ensure sufficiently low radium activity concentrations prior to use. In specific instances, such as harvesting growth media from very deep in the soil profile or using material stockpiled for more than a year, increased quantities of manure may be beneficial, and will be addressed on an "as needed" basis.

Composted manures and composted biosolids are more desirable than inorganic fertilizers and industrial byproducts such as Biosol, because they are significantly lower in inorganic and total nitrogen. Nitrogen preferentially stimulates the growth of undesirable weedy annual species, which reduces available water and nutrients for desirable perennial vegetation. In addition to the low nitrogen levels, the physical structure of the compost increases localized water holding capacity and creates "islands" of fertility to aid germination. Plant germination and establishment in the first few years is critical, as native seed sources then begin to supplement the initial seeding and stabilize the soil medium. Organic amendment application should occur immediately prior to seeding, and be incorporated as soon as

possible, preferably by disk harrow. Composted manure and/or biosolids left on the soil surface, exposed to warm temperatures and potential precipitation, will readily decompose, thus making it less beneficial.

2.4 Seeding

The proposed seed mix is comprised of all native species and application rates are presented on the table below and is optimized for site edaphic and climatic conditions. Each included species was evaluated for the following factors:

- Species Range
- Adapted to Project Soils
- Performance on Local Revegetation
- Species Dominance in Local Ecological Communities
- Precipitation Zones

These factors were also considered when recommending application rate, which was determined by seeds per square foot. Seeding can be accomplished using either broadcasting and drilling techniques (as recommended on the seed mix), following final contouring and compost application/incorporation. Seeding season shall be March 1 to April 30 or October 1 to November 30. In certain circumstances, seeding prior to the monsoonal period (in June or July) may be appropriate as well. Efforts will be made to implement seeding at optimal times for site conditions (late fall/early spring). However, if a unit must be seeded during inopportune months, a field level risk assessment will determine whether temporary erosion control measures (such as crimped hay, wood shreds, wattles, etc.) are needed to stabilize the surface prior to anticipated vegetation establishment. Drill seeding techniques cannot be used on extremely rough surfaces and in areas with slopes of 3H:1V or steeper (natural or cut slopes east of the shafts). In these situations, seed will be broadcast, and a light disc harrowing perpendicular to the flow of energy (wind and/or water) should immediately follow seeding to increase seed to soil contact and provide some protection from wind or water erosion and granivory. Hydroseeding may also be used in a

two-pass system, where the first pass is dedicated to sowing most of the seed and the second pass installs the mulch. The disposal cell will be seeded with this mix.

Mt. Taylor Seed Mix						
			Specifications / Recommendations			
Lifeform	Common Name	Scientific Nomenclature	PLS / lb.**	Recommd. PLS lbs/ac	PLS / ft^2	% of Seeds in Mix
Grasses	Sideoats Grama	*Bouteloua curtipendula*	191,000	1.00	4.4	5.0%
	Blue Grama	*Bouteloua gracilis*	825,000	1.00	18.9	21.6%
	Bottlebrush Squirreltail	*Elymus elymoides*	192,000	0.50	2.2	2.5%
	Slender Wheatgrass	*Elymus trachycaulum*	159,000	2.00	7.3	8.3%
	Indian Ricegrass	*Eriocoma hymenoides*	141,000	1.00	3.2	3.7%
	Galleta	*Hiliaria jamesii*	159,000	0.50	1.8	2.1%
	Alkali Sacaton	*Sporobolus airoides*	1,758,000	0.25	10.1	11.5%
	Sand Dropseed	*Sporobolus cryptandrus*	5,298,000	0.10	12.2	13.9%
		Grass Subtotal		**6.35**	**60.1**	**68.7%**
Forbs	Lewis Flax	*Linum lewisii*	293,000	1.00	6.7	7.7%
	Rocky Mtn. Penstemon	*Penstemon strictus*	592,000	0.25	3.4	3.9%
	Upright Prairie Coneflower	*Ratibida columnifera*	737,104	0.25	4.2	4.8%
	Scarlet Globemallow	*Sphaeralcea coccinea*	500,000	0.25	2.9	3.3%
		Forb Subtotal		**1.75**	**17.2**	**19.7%**
Shrubs	Fourwing Saltbush	*Atriplex canescens*	52,000	2.50	3.0	3.4%
	Winterfat	*Ceratoides lanata*	56,700	2.00	2.6	3.0%
	Rubber Rabbitbrush	*Chrysothamnus naseousus*	400,000	0.50	4.6	5.2%
		Shrub Subtotal		**5.00**	**10.2**	**11.6%**
		Total		**13.10**	**87.5**	
Suitable Alternatives	Purple Three-awn	*Aristida purpurea*	250,000			
	Spike Muhly	*Muhlenbergia wrightii*	1,600,000			
	Western Wheatgrass	*Pascopyrum smithii*	110,000			
	Purple Prarie Clover	*Dalea purpurea var. purpurea*	300,000			
	Firecracker Penstemon	*Penstemon eatonii*	900,000			
	Sand Sagebrush	*Artemisia filifolia*	2,000,000			
	Apache Plume	*Fallugia paradoxa*	480,000			

2.5 Erosion Control

The principle means to obtain erosional stability on the disposal cell is rock armor. Vegetation establishment and persistence will serve as the primary erosion control measure for other revegetation. A field level risk assessment will determine whether temporary erosion control measures (such as certified weed-free crimped hay, wood shreds, wattles, etc.) are needed to stabilize the surface prior to anticipated vegetation establishment.

2.6 Climate Change Considerations

Climate change modeling results provide general indications of how the climate may shift in New Mexico over the next several decades and into the next century, albeit with a significant degree of uncertainty, spatially, temporally, and degree of magnitude. In general, modeling results from the Nature Conservancy and the Southwest Climate Change Network indicate a general warming and drying trend (with localized instances of cooling and increases in precipitation), with increased variation in timing, intensity, and form of precipitation from typical averages. The species selected for revegetation are well suited to the current arid climate of this region, yet have a relatively wide tolerance to climatic conditions, particularly regarding the predicted result of climate change (warmer and drier). In other words, if precipitation decreases, drought increases, or temperatures and subsequent evaporation rates rise, these species will still be suitable for and tolerant of future climates projected in the region. The anticipated circumstances of climate change may actually select for more efficient, later seral species (as is a desired outcome for the project), over short-lived annuals and less efficient cool season grasses.

3.0 VEGETATION SAMPLING METHODS

Revegetation monitoring will consist of both qualitative and quantitative protocols. Qualitative protocols record any deficiencies in vegetation, both general and localized, and any other pertinent information relative to the reclamation is also recorded while traversing monitoring units during vegetation evaluations. During these traverses, the observer is vigilant for: 1) areas of poor establishment/growth, 2) pervasively weak or stressed plants, 3) indicators of soil fertility problems (e.g., certain anthocyanine colorations), 4) noxious weeds or invasive plant infestation, 5) evidence of unintended livestock grazing, 6) excessive erosion, 7) "pockets" of the aforementioned, and 8) any other similar revegetation / reclamation related issues. Quantitative protocols are described in the following sections.

Reference areas should be used as a benchmark for revegetation success. Appropriate reference areas will be selected in coordination with the New Mexico Mining and Minerals Division (MMD) prior to implementing revegetation monitoring and should provide a suitable target for revegetation performance by representing project topographic and edaphic conditions.

3.1 Sample Site Selection / Location

The systematic procedure for the determination of sample locations occurs in the following stepwise manner. First, a fixed point of reference is selected for the entire area to facilitate location of the systematic grid in the field. Second, a systematic grid of appropriate dimensions (i.e., 200 ft X 200 ft) is selected to provide a minimum number of coordinate intersections; reclaimed areas are conducted to a minimum of 20 transects whereas reference area sampling is conducted to a minimum of 15 initial transects. Third, a scaled representation of the grid is overlain on field maps extending parallel to major compass points to facilitate field location. Fourth, unbiased placement of this grid is controlled by selection of a random origin. Fifth, utilizing a GPS, all of the initial sample points are located in the field.

3.2 Determination of Ground Cover

Ground cover at each sampling site is determined utilizing the point-intercept method (Bonham 1989) as illustrated on Figure 1. Implementation of the technique for the sampling effort occurs as follows: First, a transect of 10 meters length is extended from the starting point of each sample site toward the direction of the next site to be sampled. Then, at each one-meter interval along the transect, a "laser point bar" is situated vertically above the ground surface, and a set of 10 readings recorded as to foliar hits on vegetation (by species), litter, standing dead, rock (>2mm), or bare soil. Hits are determined at each meter interval by activating a battery of 10 specialized lasers situated along the bar at 10-centimeter intervals and recording the variable intercepted by each of the narrow (0.02 inch)

focused beams (see Figure 1). In this manner, a total of 100 intercepts per transect are recorded resulting in 1 percent foliar cover per intercept.

3.3 Determination of Woody Plant Density

At each sample site, a 2-meter-wide by 50-meter-long belt transect is established parallel to the ground cover transect and in the direction of the next sampling point (in a cardinal compass direction – Figure 1). Occasionally 4 x 25 meter transects are employed where distance between points necessitates shorter belts. Then within each belt, all woody plants (shrubs, trees, and succulents) are enumerated by species and age class. Determination of whether or not a plant could be counted depends on the location of its main stem or root collar where it exited the ground surface with regard to belt limits.

3.4 Determination of Productivity

At each sample site, current annual production is collected from a 1/2 m^2 quadrat frame at each sampling location. Utilization and development will be estimated using on the ground observations of herbivory within each of these quadrat frames. The quadrat is placed one meter and 90º to the right (clockwise) of the ground cover transect to avoid vegetation trampled by investigators during sample site location. From within each quadrat, all above ground current annual vegetation within the vertical boundaries of the frame is clipped and bagged separately by life form as follows:

Native Perennial Cool Season Grass	Shrub
Native Perennial Warm Season Grass	Sub-Shrub
Introduced Perennial Grass	Native Perennial Forb
Annual Grass	Introduced Perennial Forb
Noxious Weed	Native/Introduced Annual/Biennial Forb

All production samples are returned to the lab for drying and weighing. Drying will occur at 105º C until a stable weight is achieved (typically 24 hours). Samples will then be weighed to the nearest 0.1 gram. Utilization and growth stage adjustments will be incorporated into the presentation of results.

3.5 Determination of Emergent Density

In the first growing season following seeding, between 5-15 samples are collected from each reclaimed unit. Each sample consists of a cluster of five 1.0 ft^2 quadrats distributed in an unbiased manner. Following a random toss of each quadrat, the number of emergent plants rooted within the frame's perimeter is recorded accordingly into one of five classes: perennial grass, perennial forb, shrub/tree (by species), annual grass, or annual forb.

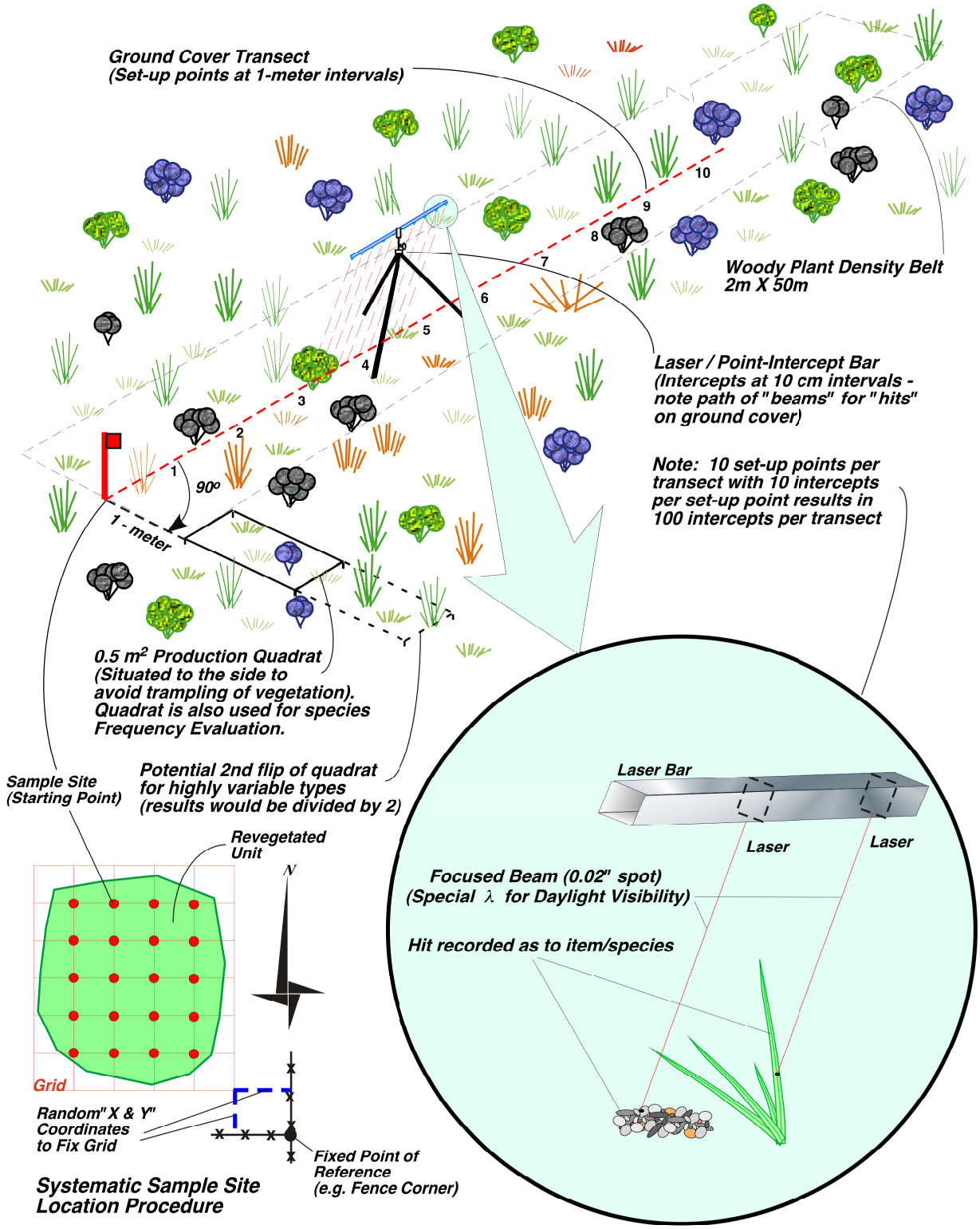


Figure 1

Sampling Procedure at a Systematic Sample Site Location

Figure 1: Sampling Procedure

4.0 REVEGETATION MONITORING SCHEDULE AND SUCCESS EVALUATIONS

4.1 Monitoring Schedule

The revegetation liability period (period of time that the owner is responsible for revegetation performance) under the MMD framework is 12 years with monitoring every three years. The annual site visits for the revegetation will be as follows:

Year 1 – Emergent Density Evaluation
Year 3 – Qualitative and quantitative evaluations (managerial information only).
Year 6 – Qualitative and quantitative evaluations (managerial information only).
Year 9 – Qualitative and quantitative evaluations (managerial information only).

Year 11 – Qualitative and quantitative evaluations (final success evaluation).
Year 12 – Qualitative and quantitative evaluations (final success evaluation).

As indicated, the final efforts, during year 11 and 12, would be an evaluation for success determination. Years 11 and 12 evaluations will be conducted in such a manner as to provide defensible verification that success has been achieved. If it is determined that vegetation needs additional time to mature, monitoring will continue once every 3 years, thereafter, until success evaluations are positive. Other than first year efforts, annual monitoring would be a combination of both qualitative and quantitative efforts to facilitate tracking and progress toward revegetation success standards.

4.2 Success Criteria

The primary post mining land use is anticipated to be grazing, therefore, revegetation success in revegetated units will concentrate on four performance standards (1) vegetative ground cover, and 2) diversity, 3) woody plant density, and 4) productivity. Revegetation efforts will be considered successful when the following criteria have been met. The reference areas will be sampled along with the revegetation to provide a suitable comparison each year of assessment. In this manner, the success criteria is dynamic and adjusts to climatic conditions.

1. Vegetative Ground Cover Standard

   The target revegetated unit equals or exceeds 70% of an appropriate reference area absolute desirable vegetative ground cover (exclusive of listed noxious species), with 90 percent statistical confidence. Desirable vegetation excludes noxious and nuisance (non-

native annual weeds) but includes other annuals and perennials which are native and non-native.

2. Species Diversity Standard:

   Ground cover shall be comprised of a minimum of three perennial grass species, one perennial forb species, and one shrub species to address species diversity.

3. Woody Plant Density Standard:

   Woody Plant Density, as indicated by number of stems per acre in the revegetated unit equals or exceeds 200 stems per acre.

4. Productivity Standard:

   The target revegetated unit equals or exceeds 70% of an appropriate reference area absolute desirable vegetative productivity (exclusive of listed noxious species and succulents). Desirable vegetation excludes noxious and nuisance (non-native annual weeds) but includes other annuals and perennials which are native and non-native.

4.3 Sample Adequacy Determination

Ground cover sampling within reclaimed areas is conducted to a minimum of 20 initial transects whereas reference area sampling is conducted to a minimum of 15 initial transects. From these preliminary efforts, sample means and standard deviations for total non-overlapping vegetation ground cover are calculated. The procedure is such that sampling continues until an adequate sample, $\mathbf{n_{min}}$, has been collected in accordance with the Cochran formula (below) for determining sample adequacy, whereby the population is estimated to be within 10% of the true mean (μ) with 90% confidence. These limits facilitate a very strong estimate of the target population (MMD 1996).

When the inequality ($\mathbf{n_{min}} \leq \mathbf{n}$) is true, sampling is adequate and $\mathbf{n_{min}}$ is determined as follows:

$$\mathbf{n_{min} = (t^2 s^2) / (0.1\ \bar{x}\ )^2}$$

where: n = the number of actual samples collected

t = the value from the one-tailed t distribution for 90% confidence with n-1 degrees of freedom

s^2 = the variance of the estimate as calculated from the initial samples

$\bar{x}$ = the mean of the estimate as calculated from the initial samples

If sampling is designed for a formal success evaluation and the initial samples do not provide a suitable estimate of the mean (i.e., had the inequality been false), additional samples will be collected until the inequality ($\mathbf{n_{min}} \leq \mathbf{n}$) becomes true or until a maximum of 40 samples are collected. If sample adequacy is not achieved after 40 samples are collected, a reverse null approach will be used to demonstrate success. The demonstration of success will utilize the central limit theorem which assumes approximate normality when a sufficiently large number of samples are collected (greater than 30). A one-sided, one-sample, reverse–null t-test is considered appropriate. Since sampling adequacy is not required (nor recommended) for woody plant density, one density belt will be co-located with each ground cover transect, but adequacy shall not be tested for this variable. Resulting data can then be considered reasonable for the evaluation purposes intended.

5.0 MANAGEMENT ACTIONS / CONTINGENCY

After the initial seeding occurs and monitoring has begun, circumstances may require additional management actions to facilitate revegetation parcels toward the desired outcomes. The management actions presented below may not represent an exhaustive list of potential options, as additional management alternatives may be needed to address site-specific issues that arise.

5.1 Inter-seeding

If undesirable precipitation, wind events, or any other factors contribute to poor seed germination, additional seed may be broadcast or drilled (if topography allows) to increase vegetative cover or diversity, as required.

5.2 Weed Control

Weed management may be implemented if noxious weeds identified during annual vegetation surveys present an obstacle to achieving performance criteria for the cover. Noxious weed control is species-dependent and both method and timing will vary from species to species. Should the need arise, noxious weed patches will be identified and delineated with a GPS during the annual vegetation survey. Data regarding the species and density of the population will be recorded, and then an informal control plan will be formulated and implemented. The effectiveness of control methods will be documented during the following annual vegetation survey.

Prevention is the highest priority weed management practice on non-infested lands; therefore, protecting weed-free plant communities is the most economical and efficient land management practice. Prevention is best accomplished by ensuring that new weed species seed or vegetative reproductive plant parts of weeds are not introduced into new areas and early detection of any new weed species before they begin to spread. Control methods may include chemical or mechanical approaches. The optimum method for weed management varies depending on a number of site-specific variables such as associated vegetation, weed type, stage of growth, and severity of the weed infestation.

5.2.1 Chemical Control

Chemical control consists of selective and non-selective herbicides. Target noxious weed, herbicide selection, proximity to desirable plant species, and timing are considerations for chemical control. The use of herbicides would be in compliance with all Federal and State laws on proper use, storage, and

disposal. The chemical application would be done by a licensed contractor in accordance with all applicable laws and regulations and all label instructions will be strictly followed.

5.2.2 Mechanical Control

Mechanical control is the physical removal of weeds and includes tilling, mowing, and pulling undesirable plant species. Treatment options and efficacy depend on the noxious weed targeted and method used.

5.3 Mulching

If revegetation parcels are eroding at an unforeseen rate while vegetation is still being established, mulch may be used to provide rainsplash and wind protection, reduce evaporation, and stabilize the seedbed. Preferably, a wood fiber or wood shred mulch would be used, as it is more robust than hay or straw and more likely to provide wind protection.

If used, wood fiber mulch or wood shred mulch would consist of specially prepared wood fibers and would not be produced from recycled material such as sawdust, paper, cardboard, or residue from pulp and paper plants. If necessary, such as on a steep slope or an area deemed a high wind erosion risk area, a tackifier can be used with the wood-fiber mulch to improve adhesion. If erosion areas are localized, small, or well sheltered, a simple straw mulch should suffice in providing rainsplash protection. Interseeding would most likely be necessary if erosion is sufficient enough to require post-revegetation corrective mulching.

5.4 Supplemental Irrigation

The seed mix proposed for this project is comprised of species adapted to the local climactic conditions and supplemental irrigation is not likely required to establish vegetation. Irrigation typically causes an artificial climactic regime that overly encourages annual weeds versus the desired seeded species. Also, under the influence of irrigation, the adapted plants that do germinate will develop above ground biomass at the expense of below ground biomass. Once the irrigation stops, those plants have essentially become "accustomed" to artificial circumstances and will typically die during a normally tolerated drought. Over approximately the last 20 years, practical applications of arid land reclamation science have abandoned the use of irrigation.

However, a prolonged drought during the plant establishment period could become detrimental to the project. In this specific circumstance, supplemental irrigation may be used to facilitate germination, but procedures for implementing irrigation need to be highly managed and not exceed 120% of any

monthly precipitation average. Soil moisture sensors and unsaturated flow modeling should accompany the planning and implementation of irrigation events to facilitate vegetation establishment and growth, while maintaining the primary function of isolating the buried materials from the water balance. Per the New Mexico Mining and Minerals Division comments on the CCP (May 10, 2023), irrigation of revegetated areas will only be permitted for the first three years after seeding.

To encourage and sustain perennial growth, particularly of warm season grasses and shrubs, and discourage annual weedy species, irrigation needs to occur as infrequent pulses of relatively substantial quantities of water, in an attempt to mimic the natural monsoonal precipitation experienced in mid to late summer. These irrigation events, mimicking high intensity, short duration convective thunderstorms will increase the amount of plant available water, facilitating the robust and extensive root systems needed for survival of perennial vegetation beyond irrigation. In contrast, frequent and shallow irrigation events will benefit the shallow rooted annual species and facilitate perennial root growth near the surface, which during periods of drought will desiccate, and result in the senescence of all shallow rooted vegetation.

6.0 REFERENCES

Bonham, Charles D., 1989. *Measurements for Terrestrial Vegetation*. John Wiley & Sons. 338 pp.

Mining Act Reclamation Bureau (MARB). 1996. Closeout Plan Guidelines for Existing Mines. April 30.

New Mexico Mining and Minerals Division (MMD). 1996. Attachment 2 – Revegetation Standards and Sampling Methods. April 30, 1996.

MMD. 2010. Guidance Document for Part 5 New Mining Operation Permitting Under the New Mexico Mining Act. August 2010.

MMD. 2022a. Guidance for Revegetation of Part 5 Existing Mines and Part 6 New Mines. December 2022.

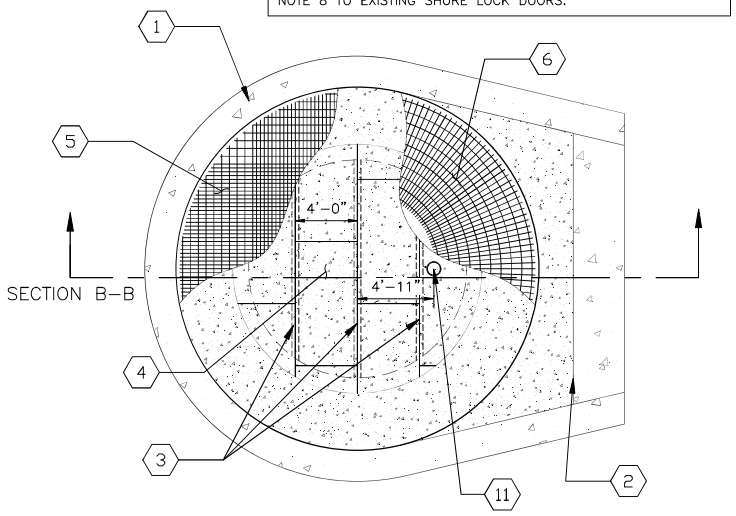
MMD. 2022b. Guidance for Soil and Cover Material Handling and Suitability for Part 5 Existing Mines. December 2022.

MMD. 2022c. Self-Sustaining Ecosystem Guidelines: In the Context of the New Mexico Mining Act Rules. December 2022.

APPENDIX G

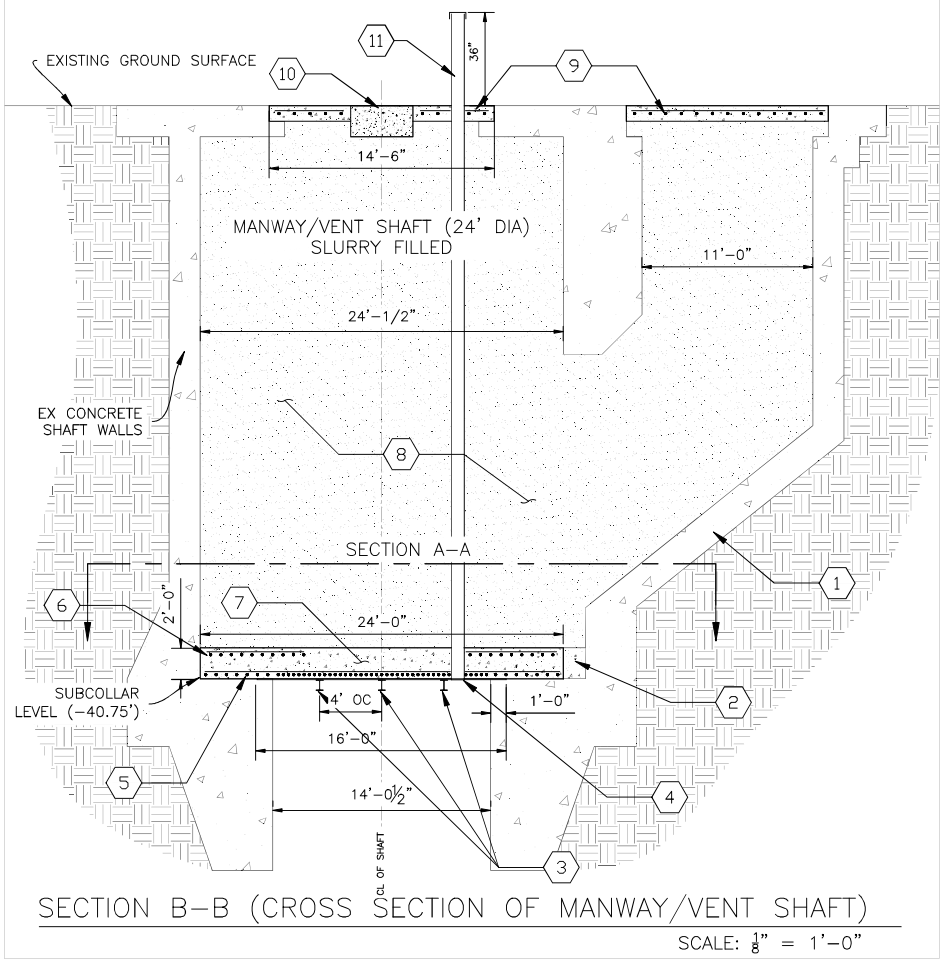
Structural Design of Shaft Plugs

NOTE: MAN TUNNEL NOT SHOWN BUT SHALL BE SEALED TO PREVENT CLSM MIGRATION FROM SHAFT OR BACKFILLED PER KEY NOTE 8 TO EXISTING SHURE LOCK DOORS.



SECTION A-A (PLAN VIEW AT SUBCOLLAR LEVEL)

SCALE: 1/8" = 1'-0"



SECTION B-B (CROSS SECTION OF MANWAY/VENT SHAFT)

SCALE: 1/8" = 1'-0"

KEYED NOTES

1. EXISITING REINFORCED CONCRETE SHAFT WALLS. PROTECT IN PLACE EXCEPT WHERE NOTED
2. EXISTING CONCRETE SHELF WALL TO ACT AS EDGE FORM. NEW SLAB CONCRETE TO EXTEND TO THIS POINT, BUT REINFORCEMENT NOT NECESSARY BEYOND LIMITS SHOWN.
3. W8X21 STEEL BEAMS SPACED 4'-0" OC SUPPORTING STEEL PLATING. BEAMS TO BE SUPPORTED AT ENDS WITH POST INSTALLED ANCHORS ATTACHED TO GUSSET PLATES
4. 3/4" STEEL PLATES TO SUPPORT CONCRETE SLAB. WELD PLATES TO STRINGERS AND AT UNSUPPORTED SEAMS. EDGES TO BE SUPPORTED BY MIN 12" OF EXISTING SHAFT COLLAR
5. BOTTOM MAT OF SLAB REINFORCEMENT. #8 @ 3" OC EACH WAY OVER CENTER 1/3 OF SLAB. #8 @ 6" OC EACH WAY OVER OUTER THIRDS. ALL BARS TO BE EPOXY COATED
6. TOP MAT OF SLAB REINFORCEMENT AT OUTER THIRD OF SLAB. #8 @ 2 DEGREES RADIALLY. #8 CIRCLES CONCENTRICALLY SPACED @ 8". ALL BARS TO BE EPOXY COATED
7. 4500 PSI HEAVY WEIGHT CONCRETE @ 24" DEPTH. TEST CONCRETE AT 7, 14, & 28 DAYS FOR STRENGTH. DO NOT BACKFILL UNTIL DESIGN STRENGTH IS ACHIEVED
8. CONTROLLED LOW STRENGTH MATERIAL (CLSM) SLURRY BACKFILL TO BE PLACED AFTER 28 DAY DESIGN STRENGTH IS ACHIEVED ON CONCRETE SLAB
9. LIGHTWEIGHT 2500 PSI CONCRETE SLAB AT MANWAY AND VENT SHAFT SURFACE ENTRANCES. 12" MIN DEPTH WITH #4 @ 12" OC EW.
10. PRECAST CONCRETE CAP WITH MARKER. 4' X 4' X 2' DEEP. INSCRIBED USING 4" LETTER EMBEDDED STATING: "MOUNT TAYLOR MINE MANWAY/VENT SHAFT, CLOSED [DATE]"
11. 10" SCH 40 STEEL PIPE TO SERVE AS SAMPLING WELL. WELD PIPE TO CIRCULAR HOLE CUT INTO STEEL PLATE. CAP TOP OF WELL WITH ROYER LOCKING WELL CAP OR EQUAL.

MANWAY SHAFT MATERIAL QUANTITIES

ITEM	QTY	UNIT
#8 EPOXY COATED REBAR-BOTTOM MAT	2894	FT
#8 EPOXY COATED REBAR-TOP MAT	1715	FT
4500 PSI CONCRETE	34	CY
3000 PSI LIGHTWEIGHT CONCRETE	11	CY
3/4" STEEL PLATE	204	SF
W8X21 STEEL BEAMS	38	LF
CLSM SLURRY BACKFILL	660	CY

GENERAL NOTES:

1. THIS PLAN IS INTENDED TO REPLACE DRAWING NO MT13-CL-05 IN THE PREVIOUSLY APPROVED 'MOUNT TAYLOR MINE CLOSEOUT/CLOSURE PLAN' DEVELOPED BY ALAN KUHN ASSOCIATES LLC, DATED 12-17-13.
2. REMOVE AND DROP ALL EQUIPMENT, FITTINGS, AND UTILITIES BETWEEN COLLAR AND SUB COLLAR LEVEL PRIOR TO CONSTRUCTION
3. ALL SLURRY BACKFILL TO INCLUDE SOIL, PORTLAND CEMENT, AND FLY ASH. MINIMUM COMPRESSIVE STRENGTH OF 75 PSI
4. ALL REINFORCING STEEL TO BE GRADE 60, EPOXY COATED REBAR
5. ALL WELDS TO BE 1/4" , 2" LONG, SPACED 6" APART
6. ARRANGEMENT OF STEEL SUPPORT MAY BE ROTATED AS NECESSARY
7. STEEL PLATES MAY BE SQUARED OFF PROVIDED A MINIMUM SUPPORT OF 12" OVER COLLAR
8. ALL EDGES AND JOINTS OF STEEL SUPPORT STRUCTURE TO BE SEALED TO ENSURE UNCURED CONCRETE CANNOT LEAK
9. PLACEMENT OF CONCRETE TO ADHERE TO ACI CODES, VIBRATED IN PLACE TO ENSURE NO VOIDS ARE PRESENT
10. REBAR LAYOUT AND STEEL BEAM CONNECTION DETAILS TO BE PROVIDED WITH ISSUE FOR CONSTRUCTION (IFC) PLAN REVISIONS

REV:	DESCRIPTION:	BY:	DATE:
0	FOR CLOSURE PLAN	JJL	4/6/22

STATUS: NOT FOR CONSTRUCTION

CRITICAL VIEW ENGINEERING
PO BOX 90073
ALBUQUERQUE, NM 87199
(505) 321-5917

CLIENT: RIO GRANDE RESOURCES INC
GRANTS, NM 87020

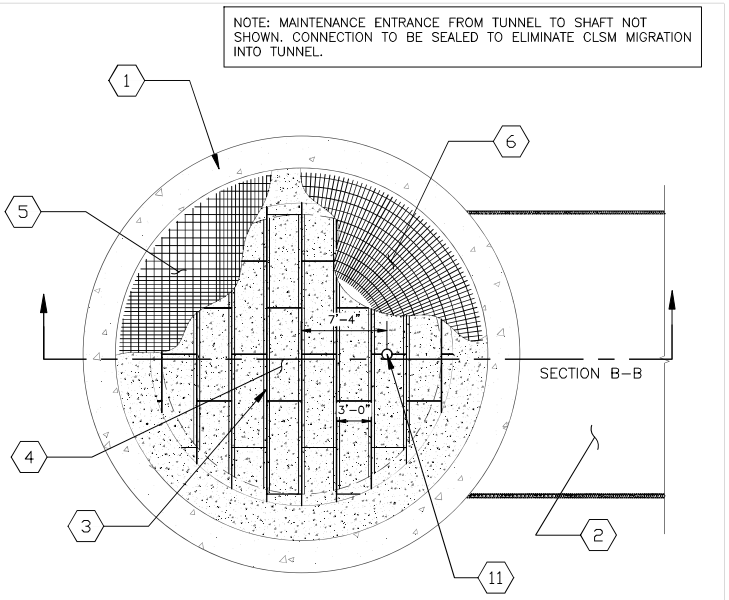
ARCHITECT:

PROJECT: RIO GRANDE RESOURCES INC MOUNT TAYLOR MINE

TITLE: RC SLAB SHAFT CLOSURE MANWAY/VENT

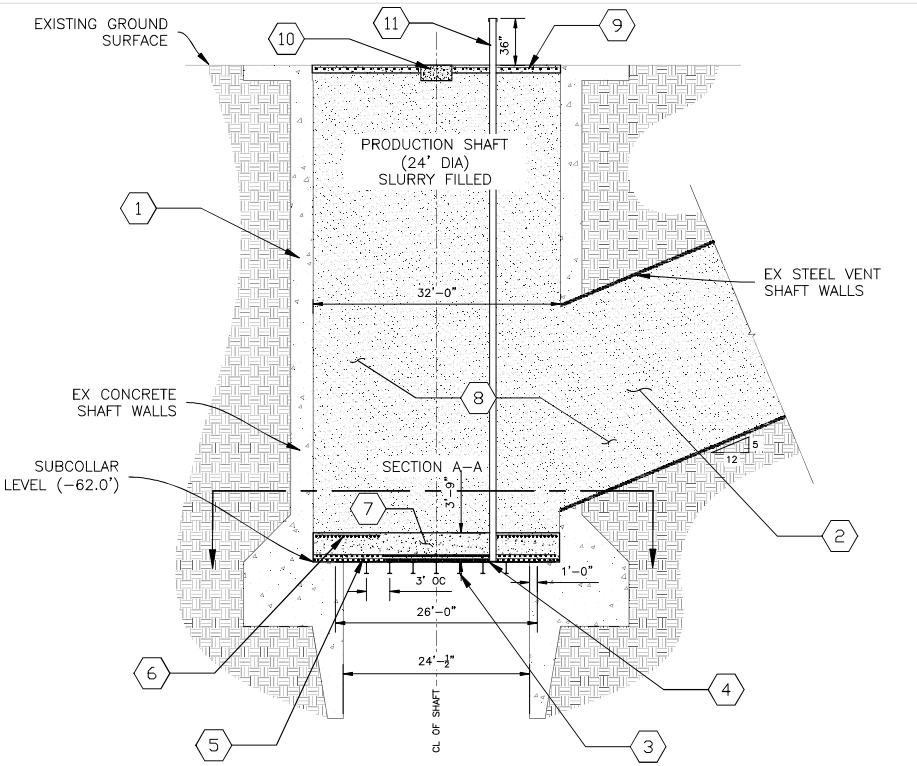
SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	4/6/22	JJL	JJL

PROJECT NO:	DRAWING NO:	REVISION:
22-003	C/100	0



SECTION A–A (PLAN VIEW AT SUBCOLLAR LEVEL)

SCALE: $\frac{3}{32}$" = 1'–0"



SECTION B–B (CROSS SECTION OF PRODUCTION SHAFT)

SCALE: $\frac{1}{16}$" = 1'–0"

KEYED NOTES

1. EXISITING REINFORCED CONCRETE SHAFT WALLS. PROTECT IN PLACE EXCEPT WHERE NOTED
2. EXISTING 24' DIA STEEL VENTILATION TUNNEL. FILL WITH CLSM PER KEY NOTE 8. CAP WITH LIGHTWEIGHT CONCRETE SLAB AND PRECAST MARKER PER KEY NOTES 9 & 10.
3. W18X40 STEEL BEAMS SPACED 3'–0" OC SUPPORTING STEEL PLATING. BEAMS TO BE SUPPORTED AT ENDS WITH POST INSTALLED ANCHORS ATTACHED TO GUSSET PLATES
4. 1" STEEL PLATES TO SUPPORT CONCRETE SLAB. WELD PLATES TO STRINGERS AND AT UNSUPPORTED SEAMS. EDGES TO BE SUPPORTED BY MIN 12" OF EXISTING SHAFT COLLAR
5. DOUBLE BOTTOM MAT OF SLAB REINFORCEMENT. #9 @ 4" OC EACH WAY MIDDLE $\frac{1}{3}$ OF SLAB. #9 @ 8" OC EACH WAY AT OUTER THIRDS. ALL BARS TO BE EPOXY COATED
6. TOP MAT OF SLAB REINFORCEMENT AT OUTER THIRD OF SLAB. #9 @ 1.5 DEGREES RADIALLY. #9 CIRCLES CONCENTRICALLY SPACED @ 10". ALL BARS TO BE EPOXY COATED
7. 4500 PSI HEAVY WEIGHT CONCRETE @ 45" DEPTH. TEST CONCRETE AT 7, 14, & 28 DAYS FOR STRENGTH. DO NOT BACKFILL UNTIL DESIGN STRENGTH IS ACHIEVED
8. CONTROLLED LOW STRENGTH MATERIAL (CLSM) SLURRY BACKFILL TO BE PLACED AFTER 28 DAY DESIGN STRENGTH IS ACHIEVED ON CONCRETE SLAB
9. LIGHTWEIGHT 2500 PSI CONCRETE SLAB AT PRODUCTION AND VENT SHAFT SURFACE ENTRANCES. 12" MIN DEPTH WITH #4 @ 12" OC EW.
10. PRECAST CONCRETE CAP WITH MARKER. 4' X 4' X 2' DEEP. INSCRIBED USING 4" LETTER EMBEDDED STATING: "MOUNT TAYLOR MINE PRODUCTION/VENT SHAFT, CLOSED [DATE]"
11. 10" SCH 40 STEEL PIPE TO SERVE AS SAMPLING WELL. WELD PIPE TO CIRCULAR HOLE CUT INTO STEEL PLATE. CAP TOP OF WELL WITH ROYER LOCKING WELL CAP OR EQUAL.

PRODUCTION SHAFT MATERIAL QUANTITIES

ITEM	QTY	UNIT
#9 EPOXY COATED REBAR–BOTTOM MATS	7144	FT
#9 EPOXY COATED REBAR–TOP MAT	2713	FT
4500 PSI CONCRETE	110	CY
3000 PSI LIGHTWEIGHT CONCRETE	29	CY
1" STEEL PLATE	531	SF
W18X40 STEEL BEAMS	146	LF
CLSM SLURRY BACKFILL	3666	CY

GENERAL NOTES:

1. THIS PLAN IS INTENDED TO REPLACE DRAWING NO MT13–CL–06 IN THE PREVIOUSLY APPROVED 'MOUNT TAYLOR MINE CLOSEOUT/CLOSURE PLAN' DEVELOPED BY ALAN KUHN ASSOCIATES LLC, DATED 12–17–13.
2. REMOVE AND DROP ALL EQUIPMENT, FITTINGS, AND UTILITIES BETWEEN COLLAR AND SUB COLLAR LEVEL PRIOR TO CONSTRUCTION
3. ALL SLURRY BACKFILL TO INCLUDE SOIL, PORTLAND CEMENT, AND FLY ASH. MINIMUM COMPRESSIVE STRENGTH OF 75 PSI
4. ALL REINFORCING STEEL TO BE GRADE 60, EPOXY COATED REBAR
5. ALL WELDS TO BE $\frac{1}{4}$" , 2" LONG, SPACED 6" APART
6. ARRANGEMENT OF STEEL SUPPORT MAY BE ROTATED AS NECESSARY
7. STEEL PLATES MAY BE SQUARED OFF PROVIDED A MINIMUM SUPPORT OF 12" OVER COLLAR
8. ALL EDGES AND JOINTS OF STEEL SUPPORT STRUCTURE TO BE SEALED TO ENSURE UNCURED CONCRETE CANNOT LEAK
9. PLACEMENT OF CONCRETE TO ADHERE TO ACI CODES, VIBRATED IN PLACE TO ENSURE NO VOIDS ARE PRESENT
10. REBAR LAYOUT AND STEEL BEAM CONNECTION DETAILS TO BE PROVIDED WITH ISSUE FOR CONSTRUCTION (IFC) PLAN REVISIONS

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CRITICAL VIEW ENGINEERING
PO BOX 90073
ALBUQUERQUE, NM 87199
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CLIENT: RIO GRANDE RESOURCES INC
GRANTS, NM 87020

ARCHITECT:

PROJECT: RIO GRANDE RESOURCES INC MOUNT TAYLOR MINE

TITLE: RC SLAB SHAFT CLOSURE PRODUCTION/VENT SHAFT

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	4/6/22	JJL	JJL

PROJECT NO:	DRAWING NO:	REVISION:
22–003	C/200	0

APPENDIX H

Post-Closure Monitoring Plan

APPENDIX I

Water Sampling and Laboratory Test Data

Water Quality Results for the October 2023 Dewatering Well Sampling Investigation

- Tabulated Water Quality Data
- October 2023 Water Quality Sampling Data for Dewatering Wells

June 4, 2025 Project No. 111360

Mr. Corey Dimond
New Mexico Environment Department
Ground Water Quality Bureau
Mining Environmental Compliance Section
1190 St. Francis Dr.
Sante Fe, NM 87502

RE: Rio Grande Resources' Submittal of Pre Rehabilitation October 2023 Dewatering Well Sampling Data from April 28, 2023 Dewatering Well DW-10 and DW-11 Investigation Work Plan prepared by Gard Water

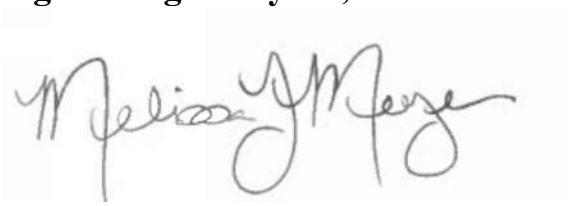
Dear Mr. Dimond,

Included in this document are the water quality results for the October 2023 ewatering well sampling investigation that is the first phase (pre well rehabilitation) of the sampling requested in the February 23, 2023 NMED Request for Additional Information on the 15-day Suspected Petroleum Release Report for Dewatering Wells Dw-10 and DW-11, Mt Taylor Mine, San Mateo, New Mexico and outlined in the April 28, 2023 Dewatering Well DW-10 and DW-11 Investigation Work Plan prepared by Gard Water.

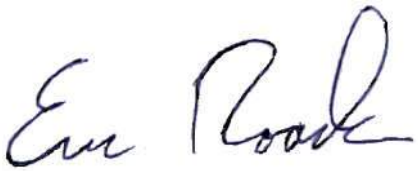
Below is a list of tables and attachments included in this letter.

- Tabulated Water Quality Data
  - Tables 1 through 11 contain water quality data for DW-1, DW-2A, DW-2, DW-3, DW-6, DW-7, DW-8, DW-9, DW-10, DW-11, and DW-12 respectively.
- Attachment A October 2023 Water Quality Sampling Data for Dewatering Wells Includes the following reports
  - October 4, 2023 L1662801 Pace Analytical Report on DW-1 and DW-7
  - October 7, 2023 L1664135 Pace Analytical Report on DW-10 and DW-12
  - October 7, 2023 L1664199 Pace Analytical Report on DW-2 and DW-9
  - October 13, 2023 L1666511 Pace Analytical Report on DW-3 and DW-11
  - October 13, 2023 L1666516 Pace Analytical Report on DW3, DW-2a, and DW-6
  - October 13, 2023 L1666531 Pace Analytical Report on DW-8 and DW-10

Respectfully Submitted,
Engineering Analytics, Inc.



Melissa Meyer, P.E.
Project Manager



Eric Roads EIT
Staff Engineer II

CC
Abimbola Ojekanmi, Uranium Coordinator, Mining and Minerals Division
Clinton Chisler, Uranium Reclamation Coordinator, Mining and Minerals Division
Kevin Raabe, President RSO, Rio Grande Resources Corporation
Anita Willcox, Facilities Supervisor, Rio Grande Resources Corporation

TABLES

TABLE 1
DW-1
GROUNDWATER QUALITY SUMMARY

October 2023 Dewatering Wells Water Quality Data Summary		Well ID	DW1	DW1	DW1	DW1
		Depth (fbtoc)	785	785	785	785
		Sample Type	Sample	Field Duplicate	Rinseate Blank	Trip Blank
		Date Collected	10/03/2023	10/03/2023	10/03/2023	10/03/2023
Analyte	NM WQCC-3103	Units				
ACENAPHTHENE		mg/l	<0.0000500[2]	<0.0000500	<0.0000500	<0.0000500
ACENAPHTHYLENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500
ANTHRACENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(A)ANTHRACENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(A)PYRENE	0.0002	mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(B)FLUORANTHENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(K)FLUORANTHENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(G,H,I)PERYLENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500
2-CHLORONAPHTHALENE		mg/l	<0.000250	<0.000250	<0.000250	<0.000250
CHRYSENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500
DIBENZ(A,H)ANTHRACENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500
FLUORANTHENE		mg/l	<0.000100	<0.000100	<0.000100	<0.000100
FLUORENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500
INDENO(1,2,3-CD)PYRENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500
1-METHYLNAPHTHALENE	0.03	mg/l	<0.000250	<0.000250	<0.000250	<0.000250
2-METHYLNAPHTHALENE	0.03	mg/l	<0.000250	<0.000250	<0.000250	<0.000250
NAPHTHALENE	0.03	mg/l	<0.000250	<0.000250	<0.000250	<0.000250
PHENANTHRENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500
PYRENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZENE	0.005	mg/l	<0.00100	<0.00100	<0.00100	<0.00100
ETHYLBENZENE	0.7	mg/l	<0.00100	<0.00100	<0.00100	<0.00100
TOLUENE	1	mg/l	<0.00100	<0.00100	<0.00100	<0.00100
XYLENES, TOTAL	0.62	mg/l	<0.00300	<0.00300	<0.00300	<0.00300
TPH		mg/l	<0.100	<0.100	<0.100	<0.100
C10-C28 DIESEL RANGE		mg/l	<0.100	<0.100	<0.100	<0.100
C28-C40 OIL RANGE		mg/l	<0.100	<0.100	<0.100	<0.100

Acronyms: Reporting Limit (RDL), Feet Below Top of Casing (fbtoc), Quality Control (QC) Total Petroleum Hydrocarbons (TPH), Point Discharge (PD)

Dark grey shading in cells idicates a concentration was measured above RDL

Yellow shading in cells indicates a concentration was measured above NMWQCC-3102 Standards

Blue indicates a concentration was measured above RDL in a blank sample

Footnotes:

1: The "less than" symbol "<" is a method to convey that the target analyte was not encountered above the RDL.

2: Sample was collected from spigot near well head

3:The targeted sample depth was unable to be met due to unforeseen obstruction. The depths listed for the sample ID for the blanks is the targeted sample depth and the depth listed for the representative sample is the deapth reached in the field.

TABLE 3
DW-2
GROUNDWATER QUALITY SUMMARY

October 2023 Dewatering Wells Water Quality Data Summary		Well ID	DW2[3]	DW2[3]	DW2[3]
		Depth (fbtoc)	2480	2480	2480
		Sample Type	Sample	Field Blank	Rinseate Blank
		Date Collected	10/05/2023	10/05/2023	10/05/2023
Analyte	NM WQCC-3103	Units			
ACENAPHTHENE		mg/l	<0.0000500	<0.0000500	<0.0000500
ACENAPHTHYLENE		mg/l	<0.0000500	<0.0000500	<0.0000500
ANTHRACENE		mg/l	<0.0000500	<0.0000500	<0.0000500
BENZO(A)ANTHRACENE		mg/l	<0.0000500	<0.0000500	<0.0000500
BENZO(A)PYRENE	0.0002	mg/l	<0.0000500	<0.0000500	<0.0000500
BENZO(B)FLUORANTHENE		mg/l	<0.0000500	<0.0000500	<0.0000500
BENZO(K)FLUORANTHENE		mg/l	<0.0000500	<0.0000500	<0.0000500
BENZO(G,H,I)PERYLENE		mg/l	<0.0000500	<0.0000500	<0.0000500
2-CHLORONAPHTHALENE		mg/l	<0.000250	<0.000250	<0.000250
CHRYSENE		mg/l	<0.0000500	<0.0000500	<0.0000500
DIBENZ(A,H)ANTHRACENE		mg/l	<0.0000500	<0.0000500	<0.0000500
FLUORANTHENE		mg/l	<0.000100	<0.000100	<0.000100
FLUORENE		mg/l	<0.0000500	<0.0000500	<0.0000500
INDENO(1,2,3-CD)PYRENE		mg/l	<0.0000500	<0.0000500	<0.0000500
1-METHYLNAPHTHALENE	0.03	mg/l	<0.000250	<0.000250	<0.000250
2-METHYLNAPHTHALENE	0.03	mg/l	<0.000250	<0.000250	<0.000250
NAPHTHALENE	0.03	mg/l	<0.000250	<0.000250	<0.000250
PHENANTHRENE		mg/l	0.0000639	<0.0000500	<0.0000500
PYRENE		mg/l	<0.0000500	<0.0000500	<0.0000500
BENZENE	0.005	mg/l	<0.00100	<0.00100	<0.00100
ETHYLBENZENE	0.7	mg/l	<0.00100	<0.00100	<0.00100
TOLUENE	1	mg/l	<0.00100	<0.00100	<0.00100
XYLENES, TOTAL	0.62	mg/l	<0.00300	<0.00300	<0.00300
TPH		mg/l	<0.100	<0.100	<0.100
C10-C28 DIESEL RANGE		mg/l	0.463	<0.100	<0.100
C28-C40 OIL RANGE		mg/l	0.359	<0.100	<0.100

Acronyms: Reporting Limit (RDL), Feet Below Top of Casing (fbtoc), Quality Control (QC) Total Petroleum Hydrocarbons (TPH), Point Discharge (PD)

Dark grey shading in cells idicates a concentration was measured above RDL

Yellow shading in cells indicates a concentration was measured above NMWQCC-3102 Standards

Blue indicates a concentration was measured above RDL in a blank sample

Footnotes:

1: The "less than" symbol "<" is a method to convey that the target analyte was not encountered above the RDL.

2: Sample was collected from spigot near well head

3:The targeted sample depth was unable to be met due to unforeseen obstruction. The depths listed for the sample ID le is the deapth reached in the field where the targeted depth was 2770 feet.

TABLE 2
DW-2A
GROUNDWATER QUALITY SUMMARY

October 2023 Dewatering Wells Water Quality Data Summary		Well ID	DW2A[2]
		Depth (fbtoc)	Spigot
		Date Collected	10/11/2023
Analyte	NM WQCC-3103	Units	
ACENAPHTHENE		mg/l	<0.0000500
ACENAPHTHYLENE		mg/l	<0.0000500
ANTHRACENE		mg/l	<0.0000500
BENZO(A)ANTHRACENE		mg/l	<0.0000500
BENZO(A)PYRENE	0.0002	mg/l	<0.0000500
BENZO(B)FLUORANTHENE		mg/l	<0.0000500
BENZO(K)FLUORANTHENE		mg/l	<0.0000500
BENZO(G,H,I)PERYLENE		mg/l	<0.0000500
2-CHLORONAPHTHALENE		mg/l	<0.000250
CHRYSENE		mg/l	<0.0000500
DIBENZ(A,H)ANTHRACENE		mg/l	<0.0000500
FLUORANTHENE		mg/l	<0.000100
FLUORENE		mg/l	<0.0000500
INDENO(1,2,3-CD)PYRENE		mg/l	<0.0000500
1-METHYLNAPHTHALENE	0.03	mg/l	<0.000250
2-METHYLNAPHTHALENE	0.03	mg/l	<0.000250
NAPHTHALENE	0.03	mg/l	<0.000250
PHENANTHRENE		mg/l	<0.0000500
PYRENE		mg/l	<0.0000500
BENZENE	0.005	mg/l	<0.00100
ETHYLBENZENE	0.7	mg/l	<0.00100
TOLUENE	1	mg/l	<0.00100
XYLENES, TOTAL	0.62	mg/l	<0.00300
TPH		mg/l	<0.100
C10-C28 DIESEL RANGE		mg/l	<0.100
C28-C40 OIL RANGE		mg/l	<0.100

Acronyms: Reporting Limit (RDL), Feet Below Top of Casing (fbtoc), Quality Control (QC) Total Petroleum Hydrocarbons (TPH), Point Discharge (PD)

Dark grey shading in cells idicates a concentration was measured above RDL

Yellow shading in cells indicates a concentration was measured above NMWQCC-3102 Standards

Blue indicates a concentration was measured above RDL in a blank sample

Footnotes:

1: The "less than" symbol "<" is a method to convey that the target analyte was not encountered above the RDL.

2: Sample was collected from spigot near well head

3:The targeted sample depth was unable to be met due to unforeseen obstruction. The depths listed for the sample ID for the blanks is the targeted sample depth and the depth listed for the representative sample is the deapth reached in the field.

TABLE 4
DW-3
GROUNDWATER QUALITY SUMMARY

October 2023 Dewatering Wells Water Quality Data Summary		Well ID	DW3	DW3	DW3	DW3	DW3	DW3	DW3	DW3
		Depth (fbtoc)	596	596	896	896	1005	1005	1005	1005
		Sample Type	Sample	Rinseate Blank	Sample	Rinseate Blank	Sample	Field Duplicate	Field Blank	Rinseate Blank
		Date Collected	10/11/2023	10/11/2023	10/11/2023	10/11/2023	10/11/2023	10/11/2023	10/11/2023	10/11/2023
Analyte	NM WQCC-3103	Units								
ACENAPHTHENE		mg/l	0.000477	<0.0000500	<0.0000500	<0.0000500	0.000104	0.000111	<0.0000500	<0.0000500
ACENAPHTHYLENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
ANTHRACENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(A)ANTHRACENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(A)PYRENE	0.0002	mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(B)FLUORANTHENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(K)FLUORANTHENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(G,H,I)PERYLENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
2-CHLORONAPHTHALENE		mg/l	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250
CHRYSENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
DIBENZ(A,H)ANTHRACENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
FLUORANTHENE		mg/l	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100
FLUORENE		mg/l	0.00161	<0.0000500	0.0000566	<0.0000500	0.000183	0.00018	<0.0000500	<0.0000500
INDENO(1,2,3-CD)PYRENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
1-METHYLNAPHTHALENE	0.03	mg/l	0.0105	<0.000250	<0.000250	<0.000250	0.000599	0.00058	<0.000250	<0.000250
2-METHYLNAPHTHALENE	0.03	mg/l	0.0118	<0.000250	<0.000250	<0.000250	0.000701	0.00068	<0.000250	<0.000250
NAPHTHALENE	0.03	mg/l	0.00134	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250
PHENANTHRENE		mg/l	0.00181	<0.0000500	0.0000815	<0.0000500	0.000245	0.000252	<0.0000500	<0.0000500
PYRENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZENE	0.005	mg/l	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100
ETHYLBENZENE	0.7	mg/l	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100
TOLUENE	1	mg/l	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100
XYLENES, TOTAL	0.62	mg/l	<0.00300	<0.00300	<0.00300	<0.00300	<0.00300	<0.00300	<0.00300	<0.00300
TPH		mg/l	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100
C10-C28 DIESEL RANGE		mg/l	1.37	<0.100	0.62	<0.100	2.3	1.7	<0.100	<0.100
C28-C40 OIL RANGE		mg/l	0.147	<0.100	0.158	<0.100	0.347	0.156	<0.100	<0.100

Acronyms: Reporting Limit (RDL), Feet Below Top of Casing (fbtoc), Quality Control (QC) Total Petroleum Hydrocarbons (TPH), Point Discharge (PD)

Dark grey shading in cells idicates a concentration was measured above RDL

Yellow shading in cells indicates a concentration was measured above NMWQCC-3102 Standards

Blue indicates a concentration was measured above RDL in a blank sample

Footnotes:

1: The "less than" symbol "<" is a method to convey that the target analyte was not encountered above the RDL.

2: Sample was collected from spigot near well head

3:The targeted sample depth was unable to be met due to unforeseen obstruction. The depths listed for the sample ID for the blanks is the targeted sample depth and the depth listed for the representative sample is the deapth reached in the field.

TABLE 5
DW-6
GROUNDWATER QUALITY SUMMARY

October 2023 Dewatering Wells Water Quality Data Summary		Well ID	DW6[3]
		Depth (fbtoc)	Spigot
		Date Collected	10/10/2023
Analyte	NM WQCC-3103	Units	
ACENAPHTHENE		mg/l	<0.0000500
ACENAPHTHYLENE		mg/l	<0.0000500
ANTHRACENE		mg/l	<0.0000500
BENZO(A)ANTHRACENE		mg/l	<0.0000500
BENZO(A)PYRENE	0.0002	mg/l	<0.0000500
BENZO(B)FLUORANTHENE		mg/l	<0.0000500
BENZO(K)FLUORANTHENE		mg/l	<0.0000500
BENZO(G,H,I)PERYLENE		mg/l	<0.0000500
2-CHLORONAPHTHALENE		mg/l	<0.000250
CHRYSENE		mg/l	<0.0000500
DIBENZ(A,H)ANTHRACENE		mg/l	<0.0000500
FLUORANTHENE		mg/l	<0.000100
FLUORENE		mg/l	<0.0000500
INDENO(1,2,3-CD)PYRENE		mg/l	<0.0000500
1-METHYLNAPHTHALENE	0.03	mg/l	<0.000250
2-METHYLNAPHTHALENE	0.03	mg/l	<0.000250
NAPHTHALENE	0.03	mg/l	<0.000250
PHENANTHRENE		mg/l	<0.0000500
PYRENE		mg/l	<0.0000500
BENZENE	0.005	mg/l	<0.00100
ETHYLBENZENE	0.7	mg/l	<0.00100
TOLUENE	1	mg/l	<0.00100
XYLENES, TOTAL	0.62	mg/l	<0.00300
TPH		mg/l	<0.100
C10-C28 DIESEL RANGE		mg/l	0.115
C28-C40 OIL RANGE		mg/l	0.366

Acronyms: Reporting Limit (RDL), Feet Below Top of Casing (fbtoc), Quality Control (QC) Total Petroleum Hydrocarbons (TPH), Point Discharge (PD)

Dark grey shading in cells idicates a concentration was measured above RDL

Yellow shading in cells indicates a concentration was measured above NMWQCC-3102 Standards

Blue indicates a concentration was measured above RDL in a blank sample

Footnotes:

1: The "less than" symbol "<" is a method to convey that the target analyte was not encountered above the RDL.

2: Sample was collected from spigot near well head

3:The targeted sample depth was unable to be met due to unforeseen obstruction. The depths listed for the sample ID for the blanks is the targeted sample depth and the depth listed for the representative sample is the deapth reached in the field.

TABLE 6
DW-7
GROUNDWATER QUALITY SUMMARY

October 2023 Dewatering Wells Water Quality Data Summary			Well ID	DW7	DW7	DW7
			Depth (fbtoc)	900	900	900
			Sample Type	Sample	Field Blank	Rinseate Blank
			Date Collected	10/02/2023	10/02/2023	10/02/2023
Analyte	NM WQCC-3103	Units				
ACENAPHTHENE		mg/l	<0.0000500	<0.0000500	<0.0000500
ACENAPHTHYLENE		mg/l	<0.0000500	<0.0000500	<0.0000500
ANTHRACENE		mg/l	<0.0000500	<0.0000500	<0.0000500
BENZO(A)ANTHRACENE		mg/l	<0.0000500	<0.0000500	<0.0000500
BENZO(A)PYRENE	0.0002	mg/l	<0.0000500	<0.0000500	<0.0000500
BENZO(B)FLUORANTHENE		mg/l	<0.0000500	<0.0000500	<0.0000500
BENZO(K)FLUORANTHENE		mg/l	<0.0000500	<0.0000500	<0.0000500
BENZO(G,H,I)PERYLENE		mg/l	<0.0000500	<0.0000500	<0.0000500
2-CHLORONAPHTHALENE		mg/l	<0.000250	<0.000250	<0.000250
CHRYSENE		mg/l	<0.0000500	<0.0000500	<0.0000500
DIBENZ(A,H)ANTHRACENE		mg/l	<0.0000500	<0.0000500	<0.0000500
FLUORANTHENE		mg/l	<0.000100	<0.000100	<0.000100
FLUORENE		mg/l	<0.0000500	<0.0000500	<0.0000500
INDENO(1,2,3-CD)PYRENE		mg/l	<0.0000500	<0.0000500	<0.0000500
1-METHYLNAPHTHALENE	0.03	mg/l	<0.000250	<0.000250	<0.000250
2-METHYLNAPHTHALENE	0.03	mg/l	<0.000250	<0.000250	<0.000250
NAPHTHALENE	0.03	mg/l	<0.000250	<0.000250	<0.000250
PHENANTHRENE		mg/l	<0.0000500	<0.0000500	<0.0000500
PYRENE		mg/l	<0.0000500	<0.0000500	<0.0000500
BENZENE	0.005	mg/l	<0.00100	<0.00100	<0.00100
ETHYLBENZENE	0.7	mg/l	<0.00100	<0.00100	<0.00100
TOLUENE	1	mg/l	<0.00100	<0.00100	<0.00100
XYLENES, TOTAL	0.62	mg/l	<0.00300	<0.00300	<0.00300
TPH		mg/l	<0.100	<0.100	<0.100
C10-C28 DIESEL RANGE		mg/l	0.166	<0.100	<0.100
C28-C40 OIL RANGE		mg/l	<0.100	<0.100	<0.100

Acronyms: Reporting Limit (RDL), Feet Below Top of Casing (fbtoc), Quality Control (QC) Total Petroleum Hydrocarbons (TPH), Point Discharge (PD)

Dark grey shading in cells idicates a concentration was measured above RDL

Yellow shading in cells indicates a concentration was measured above NMWQCC-3102 Standards

Blue indicates a concentration was measured above RDL in a blank sample

Footnotes:

1: The "less than" symbol "<" is a method to convey that the target analyte was not encountered above the RDL.

2: Sample was collected from spigot near well head

3:The targeted sample depth was unable to be met due to unforeseen obstruction. The depths listed for the sample ID for the blanks is the targeted sample depth and the depth listed for the representative sample is the deapth reached in the field.

TABLE 7
DW-8
GROUNDWATER QUALITY SUMMARY

October 2023 Dewatering Wells Water Quality Data Summary							
		Well ID	DW8	DW8	DW8	DW8	DW8
		Depth (fbtoc)	840	840	961	961	961
		Sample Type	Sample	Rinseate Blank	Sample	Field Duplicate	Rinseate Blank
		Date Collected	10/09/2023	10/09/2023	10/09/2023	10/09/2023	10/09/2023
Analyte	NM WQCC-3103	Units					
ACENAPHTHENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
ACENAPHTHYLENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
ANTHRACENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(A)ANTHRACENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(A)PYRENE	0.0002	mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(B)FLUORANTHENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(K)FLUORANTHENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(G,H,I)PERYLENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
2-CHLORONAPHTHALENE		mg/l	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250
CHRYSENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
DIBENZ(A,H)ANTHRACENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
FLUORANTHENE		mg/l	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100
FLUORENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
INDENO(1,2,3-CD)PYRENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
1-METHYLNAPHTHALENE	0.03	mg/l	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250
2-METHYLNAPHTHALENE	0.03	mg/l	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250
NAPHTHALENE	0.03	mg/l	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250
PHENANTHRENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
PYRENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZENE	0.005	mg/l	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100
ETHYLBENZENE	0.7	mg/l	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100
TOLUENE	1	mg/l	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100
XYLENES, TOTAL	0.62	mg/l	<0.00300	<0.00300	<0.00300	<0.00300	<0.00300
TPH		mg/l	<0.100	<0.100	<0.100	<0.100	<0.100
C10-C28 DIESEL RANGE		mg/l	<0.100	<0.100	0.122	0.13	<0.100
C28-C40 OIL RANGE		mg/l	<0.100	<0.100	0.146	0.138	<0.100

Acronyms: Reporting Limit (RDL), Feet Below Top of Casing (fbtoc), Quality Control (QC) Total Petroleum Hydrocarbons (TPH), Point Discharge (PD)

Dark grey shading in cells idicates a concentration was measured above RDL

Yellow shading in cells indicates a concentration was measured above NMWQCC-3102 Standards

Blue indicates a concentration was measured above RDL in a blank sample

Footnotes:

1: The "less than" symbol "<" is a method to convey that the target analyte was not encountered above the RDL.

2: Sample was collected from spigot near well head

3:The targeted sample depth was unable to be met due to unforeseen obstruction. The depths listed for the sample ID for the blanks is the targeted sample depth and the depth listed for the representative sample is the deapth reached in the field.

TABLE 8
DW-9
GROUNDWATER QUALITY SUMMARY

October 2023 Dewatering Wells Water Quality Data Summary	Well ID		DW9	DW9	DW9	DW9	DW9	DW9	DW9
	Depth (fbtoc)		1144	1144	1655	1655	2760	2760	2760
	Sample Type		Sample	Rinseate Blank	Sample	Rinseate Blank	Sample	Field Blank	Rinseate Blank
	Date Collected		10/04/2023	10/04/2023	10/04/2023	10/04/2023	10/04/2023	10/04/2023	10/04/2023
Analyte	NM WQCC-3103	Units							
ACENAPHTHENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
ACENAPHTHYLENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
ANTHRACENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(A)ANTHRACENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(A)PYRENE	0.0002	mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(B)FLUORANTHENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(K)FLUORANTHENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(G,H,I)PERYLENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
2-CHLORONAPHTHALENE		mg/l	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250
CHRYSENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
DIBENZ(A,H)ANTHRACENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
FLUORANTHENE		mg/l	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100
FLUORENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
INDENO(1,2,3-CD)PYRENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
1-METHYLNAPHTHALENE	0.03	mg/l	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250
2-METHYLNAPHTHALENE	0.03	mg/l	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250
NAPHTHALENE	0.03	mg/l	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250
PHENANTHRENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
PYRENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZENE	0.005	mg/l	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100
ETHYLBENZENE	0.7	mg/l	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100
TOLUENE	1	mg/l	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100
XYLENES, TOTAL	0.62	mg/l	<0.00300	<0.00300	<0.00300	<0.00300	<0.00300	<0.00300	<0.00300
TPH		mg/l	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100
C10-C28 DIESEL RANGE		mg/l	0.193	<0.100	<0.100	<0.100	0.422	<0.300	<0.100
C28-C40 OIL RANGE		mg/l	0.126	<0.100	<0.100	<0.100	1.68	<0.300	<0.100

Acronyms: Reporting Limit (RDL), Feet Below Top of Casing (fbtoc), Quality Control (QC) Total Petroleum Hydrocarbons (TPH), Point Discharge (PD)

Dark grey shading in cells idicates a concentration was measured above RDL

Yellow shading in cells indicates a concentration was measured above NMWQCC-3102 Standards

Blue indicates a concentration was measured above RDL in a blank sample

Footnotes:

1: The "less than" symbol "<" is a method to convey that the target analyte was not encountered above the RDL.

2: Sample was collected from spigot near well head

3:The targeted sample depth was unable to be met due to unforeseen obstruction. The depths listed for the sample ID for the blanks is the targeted sample depth and the depth listed for the representative sample is the deapth reached in the field.

TABLE 9
DW-10
GROUNDWATER QUALITY SUMMARY

October 2023 Dewatering Wells Water Quality Data Summary	Well ID		DW10	DW10	DW10	DW10	DW10	DW10	DW10	DW10
	Depth (fbtoc)		463	463	781	781	781	865	865	865
	Sample Type		Sample	Rinseate Blank	Sample	Field Blank	Rinseate Blank	Sample	Field Blank	Rinseate Blank
	Date Collected		10/09/2023	10/09/2023	10/09/2023	10/09/2023	10/09/2023	10/06/2023	10/06/2023	10/06/2023
Analyte	NM WQCC-3103	Units								
ACENAPHTHENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
ACENAPHTHYLENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
ANTHRACENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(A)ANTHRACENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(A)PYRENE	0.0002	mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(B)FLUORANTHENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(K)FLUORANTHENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(G,H,I)PERYLENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
2-CHLORONAPHTHALENE		mg/l	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250
CHRYSENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
DIBENZ(A,H)ANTHRACENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
FLUORANTHENE		mg/l	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100
FLUORENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
INDENO(1,2,3-CD)PYRENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
1-METHYLNAPHTHALENE	0.03	mg/l	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250
2-METHYLNAPHTHALENE	0.03	mg/l	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250
NAPHTHALENE	0.03	mg/l	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250
PHENANTHRENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
PYRENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZENE	0.005	mg/l	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100
ETHYLBENZENE	0.7	mg/l	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100
TOLUENE	1	mg/l	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100
XYLENES, TOTAL	0.62	mg/l	<0.00300	<0.00300	<0.00300	<0.00300	<0.00300	<0.00300	<0.00300	<0.00300
TPH		mg/l	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100
C10-C28 DIESEL RANGE		mg/l	0.518	<0.100	0.112	<0.100	<0.100	0.395	<0.100	<0.100
C28-C40 OIL RANGE		mg/l	0.871	<0.100	0.236	<0.100	<0.100	0.74	<0.100	<0.100

Acronyms: Reporting Limit (RDL), Feet Below Top of Casing (fbtoc), Quality Control (QC) Total Petroleum Hydrocarbons (TPH), Point Discharge (PD)

Dark grey shading in cells idicates a concentration was measured above RDL

Yellow shading in cells indicates a concentration was measured above NMWQCC-3102 Standards

Blue indicates a concentration was measured above RDL in a blank sample

Footnotes:

1: The "less than" symbol "<" is a method to convey that the target analyte was not encountered above the RDL.

2: Sample was collected from spigot near well head

3:The targeted sample depth was unable to be met due to unforeseen obstruction. The depths listed for the sample ID for the blanks is the targeted sample depth and the depth listed for the representative sample is the deapth reached in the field.

TABLE 10
DW-11
GROUNDWATER QUALITY SUMMARY

October 2023 Dewatering Wells Water Quality Data Summary			Well ID	DW11	DW11	DW11	DW11	DW11[3]	DW11[3]	DW11[3]
			Depth (fbtoc)	904	904	1100	1100	1750	1750	1750
			Sample Type	Sample	Rinseate Blank	Sample	Rinseate Blank	Sample	Field Blank	Rinseate Blank
			Date Collected	10/10/2023	10/10/2023	10/10/2023	10/10/2023	10/10/2023	10/10/2023	10/10/2023
Analyte	NM WQCC-3103	Units								
ACENAPHTHENE		mg/l	0.00775	0.000118	0.00915	0.00008	0.0105	<0.0000500	<0.0000500
ACENAPHTHYLENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
ANTHRACENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(A)ANTHRACENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(A)PYRENE	0.0002	mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(B)FLUORANTHENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(K)FLUORANTHENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(G,H,I)PERYLENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
2-CHLORONAPHTHALENE		mg/l	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250
CHRYSENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
DIBENZ(A,H)ANTHRACENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
FLUORANTHENE		mg/l	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100
FLUORENE		mg/l	0.00204	<0.0000500	0.00226	<0.0000500	0.00238	<0.0000500	<0.0000500
INDENO(1,2,3-CD)PYRENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500	<0.0000500
1-METHYLNAPHTHALENE	0.03	mg/l	<0.0125	<0.000250	<0.0125	<0.000250	<0.0125	<0.000250	<0.000250
2-METHYLNAPHTHALENE	0.03	mg/l	<0.0125	<0.000250	0.0136	<0.000250	0.0155	<0.000250	<0.000250
NAPHTHALENE	0.03	mg/l	0.404	0.000424	0.485	0.000258	0.55	<0.000250	<0.000250
PHENANTHRENE		mg/l	0.000577	<0.0000500	0.000609	<0.0000500	0.000536	<0.0000500	<0.0000500
PYRENE		mg/l	0.0000516	<0.0000500	0.00006	<0.0000500	0.0000768	<0.0000500	<0.0000500
BENZENE	0.005	mg/l	<0.00100	<0.00100	0.00143	<0.00100	0.00137	<0.00100	<0.00100
ETHYLBENZENE	0.7	mg/l	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100
TOLUENE	1	mg/l	0.00185	<0.00100	0.0028	<0.00100	0.00258	<0.00100	<0.00100
XYLENES, TOTAL	0.62	mg/l	<0.00300	<0.00300	<0.00300	<0.00300	<0.00300	<0.00300	<0.00300
TPH		mg/l	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100
C10-C28 DIESEL RANGE		mg/l	12.5	<0.100	13.1	<0.100	13	<0.100	<0.100
C28-C40 OIL RANGE		mg/l	9.5	<0.100	8.62	<0.100	7.42	<0.100	<0.100

Acronyms: Reporting Limit (RDL), Feet Below Top of Casing (fbtoc), Quality Control (QC) Total Petroleum Hydrocarbons (TPH), Point Discharge (PD)

Dark grey shading in cells idicates a concentration was measured above RDL

Yellow shading in cells indicates a concentration was measured above NMWQCC-3102 Standards

Blue indicates a concentration was measured above RDL in a blank sample

Footnotes:

1: The "less than" symbol "<" is a method to convey that the target analyte was not encountered above the RDL.

2: Sample was collected from spigot near well head

3:The targeted sample depth was unable to be met due to unforeseen obstruction. The depths listed is the deapth reached in the field, target depth was 2,848 feet.

TABLE 11
DW-12
GROUNDWATER QUALITY SUMMARY

October 2023 Dewatering Wells Water Quality Data Summary						
		Well ID	DW12	DW12	DW12	DW12
		Depth (fbtoc)	1764	1764	2865	2865
		Sample Type	Sample	Rinseate Blank	Sample	Rinseate Blank
		Date Collected	10/06/2023	10/06/2023	10/05/2023	10/05/2023
Analyte	NM WQCC-3103	Units				
ACENAPHTHENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500
ACENAPHTHYLENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500
ANTHRACENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(A)ANTHRACENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(A)PYRENE	0.0002	mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(B)FLUORANTHENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(K)FLUORANTHENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZO(G,H,I)PERYLENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500
2-CHLORONAPHTHALENE		mg/l	<0.000250	<0.000250	<0.000250	<0.000250
CHRYSENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500
DIBENZ(A,H)ANTHRACENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500
FLUORANTHENE		mg/l	<0.000100	<0.000100	<0.000100	<0.000100
FLUORENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500
INDENO(1,2,3-CD)PYRENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500
1-METHYLNAPHTHALENE	0.03	mg/l	<0.000250	<0.000250	<0.000250	<0.000250
2-METHYLNAPHTHALENE	0.03	mg/l	<0.000250	<0.000250	<0.000250	<0.000250
NAPHTHALENE	0.03	mg/l	<0.000250	<0.000250	<0.000250	<0.000250
PHENANTHRENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500
PYRENE		mg/l	<0.0000500	<0.0000500	<0.0000500	<0.0000500
BENZENE	0.005	mg/l	<0.00100	<0.00100	<0.00100	<0.00100
ETHYLBENZENE	0.7	mg/l	<0.00100	<0.00100	<0.00100	<0.00100
TOLUENE	1	mg/l	<0.00100	<0.00100	<0.00100	<0.00100
XYLENES, TOTAL	0.62	mg/l	<0.00300	<0.00300	<0.00300	<0.00300
TPH		mg/l	<0.100	<0.100	<0.100	<0.100
C10-C28 DIESEL RANGE		mg/l	0.246	<0.100	0.156	<0.100
C28-C40 OIL RANGE		mg/l	0.126	<0.100	0.116	<0.100

Acronyms: Reporting Limit (RDL), Feet Below Top of Casing (fbtoc), Quality Control (QC) Total Petroleum Hydrocarbons (TPH), Point Discharge (PD)

Dark grey shading in cells idicates a concentration was measured above RDL

Yellow shading in cells indicates a concentration was measured above NMWQCC-3102 Standards

Blue indicates a concentration was measured above RDL in a blank sample

Footnotes:

1: The "less than" symbol "<" is a method to convey that the target analyte was not encountered above the RDL.

2: Sample was collected from spigot near well head

3:The targeted sample depth was unable to be met due to unforeseen obstruction. The depths listed for the sample ID for the blanks is the targeted sample depth and the depth listed for the representative sample is the deapth reached in the field.

ATTACHMENT A
OCTOBER 2023 WATER QUALITY SAMPLING DATA FOR DEWATERING WELLS

ANALYTICAL REPORT

October 18, 2023

Rio Grande Resources Corp

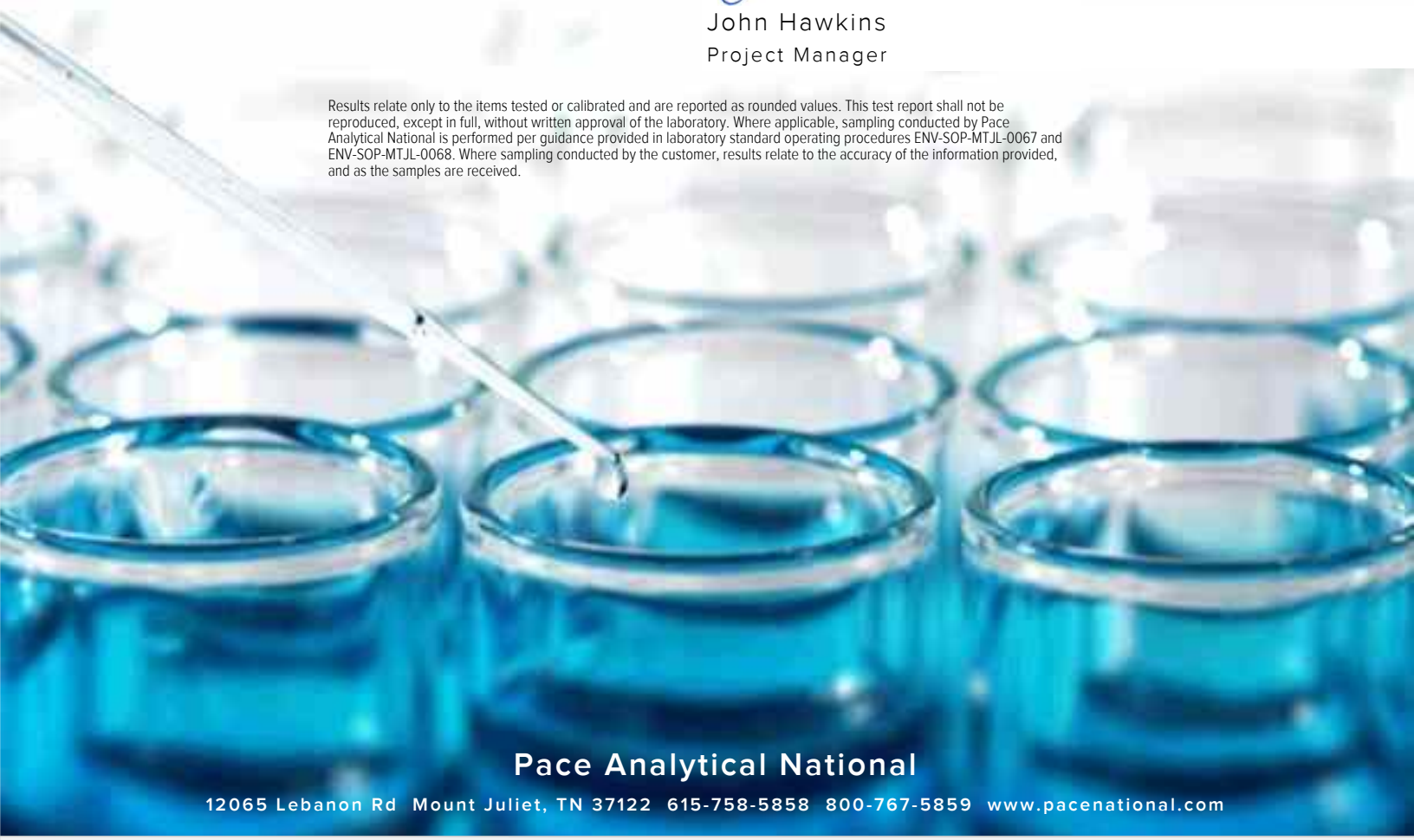
Sample Delivery Group:	L1662801
Samples Received:	10/04/2023
Project Number:	111360
Description:	Mt Taylor

Report To: Eric Roads
219 S 2nd St
Raton, NM 87740

Entire Report Reviewed By:

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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MT-GW-TS-900-DW7-100323-K3 L1662801-01 GW

Collected by: Tyler Davis | Collected date/time: 10/02/23 15:42 | Received date/time: 10/04/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2147534	1	10/09/23 23:28	10/09/23 23:28	DYW	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2147038	1	10/07/23 14:03	10/07/23 14:03	DYW	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2150669	1	10/14/23 19:59	10/16/23 21:44	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2147261	1	10/09/23 07:30	10/09/23 15:47	DSH	Mt. Juliet, TN

MT-GW-TS-900-DW7-100323 L1662801-02 GW

Collected by: Tyler Davis | Collected date/time: 10/02/23 16:46 | Received date/time: 10/04/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2147534	1	10/09/23 23:50	10/09/23 23:50	DYW	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2147038	1	10/07/23 14:24	10/07/23 14:24	DYW	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2150669	1	10/14/23 19:59	10/16/23 22:03	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2147261	1	10/09/23 07:30	10/09/23 16:05	DSH	Mt. Juliet, TN

MT-GW-TS-900-DW7-100323-K2 L1662801-03 GW

Collected by: Tyler Davis | Collected date/time: 10/02/23 17:42 | Received date/time: 10/04/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2147534	1	10/10/23 00:12	10/10/23 00:12	DYW	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2147038	1	10/07/23 14:45	10/07/23 14:45	DYW	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2150669	1	10/14/23 19:59	10/16/23 22:23	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2147261	1	10/09/23 07:30	10/09/23 16:22	DSH	Mt. Juliet, TN

MT-GW-TS-785-DW1-100323-K3 L1662801-04 GW

Collected by: Tyler Davis | Collected date/time: 10/03/23 10:58 | Received date/time: 10/04/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2150834	1	10/13/23 17:12	10/13/23 17:12	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2147038	1	10/07/23 15:06	10/07/23 15:06	DYW	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2150669	1	10/14/23 19:59	10/16/23 22:43	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2147558	1	10/09/23 17:02	10/10/23 02:04	DSH	Mt. Juliet, TN

MT-GW-TS-785-DW1-100323-K4 L1662801-05 GW

Collected by: Tyler Davis | Collected date/time: 10/03/23 11:09 | Received date/time: 10/04/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2150834	1	10/13/23 17:57	10/13/23 17:57	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2148770	1	10/10/23 23:18	10/10/23 23:18	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2150669	1	10/14/23 19:59	10/16/23 23:03	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2147558	1	10/09/23 17:02	10/10/23 02:24	DSH	Mt. Juliet, TN

MT-GW-TS-785-DW1-100323 L1662801-06 GW

Collected by: Tyler Davis | Collected date/time: 10/03/23 12:43 | Received date/time: 10/04/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2150834	1	10/13/23 18:19	10/13/23 18:19	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2148770	1	10/10/23 23:41	10/10/23 23:41	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2150669	1	10/14/23 19:59	10/16/23 23:22	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2147558	1	10/09/23 17:02	10/10/23 02:44	DSH	Mt. Juliet, TN

SAMPLE SUMMARY

MT-GW-TS-785-DW1-100323-K1 L1662801-07 GW

Collected by: Tyler Davis
Collected date/time: 10/03/23 12:43
Received date/time: 10/04/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2150834	1	10/13/23 18:42	10/13/23 18:42	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2148770	1	10/11/23 00:03	10/11/23 00:03	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2150669	1	10/14/23 19:59	10/16/23 23:42	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2147558	1	10/09/23 17:02	10/10/23 03:03	DSH	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Project Manager

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/09/2023 23:28	WG2147534
(S) a,a,a-Trifluorotoluene(FID)	*99.7*		*78.0-120*		*10/09/2023 23:28*	WG2147534

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/07/2023 14:03	WG2147038
Toluene	ND		0.00100	1	10/07/2023 14:03	WG2147038
Ethylbenzene	ND		0.00100	1	10/07/2023 14:03	WG2147038
Total Xylenes	ND		0.00300	1	10/07/2023 14:03	WG2147038
(S) Toluene-d8	*97.1*		*80.0-120*		*10/07/2023 14:03*	WG2147038
(S) 4-Bromofluorobenzene	*90.1*		*77.0-126*		*10/07/2023 14:03*	WG2147038
(S) 1,2-Dichloroethane-d4	*109*		*70.0-130*		*10/07/2023 14:03*	WG2147038

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		0.100	1	10/16/2023 21:44	WG2150669
C28-C40 Oil Range	ND		0.100	1	10/16/2023 21:44	WG2150669
(S) o-Terphenyl	*81.5*		*52.0-156*		*10/16/2023 21:44*	WG2150669

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/09/2023 15:47	WG2147261
Acenaphthene	ND		0.0000500	1	10/09/2023 15:47	WG2147261
Acenaphthylene	ND		0.0000500	1	10/09/2023 15:47	WG2147261
Benzo(a)anthracene	ND		0.0000500	1	10/09/2023 15:47	WG2147261
Benzo(a)pyrene	ND		0.0000500	1	10/09/2023 15:47	WG2147261
Benzo(b)fluoranthene	ND		0.0000500	1	10/09/2023 15:47	WG2147261
Benzo(g,h,i)perylene	ND		0.0000500	1	10/09/2023 15:47	WG2147261
Benzo(k)fluoranthene	ND		0.0000500	1	10/09/2023 15:47	WG2147261
Chrysene	ND		0.0000500	1	10/09/2023 15:47	WG2147261
Dibenz(a,h)anthracene	ND		0.0000500	1	10/09/2023 15:47	WG2147261
Fluoranthene	ND		0.000100	1	10/09/2023 15:47	WG2147261
Fluorene	ND		0.0000500	1	10/09/2023 15:47	WG2147261
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/09/2023 15:47	WG2147261
Naphthalene	ND		0.000250	1	10/09/2023 15:47	WG2147261
Phenanthrene	ND		0.0000500	1	10/09/2023 15:47	WG2147261
Pyrene	ND		0.0000500	1	10/09/2023 15:47	WG2147261
1-Methylnaphthalene	ND		0.000250	1	10/09/2023 15:47	WG2147261
2-Methylnaphthalene	ND		0.000250	1	10/09/2023 15:47	WG2147261
2-Chloronaphthalene	ND		0.000250	1	10/09/2023 15:47	WG2147261
(S) Nitrobenzene-d5	*109*		*31.0-160*		*10/09/2023 15:47*	WG2147261
(S) 2-Fluorobiphenyl	*86.8*		*48.0-148*		*10/09/2023 15:47*	WG2147261
(S) p-Terphenyl-d14	*87.4*		*37.0-146*		*10/09/2023 15:47*	WG2147261

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/09/2023 23:50	WG2147534
(S) a,a,a-Trifluorotoluene(FID)	*106*		*78.0-120*		*10/09/2023 23:50*	WG2147534

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/07/2023 14:24	WG2147038
Toluene	ND		0.00100	1	10/07/2023 14:24	WG2147038
Ethylbenzene	ND		0.00100	1	10/07/2023 14:24	WG2147038
Total Xylenes	ND		0.00300	1	10/07/2023 14:24	WG2147038
(S) Toluene-d8	*89.4*		*80.0-120*		*10/07/2023 14:24*	WG2147038
(S) 4-Bromofluorobenzene	*93.8*		*77.0-126*		*10/07/2023 14:24*	WG2147038
(S) 1,2-Dichloroethane-d4	*110*		*70.0-130*		*10/07/2023 14:24*	WG2147038

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	0.166		0.100	1	10/16/2023 22:03	WG2150669
C28-C40 Oil Range	ND		0.100	1	10/16/2023 22:03	WG2150669
(S) o-Terphenyl	*81.0*		*52.0-156*		*10/16/2023 22:03*	WG2150669

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/09/2023 16:05	WG2147261
Acenaphthene	ND		0.0000500	1	10/09/2023 16:05	WG2147261
Acenaphthylene	ND		0.0000500	1	10/09/2023 16:05	WG2147261
Benzo(a)anthracene	ND		0.0000500	1	10/09/2023 16:05	WG2147261
Benzo(a)pyrene	ND		0.0000500	1	10/09/2023 16:05	WG2147261
Benzo(b)fluoranthene	ND		0.0000500	1	10/09/2023 16:05	WG2147261
Benzo(g,h,i)perylene	ND		0.0000500	1	10/09/2023 16:05	WG2147261
Benzo(k)fluoranthene	ND		0.0000500	1	10/09/2023 16:05	WG2147261
Chrysene	ND		0.0000500	1	10/09/2023 16:05	WG2147261
Dibenz(a,h)anthracene	ND		0.0000500	1	10/09/2023 16:05	WG2147261
Fluoranthene	ND		0.000100	1	10/09/2023 16:05	WG2147261
Fluorene	ND		0.0000500	1	10/09/2023 16:05	WG2147261
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/09/2023 16:05	WG2147261
Naphthalene	ND		0.000250	1	10/09/2023 16:05	WG2147261
Phenanthrene	ND		0.0000500	1	10/09/2023 16:05	WG2147261
Pyrene	ND		0.0000500	1	10/09/2023 16:05	WG2147261
1-Methylnaphthalene	ND		0.000250	1	10/09/2023 16:05	WG2147261
2-Methylnaphthalene	ND		0.000250	1	10/09/2023 16:05	WG2147261
2-Chloronaphthalene	ND		0.000250	1	10/09/2023 16:05	WG2147261
(S) Nitrobenzene-d5	*87.9*		*31.0-160*		*10/09/2023 16:05*	WG2147261
(S) 2-Fluorobiphenyl	*84.7*		*48.0-148*		*10/09/2023 16:05*	WG2147261
(S) p-Terphenyl-d14	*84.2*		*37.0-146*		*10/09/2023 16:05*	WG2147261

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/10/2023 00:12	WG2147534
(S) a,a,a-Trifluorotoluene(FID)	*106*		*78.0-120*		*10/10/2023 00:12*	WG2147534

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/07/2023 14:45	WG2147038
Toluene	ND		0.00100	1	10/07/2023 14:45	WG2147038
Ethylbenzene	ND		0.00100	1	10/07/2023 14:45	WG2147038
Total Xylenes	ND		0.00300	1	10/07/2023 14:45	WG2147038
(S) Toluene-d8	*92.7*		*80.0-120*		*10/07/2023 14:45*	WG2147038
(S) 4-Bromofluorobenzene	*95.3*		*77.0-126*		*10/07/2023 14:45*	WG2147038
(S) 1,2-Dichloroethane-d4	*111*		*70.0-130*		*10/07/2023 14:45*	WG2147038

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		0.100	1	10/16/2023 22:23	WG2150669
C28-C40 Oil Range	ND		0.100	1	10/16/2023 22:23	WG2150669
(S) o-Terphenyl	*80.0*		*52.0-156*		*10/16/2023 22:23*	WG2150669

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/09/2023 16:22	WG2147261
Acenaphthene	ND		0.0000500	1	10/09/2023 16:22	WG2147261
Acenaphthylene	ND		0.0000500	1	10/09/2023 16:22	WG2147261
Benzo(a)anthracene	ND		0.0000500	1	10/09/2023 16:22	WG2147261
Benzo(a)pyrene	ND		0.0000500	1	10/09/2023 16:22	WG2147261
Benzo(b)fluoranthene	ND		0.0000500	1	10/09/2023 16:22	WG2147261
Benzo(g,h,i)perylene	ND		0.0000500	1	10/09/2023 16:22	WG2147261
Benzo(k)fluoranthene	ND		0.0000500	1	10/09/2023 16:22	WG2147261
Chrysene	ND		0.0000500	1	10/09/2023 16:22	WG2147261
Dibenz(a,h)anthracene	ND		0.0000500	1	10/09/2023 16:22	WG2147261
Fluoranthene	ND		0.000100	1	10/09/2023 16:22	WG2147261
Fluorene	ND		0.0000500	1	10/09/2023 16:22	WG2147261
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/09/2023 16:22	WG2147261
Naphthalene	ND		0.000250	1	10/09/2023 16:22	WG2147261
Phenanthrene	ND		0.0000500	1	10/09/2023 16:22	WG2147261
Pyrene	ND		0.0000500	1	10/09/2023 16:22	WG2147261
1-Methylnaphthalene	ND		0.000250	1	10/09/2023 16:22	WG2147261
2-Methylnaphthalene	ND		0.000250	1	10/09/2023 16:22	WG2147261
2-Chloronaphthalene	ND		0.000250	1	10/09/2023 16:22	WG2147261
(S) Nitrobenzene-d5	*107*		*31.0-160*		*10/09/2023 16:22*	WG2147261
(S) 2-Fluorobiphenyl	*87.9*		*48.0-148*		*10/09/2023 16:22*	WG2147261
(S) p-Terphenyl-d14	*91.1*		*37.0-146*		*10/09/2023 16:22*	WG2147261

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/13/2023 17:12	WG2150834
(S) a,a,a-Trifluorotoluene(FID)	*89.9*		*78.0-120*		*10/13/2023 17:12*	WG2150834

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/07/2023 15:06	WG2147038
Toluene	ND		0.00100	1	10/07/2023 15:06	WG2147038
Ethylbenzene	ND		0.00100	1	10/07/2023 15:06	WG2147038
Total Xylenes	ND		0.00300	1	10/07/2023 15:06	WG2147038
(S) Toluene-d8	*91.3*		*80.0-120*		*10/07/2023 15:06*	WG2147038
(S) 4-Bromofluorobenzene	*95.6*		*77.0-126*		*10/07/2023 15:06*	WG2147038
(S) 1,2-Dichloroethane-d4	*110*		*70.0-130*		*10/07/2023 15:06*	WG2147038

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		0.100	1	10/16/2023 22:43	WG2150669
C28-C40 Oil Range	ND		0.100	1	10/16/2023 22:43	WG2150669
(S) o-Terphenyl	*80.0*		*52.0-156*		*10/16/2023 22:43*	WG2150669

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/10/2023 02:04	WG2147558
Acenaphthene	ND		0.0000500	1	10/10/2023 02:04	WG2147558
Acenaphthylene	ND		0.0000500	1	10/10/2023 02:04	WG2147558
Benzo(a)anthracene	ND		0.0000500	1	10/10/2023 02:04	WG2147558
Benzo(a)pyrene	ND		0.0000500	1	10/10/2023 02:04	WG2147558
Benzo(b)fluoranthene	ND		0.0000500	1	10/10/2023 02:04	WG2147558
Benzo(g,h,i)perylene	ND	J4	0.0000500	1	10/10/2023 02:04	WG2147558
Benzo(k)fluoranthene	ND		0.0000500	1	10/10/2023 02:04	WG2147558
Chrysene	ND		0.0000500	1	10/10/2023 02:04	WG2147558
Dibenz(a,h)anthracene	ND		0.0000500	1	10/10/2023 02:04	WG2147558
Fluoranthene	ND		0.000100	1	10/10/2023 02:04	WG2147558
Fluorene	ND		0.0000500	1	10/10/2023 02:04	WG2147558
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/10/2023 02:04	WG2147558
Naphthalene	ND		0.000250	1	10/10/2023 02:04	WG2147558
Phenanthrene	ND		0.0000500	1	10/10/2023 02:04	WG2147558
Pyrene	ND		0.0000500	1	10/10/2023 02:04	WG2147558
1-Methylnaphthalene	ND		0.000250	1	10/10/2023 02:04	WG2147558
2-Methylnaphthalene	ND		0.000250	1	10/10/2023 02:04	WG2147558
2-Chloronaphthalene	ND		0.000250	1	10/10/2023 02:04	WG2147558
(S) Nitrobenzene-d5	*95.3*		*31.0-160*		*10/10/2023 02:04*	WG2147558
(S) 2-Fluorobiphenyl	*102*		*48.0-148*		*10/10/2023 02:04*	WG2147558
(S) p-Terphenyl-d14	*73.7*		*37.0-146*		*10/10/2023 02:04*	WG2147558

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/13/2023 17:57	WG2150834
(S) a,a,a-Trifluorotoluene(FID)	*89.9*		*78.0-120*		*10/13/2023 17:57*	WG2150834

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/10/2023 23:18	WG2148770
Toluene	ND		0.00100	1	10/10/2023 23:18	WG2148770
Ethylbenzene	ND		0.00100	1	10/10/2023 23:18	WG2148770
Total Xylenes	ND		0.00300	1	10/10/2023 23:18	WG2148770
(S) Toluene-d8	*90.3*		*80.0-120*		*10/10/2023 23:18*	WG2148770
(S) 4-Bromofluorobenzene	*97.0*		*77.0-126*		*10/10/2023 23:18*	WG2148770
(S) 1,2-Dichloroethane-d4	*119*		*70.0-130*		*10/10/2023 23:18*	WG2148770

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		0.100	1	10/16/2023 23:03	WG2150669
C28-C40 Oil Range	ND		0.100	1	10/16/2023 23:03	WG2150669
(S) o-Terphenyl	*88.0*		*52.0-156*		*10/16/2023 23:03*	WG2150669

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/10/2023 02:24	WG2147558
Acenaphthene	ND		0.0000500	1	10/10/2023 02:24	WG2147558
Acenaphthylene	ND		0.0000500	1	10/10/2023 02:24	WG2147558
Benzo(a)anthracene	ND		0.0000500	1	10/10/2023 02:24	WG2147558
Benzo(a)pyrene	ND		0.0000500	1	10/10/2023 02:24	WG2147558
Benzo(b)fluoranthene	ND		0.0000500	1	10/10/2023 02:24	WG2147558
Benzo(g,h,i)perylene	ND	J4	0.0000500	1	10/10/2023 02:24	WG2147558
Benzo(k)fluoranthene	ND		0.0000500	1	10/10/2023 02:24	WG2147558
Chrysene	ND		0.0000500	1	10/10/2023 02:24	WG2147558
Dibenz(a,h)anthracene	ND		0.0000500	1	10/10/2023 02:24	WG2147558
Fluoranthene	ND		0.000100	1	10/10/2023 02:24	WG2147558
Fluorene	ND		0.0000500	1	10/10/2023 02:24	WG2147558
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/10/2023 02:24	WG2147558
Naphthalene	ND		0.000250	1	10/10/2023 02:24	WG2147558
Phenanthrene	ND		0.0000500	1	10/10/2023 02:24	WG2147558
Pyrene	ND		0.0000500	1	10/10/2023 02:24	WG2147558
1-Methylnaphthalene	ND		0.000250	1	10/10/2023 02:24	WG2147558
2-Methylnaphthalene	ND		0.000250	1	10/10/2023 02:24	WG2147558
2-Chloronaphthalene	ND		0.000250	1	10/10/2023 02:24	WG2147558
(S) Nitrobenzene-d5	*92.6*		*31.0-160*		*10/10/2023 02:24*	WG2147558
(S) 2-Fluorobiphenyl	*102*		*48.0-148*		*10/10/2023 02:24*	WG2147558
(S) p-Terphenyl-d14	*77.4*		*37.0-146*		*10/10/2023 02:24*	WG2147558

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/13/2023 18:19	WG2150834
(S) a,a,a-Trifluorotoluene(FID)	*89.6*		*78.0-120*		*10/13/2023 18:19*	WG2150834

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/10/2023 23:41	WG2148770
Toluene	ND		0.00100	1	10/10/2023 23:41	WG2148770
Ethylbenzene	ND		0.00100	1	10/10/2023 23:41	WG2148770
Total Xylenes	ND		0.00300	1	10/10/2023 23:41	WG2148770
(S) Toluene-d8	*93.3*		*80.0-120*		*10/10/2023 23:41*	WG2148770
(S) 4-Bromofluorobenzene	*93.6*		*77.0-126*		*10/10/2023 23:41*	WG2148770
(S) 1,2-Dichloroethane-d4	*118*		*70.0-130*		*10/10/2023 23:41*	WG2148770

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		0.100	1	10/16/2023 23:22	WG2150669
C28-C40 Oil Range	ND		0.100	1	10/16/2023 23:22	WG2150669
(S) o-Terphenyl	*82.0*		*52.0-156*		*10/16/2023 23:22*	WG2150669

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/10/2023 02:44	WG2147558
Acenaphthene	ND		0.0000500	1	10/10/2023 02:44	WG2147558
Acenaphthylene	ND		0.0000500	1	10/10/2023 02:44	WG2147558
Benzo(a)anthracene	ND		0.0000500	1	10/10/2023 02:44	WG2147558
Benzo(a)pyrene	ND		0.0000500	1	10/10/2023 02:44	WG2147558
Benzo(b)fluoranthene	ND		0.0000500	1	10/10/2023 02:44	WG2147558
Benzo(g,h,i)perylene	ND	J4	0.0000500	1	10/10/2023 02:44	WG2147558
Benzo(k)fluoranthene	ND		0.0000500	1	10/10/2023 02:44	WG2147558
Chrysene	ND		0.0000500	1	10/10/2023 02:44	WG2147558
Dibenz(a,h)anthracene	ND		0.0000500	1	10/10/2023 02:44	WG2147558
Fluoranthene	ND		0.000100	1	10/10/2023 02:44	WG2147558
Fluorene	ND		0.0000500	1	10/10/2023 02:44	WG2147558
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/10/2023 02:44	WG2147558
Naphthalene	ND		0.000250	1	10/10/2023 02:44	WG2147558
Phenanthrene	ND		0.0000500	1	10/10/2023 02:44	WG2147558
Pyrene	ND		0.0000500	1	10/10/2023 02:44	WG2147558
1-Methylnaphthalene	ND		0.000250	1	10/10/2023 02:44	WG2147558
2-Methylnaphthalene	ND		0.000250	1	10/10/2023 02:44	WG2147558
2-Chloronaphthalene	ND		0.000250	1	10/10/2023 02:44	WG2147558
(S) Nitrobenzene-d5	*95.3*		*31.0-160*		*10/10/2023 02:44*	WG2147558
(S) 2-Fluorobiphenyl	*104*		*48.0-148*		*10/10/2023 02:44*	WG2147558
(S) p-Terphenyl-d14	*75.8*		*37.0-146*		*10/10/2023 02:44*	WG2147558

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/13/2023 18:42	WG2150834
(S) a,a,a-Trifluorotoluene(FID)	*90.1*		*78.0-120*		*10/13/2023 18:42*	WG2150834

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/11/2023 00:03	WG2148770
Toluene	ND		0.00100	1	10/11/2023 00:03	WG2148770
Ethylbenzene	ND		0.00100	1	10/11/2023 00:03	WG2148770
Total Xylenes	ND		0.00300	1	10/11/2023 00:03	WG2148770
(S) Toluene-d8	*90.4*		*80.0-120*		*10/11/2023 00:03*	WG2148770
(S) 4-Bromofluorobenzene	*90.4*		*77.0-126*		*10/11/2023 00:03*	WG2148770
(S) 1,2-Dichloroethane-d4	*118*		*70.0-130*		*10/11/2023 00:03*	WG2148770

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		0.100	1	10/16/2023 23:42	WG2150669
C28-C40 Oil Range	ND		0.100	1	10/16/2023 23:42	WG2150669
(S) o-Terphenyl	*81.0*		*52.0-156*		*10/16/2023 23:42*	WG2150669

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/10/2023 03:03	WG2147558
Acenaphthene	ND		0.0000500	1	10/10/2023 03:03	WG2147558
Acenaphthylene	ND		0.0000500	1	10/10/2023 03:03	WG2147558
Benzo(a)anthracene	ND		0.0000500	1	10/10/2023 03:03	WG2147558
Benzo(a)pyrene	ND		0.0000500	1	10/10/2023 03:03	WG2147558
Benzo(b)fluoranthene	ND		0.0000500	1	10/10/2023 03:03	WG2147558
Benzo(g,h,i)perylene	ND	J4	0.0000500	1	10/10/2023 03:03	WG2147558
Benzo(k)fluoranthene	ND		0.0000500	1	10/10/2023 03:03	WG2147558
Chrysene	ND		0.0000500	1	10/10/2023 03:03	WG2147558
Dibenz(a,h)anthracene	ND		0.0000500	1	10/10/2023 03:03	WG2147558
Fluoranthene	ND		0.000100	1	10/10/2023 03:03	WG2147558
Fluorene	ND		0.0000500	1	10/10/2023 03:03	WG2147558
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/10/2023 03:03	WG2147558
Naphthalene	ND		0.000250	1	10/10/2023 03:03	WG2147558
Phenanthrene	ND		0.0000500	1	10/10/2023 03:03	WG2147558
Pyrene	ND		0.0000500	1	10/10/2023 03:03	WG2147558
1-Methylnaphthalene	ND		0.000250	1	10/10/2023 03:03	WG2147558
2-Methylnaphthalene	ND		0.000250	1	10/10/2023 03:03	WG2147558
2-Chloronaphthalene	ND		0.000250	1	10/10/2023 03:03	WG2147558
(S) Nitrobenzene-d5	*90.0*		*31.0-160*		*10/10/2023 03:03*	WG2147558
(S) 2-Fluorobiphenyl	*102*		*48.0-148*		*10/10/2023 03:03*	WG2147558
(S) p-Terphenyl-d14	*74.2*		*37.0-146*		*10/10/2023 03:03*	WG2147558

Method Blank (MB)

(MB) R3984502-2 10/09/23 18:33

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPH (GC/FID) Low Fraction	U		0.0314	0.100
(S) a,a,a-Trifluorotoluene(FID)	*104*			*78.0-120*

Laboratory Control Sample (LCS)

(LCS) R3984502-1 10/09/23 17:49

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.04	91.6	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*102*	*78.0-120*	

Method Blank (MB)

(MB) R3986989-2 10/13/23 15:39

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPH (GC/FID) Low Fraction	U		0.0314	0.100
(S) a,a,a-Trifluorotoluene(FID)	*90.1*			*78.0-120*

Laboratory Control Sample (LCS)

(LCS) R3986989-1 10/13/23 13:47

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.77	86.7	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*96.3*	*78.0-120*	

L1662801-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1662801-04 10/13/23 17:12 • (MS) R3986989-3 10/14/23 00:37 • (MSD) R3986989-4 10/14/23 01:00

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	ND	5.09	4.13	92.5	75.1	1	10.0-160			20.8	22
(S) a,a,a-Trifluorotoluene(FID)					*97.3*	*94.5*		*78.0-120*				

Method Blank (MB)

(MB) R3984889-2 10/07/23 12:27

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0000941	0.00100
Toluene	U		0.000278	0.00100
Ethylbenzene	U		0.000137	0.00100
Total Xylenes	U		0.000174	0.00300
(S) Toluene-d8	*92.3*			*80.0-120*
(S) 4-Bromofluorobenzene	*89.8*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*107*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3984889-1 10/07/23 11:44

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.00500	0.00582	116	70.0-123	
Toluene	0.00500	0.00479	95.8	79.0-120	
Ethylbenzene	0.00500	0.00475	95.0	79.0-123	
Total Xylenes	0.0150	0.0141	94.0	79.0-123	
(S) Toluene-d8			*92.5*	*80.0-120*	
(S) 4-Bromofluorobenzene			*98.0*	*77.0-126*	
(S) 1,2-Dichloroethane-d4			*107*	*70.0-130*	

L1663337-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1663337-06 10/07/23 18:37 • (MS) R3984889-3 10/07/23 20:23 • (MSD) R3984889-4 10/07/23 20:43

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.00500	ND	0.00692	0.00711	128	132	1	17.0-158			2.71	27
Toluene	0.00500	ND	0.00511	0.00551	102	110	1	26.0-154			7.53	28
Ethylbenzene	0.00500	ND	0.00531	0.00583	106	117	1	30.0-155			9.34	27
Total Xylenes	0.0150	ND	0.0162	0.0170	108	113	1	29.0-154			4.82	28
(S) Toluene-d8					*87.3*	*88.4*		*80.0-120*				
(S) 4-Bromofluorobenzene					*101*	*101*		*77.0-126*				
(S) 1,2-Dichloroethane-d4					*104*	*106*		*70.0-130*				

Method Blank (MB)

(MB) R3985622-3 10/10/23 21:31

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0000941	0.00100
Toluene	U		0.000278	0.00100
Ethylbenzene	U		0.000137	0.00100
Total Xylenes	U		0.000174	0.00300
(S) Toluene-d8	*94.1*			*80.0-120*
(S) 4-Bromofluorobenzene	*96.4*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*118*			*70.0-130*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3985622-1 10/10/23 20:25 • (LCSD) R3985622-2 10/10/23 20:47

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.00500	0.00590	0.00585	118	117	70.0-123			0.851	20
Toluene	0.00500	0.00493	0.00492	98.6	98.4	79.0-120			0.203	20
Ethylbenzene	0.00500	0.00467	0.00490	93.4	98.0	79.0-123			4.81	20
Total Xylenes	0.0150	0.0143	0.0149	95.3	99.3	79.0-123			4.11	20
(S) Toluene-d8				*92.1*	*93.7*	*80.0-120*				
(S) 4-Bromofluorobenzene				*96.4*	*99.1*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*119*	*114*	*70.0-130*				

Method Blank (MB)

(MB) R3986861-1 10/16/23 17:10

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
C10-C28 Diesel Range	U		0.0222	0.100
C28-C40 Oil Range	U		0.0118	0.100
(S) o-Terphenyl	*87.0*			*52.0-156*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3986861-2 10/16/23 17:41 • (LCSD) R3986861-3 10/16/23 18:01

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	1.50	1.60	1.71	107	114	50.0-150			6.65	20
(S) o-Terphenyl				*79.5*	*80.5*	*52.0-156*				

Method Blank (MB)

(MB) R3984637-3 10/09/23 13:47

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Anthracene	U		0.0000190	0.0000500
Acenaphthene	U		0.0000190	0.0000500
Acenaphthylene	U		0.0000171	0.0000500
Benzo(a)anthracene	U		0.0000203	0.0000500
Benzo(a)pyrene	U		0.0000184	0.0000500
Benzo(b)fluoranthene	U		0.0000168	0.0000500
Benzo(g,h,i)perylene	U		0.0000184	0.0000500
Benzo(k)fluoranthene	U		0.0000202	0.0000500
Chrysene	U		0.0000179	0.0000500
Dibenz(a,h)anthracene	U		0.0000160	0.0000500
Fluoranthene	U		0.0000270	0.000100
Fluorene	U		0.0000169	0.0000500
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500
Naphthalene	U		0.0000917	0.000250
Phenanthrene	U		0.0000180	0.0000500
Pyrene	U		0.0000169	0.0000500
1-Methylnaphthalene	U		0.0000687	0.000250
2-Methylnaphthalene	U		0.0000674	0.000250
2-Chloronaphthalene	U		0.0000682	0.000250
(S) Nitrobenzene-d5	*108*			*31.0-160*
(S) 2-Fluorobiphenyl	*88.0*			*48.0-148*
(S) p-Terphenyl-d14	*92.5*			*37.0-146*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3984637-1 10/09/23 13:13 • (LCSD) R3984637-2 10/09/23 13:30

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Anthracene	0.00200	0.00184	0.00185	92.0	92.5	67.0-150			0.542	20
Acenaphthene	0.00200	0.00184	0.00177	92.0	88.5	65.0-138			3.88	20
Acenaphthylene	0.00200	0.00197	0.00191	98.5	95.5	66.0-140			3.09	20
Benzo(a)anthracene	0.00200	0.00208	0.00204	104	102	61.0-140			1.94	20
Benzo(a)pyrene	0.00200	0.00212	0.00206	106	103	60.0-143			2.87	20
Benzo(b)fluoranthene	0.00200	0.00188	0.00183	94.0	91.5	58.0-141			2.70	20
Benzo(g,h,i)perylene	0.00200	0.00186	0.00181	93.0	90.5	52.0-153			2.72	20
Benzo(k)fluoranthene	0.00200	0.00184	0.00181	92.0	90.5	58.0-148			1.64	20
Chrysene	0.00200	0.00193	0.00190	96.5	95.0	64.0-144			1.57	20
Dibenz(a,h)anthracene	0.00200	0.00198	0.00192	99.0	96.0	52.0-155			3.08	20
Fluoranthene	0.00200	0.00203	0.00201	102	100	69.0-153			0.990	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3984637-1 10/09/23 13:13 • (LCSD) R3984637-2 10/09/23 13:30

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Fluorene	0.00200	0.00195	0.00187	97.5	93.5	64.0-136			4.19	20
Indeno(1,2,3-cd)pyrene	0.00200	0.00221	0.00216	111	108	54.0-153			2.29	20
Naphthalene	0.00200	0.00173	0.00172	86.5	86.0	61.0-137			0.580	20
Phenanthrene	0.00200	0.00183	0.00177	91.5	88.5	62.0-137			3.33	20
Pyrene	0.00200	0.00193	0.00189	96.5	94.5	60.0-142			2.09	20
1-Methylnaphthalene	0.00200	0.00187	0.00183	93.5	91.5	66.0-142			2.16	20
2-Methylnaphthalene	0.00200	0.00192	0.00187	96.0	93.5	62.0-136			2.64	20
2-Chloronaphthalene	0.00200	0.00177	0.00170	88.5	85.0	64.0-140			4.03	20
(S) Nitrobenzene-d5				*101*	*99.0*	*31.0-160*				
(S) 2-Fluorobiphenyl				*88.0*	*85.5*	*48.0-148*				
(S) p-Terphenyl-d14				*90.0*	*87.5*	*37.0-146*				

Method Blank (MB)

(MB) R3984856-3 10/10/23 01:45

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Anthracene	U		0.0000190	0.0000500
Acenaphthene	U		0.0000190	0.0000500
Acenaphthylene	U		0.0000171	0.0000500
Benzo(a)anthracene	U		0.0000203	0.0000500
Benzo(a)pyrene	U		0.0000184	0.0000500
Benzo(b)fluoranthene	U		0.0000168	0.0000500
Benzo(g,h,i)perylene	U		0.0000184	0.0000500
Benzo(k)fluoranthene	U		0.0000202	0.0000500
Chrysene	U		0.0000179	0.0000500
Dibenz(a,h)anthracene	U		0.0000160	0.0000500
Fluoranthene	U		0.0000270	0.000100
Fluorene	U		0.0000169	0.0000500
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500
Naphthalene	U		0.0000917	0.000250
Phenanthrene	U		0.0000180	0.0000500
Pyrene	U		0.0000169	0.0000500
1-Methylnaphthalene	U		0.0000687	0.000250
2-Methylnaphthalene	U		0.0000674	0.000250
2-Chloronaphthalene	U		0.0000682	0.000250
(S) Nitrobenzene-d5	*92.5*			*31.0-160*
(S) 2-Fluorobiphenyl	*94.0*			*48.0-148*
(S) p-Terphenyl-d14	*73.5*			*37.0-146*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3984856-1 10/10/23 01:06 • (LCSD) R3984856-2 10/10/23 01:25

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Anthracene	0.00200	0.00167	0.00179	83.5	89.5	67.0-150			6.94	20
Acenaphthene	0.00200	0.00180	0.00192	90.0	96.0	65.0-138			6.45	20
Acenaphthylene	0.00200	0.00189	0.00202	94.5	101	66.0-140			6.65	20
Benzo(a)anthracene	0.00200	0.00169	0.00176	84.5	88.0	61.0-140			4.06	20
Benzo(a)pyrene	0.00200	0.00131	0.00137	65.5	68.5	60.0-143			4.48	20
Benzo(b)fluoranthene	0.00200	0.00120	0.00129	60.0	64.5	58.0-141			7.23	20
Benzo(g,h,i)perylene	0.00200	0.00101	0.000981	50.5	49.0	52.0-153	J4	J4	2.91	20
Benzo(k)fluoranthene	0.00200	0.00119	0.00119	59.5	59.5	58.0-148			0.000	20
Chrysene	0.00200	0.00164	0.00180	82.0	90.0	64.0-144			9.30	20
Dibenz(a,h)anthracene	0.00200	0.00108	0.00107	54.0	53.5	52.0-155			0.930	20
Fluoranthene	0.00200	0.00177	0.00195	88.5	97.5	69.0-153			9.68	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3984856-1 10/10/23 01:06 • (LCSD) R3984856-2 10/10/23 01:25

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Fluorene	0.00200	0.00183	0.00196	91.5	98.0	64.0-136			6.86	20
Indeno(1,2,3-cd)pyrene	0.00200	0.00110	0.00108	55.0	54.0	54.0-153			1.83	20
Naphthalene	0.00200	0.00175	0.00184	87.5	92.0	61.0-137			5.01	20
Phenanthrene	0.00200	0.00167	0.00187	83.5	93.5	62.0-137			11.3	20
Pyrene	0.00200	0.00188	0.00196	94.0	98.0	60.0-142			4.17	20
1-Methylnaphthalene	0.00200	0.00181	0.00195	90.5	97.5	66.0-142			7.45	20
2-Methylnaphthalene	0.00200	0.00188	0.00198	94.0	99.0	62.0-136			5.18	20
2-Chloronaphthalene	0.00200	0.00172	0.00188	86.0	94.0	64.0-140			8.89	20
(S) Nitrobenzene-d5				*95.0*	*93.0*	*31.0-160*				
(S) 2-Fluorobiphenyl				*94.5*	*96.5*	*48.0-148*				
(S) p-Terphenyl-d14				*67.0*	*64.5*	*37.0-146*				

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J4	The associated batch QC was outside the established quality control range for accuracy.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Company Name/Address:
Rio Grande Resources Corp

219 S 2nd St
Raton, NM 87740

Billing Information:
Bruce Norquist
PO Box 1150
Grants , NM 87020

Pres Chk

Report to: **Eric Roads** / Melissa Chalona

Email To: **eroads@enganalytics.com;tdavis@enganalytics.**

Project Description: **Mt Taylor**

City/State Collected: New Mexico

Please Circle: PT MT CT ET

Phone: **970-488-3111**

Client Project # 111360

Lab Project # **RIOGRAGNM-MTTAYLOR**

Collected by (print): Tyler Davis

Site/Facility ID #

P.O. #

Collected by (signature): Tyler Davis

Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
~~X~~ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	DROORGLVI 40mlAmb-HCl-BT	GRO 40mlAmb HCl	PAHSIMLVI 40mlAmb-NoPres-WT	SV8270PAH 4ozClr-NoPres	V8260BTEX 40mlAmb-HCl	V8260BTEX 40mlAmb/MeOH10ml/Syr	Remarks	Sample # (lab only)
MT-GW-TS-900-DW7-100323-K3	Grab	GW	900	10/2/23	15:42	9	X	X	X		X			-01
MT-GW-TS-900-DW7-100223	Grab	GW	900	10/2/23	16:46	9	X	X	X		X			-02
MT-GW-TS-900-DW7-10023-K2	Grab	GW	900	10/2/23	17:42	9	X	X	X		X			-03
MT-GW-TS-785-DW1-100323-K3	Grab	GW	785	10/3/23	10:58	9	X	X	X		X			-04
MT-GW-TS-785-DW1-100323-K4	Grab	GW	785	10/3/23	11:09	9	X	X	X		X			-05
MT-GW-TS-785-DW1-100323	Grab	GW	785	10/3/23	12:43	9	X	X	X		X			-06
MT-GW-TS-785-DW1-100323-K1	Grab	GW	785	10/3/23	12:43	9	X	X	X		X			-07
		GW				9	X	X	X		X			
		GW				9	X	X	X		X			
		GW				9	X	X	X		X			

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

Pace
PEOPLE ADVANCING SCIENCE

MT JULIET, TN
12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # 166280
B041

Acctnum: **RIOGRAGNM**
Template: **T238214**
Prelogin: **P1026344**
PM: **732 - Donna Eidson**
PB: NG 9/27/23
Shipped Via: **FedEX Ground**

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking # 6841 8349 2592

Sample Receipt Checklist
COC Seal Present/Intact: __NP __Y __N
COC Signed/Accurate: __Y __N
Bottles arrive intact: __Y __N
Correct bottles used: __Y __N
Sufficient volume sent: __Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N
RAD Screen <0.5 mR/hr: __Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	If preservation required by Login: Date/Time
Tyler Davis	10/3/2023	16:27			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received:	
	10/3/2023	1800		CA8 4.7+0.4.7	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: Time:	Hold: Condition: NCF / OK
				10-4-23 9:30	

ANALYTICAL REPORT

November 04, 2023

Rio Grande Resources Corp

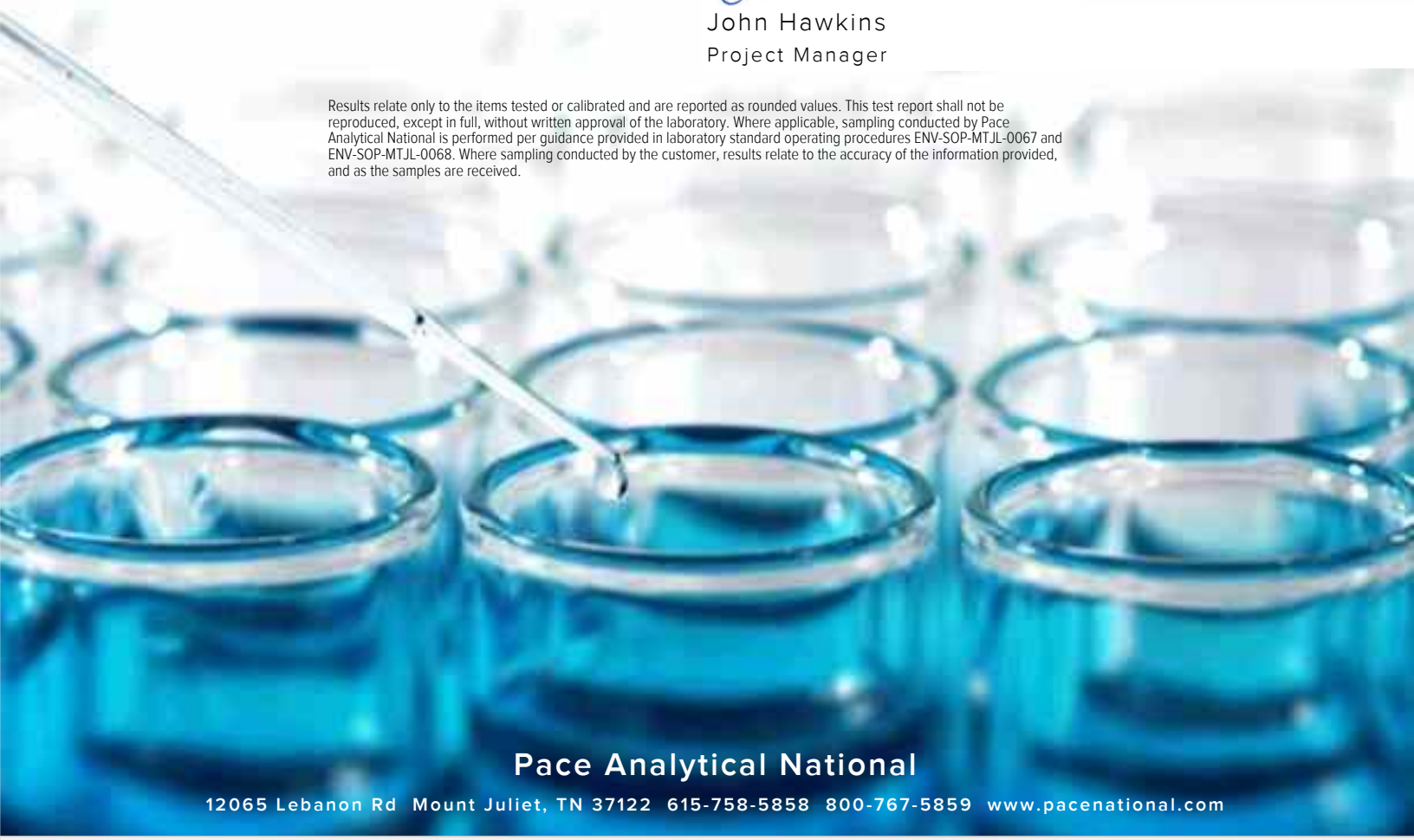
Sample Delivery Group:	L1664135
Samples Received:	10/07/2023
Project Number:	111360
Description:	Mt. Taylor

Report To: Eric Roads
219 S 2nd St
Raton, NM 87740

Entire Report Reviewed By:

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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MT-GW-TS2865-DW12-100523-K3 L1664135-01 GW

Collected by: Tyler Davis | Collected date/time: 10/05/23 15:19 | Received date/time: 10/07/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2151294	1	10/14/23 22:02	10/14/23 22:02	NCD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2148770	1	10/11/23 01:10	10/11/23 01:10	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2152443	1	10/18/23 05:23	10/19/23 21:18	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2147261	1	10/09/23 07:30	10/09/23 17:30	DSH	Mt. Juliet, TN

MT-GW-TS-28665-DW12-100523 L1664135-02 GW

Collected by: Tyler Davis | Collected date/time: 10/05/23 17:14 | Received date/time: 10/07/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2151294	1	10/14/23 22:26	10/14/23 22:26	NCD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2148770	1	10/11/23 01:32	10/11/23 01:32	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2152443	1	10/18/23 05:23	10/19/23 21:38	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2147261	1	10/09/23 07:30	10/09/23 17:48	DSH	Mt. Juliet, TN

MT-GW-TS-1764-DW12-100623-K3 L1664135-03 GW

Collected by: Tyler Davis | Collected date/time: 10/06/23 08:33 | Received date/time: 10/07/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2151298	1	10/16/23 13:21	10/16/23 13:21	NCD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2148770	1	10/11/23 01:53	10/11/23 01:53	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2153241	1	10/19/23 09:26	10/20/23 08:49	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2147261	1	10/09/23 07:30	10/09/23 18:05	DSH	Mt. Juliet, TN

MT-GW-TS-1764-DW12-100623 L1664135-04 GW

Collected by: Tyler Davis | Collected date/time: 10/06/23 09:46 | Received date/time: 10/07/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2151298	1	10/16/23 13:44	10/16/23 13:44	NCD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2148770	1	10/11/23 02:15	10/11/23 02:15	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2153241	1	10/19/23 09:26	10/20/23 09:09	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2148909	1	10/12/23 16:23	10/13/23 16:36	AMM	Mt. Juliet, TN

MT-GW-TS-865-DW10-100623-K2 L1664135-05 GW

Collected by: Tyler Davis | Collected date/time: 10/06/23 11:37 | Received date/time: 10/07/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2151298	1	10/16/23 14:07	10/16/23 14:07	NCD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2148770	1	10/11/23 02:38	10/11/23 02:38	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2153241	1	10/19/23 09:26	10/20/23 09:29	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2148909	1	10/12/23 16:23	10/13/23 16:54	AMM	Mt. Juliet, TN

MT-GW-TS-865-DW10-100623-K3 L1664135-06 GW

Collected by: Tyler Davis | Collected date/time: 10/06/23 13:00 | Received date/time: 10/07/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2151298	1	10/16/23 14:30	10/16/23 14:30	NCD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2148770	1	10/11/23 03:00	10/11/23 03:00	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2153241	1	10/19/23 09:26	10/20/23 09:50	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2148909	1	10/12/23 16:23	10/13/23 17:12	AMM	Mt. Juliet, TN

SAMPLE SUMMARY

MT-GW-TS-865-DW10-100623 L1664135-07 GW

Collected by: Tyler Davis
Collected date/time: 10/06/23 13:52
Received date/time: 10/07/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2151298	1	10/16/23 14:53	10/16/23 14:53	NCD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2148803	1	10/11/23 02:11	10/11/23 02:11	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2153241	1	10/19/23 09:26	10/20/23 10:10	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2148909	1	10/12/23 16:23	10/13/23 17:30	AMM	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Project Manager

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/14/2023 22:02	WG2151294
(S) a,a,a-Trifluorotoluene(FID)	*92.2*		*78.0-120*		*10/14/2023 22:02*	WG2151294

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/11/2023 01:10	WG2148770
Toluene	ND		0.00100	1	10/11/2023 01:10	WG2148770
Ethylbenzene	ND		0.00100	1	10/11/2023 01:10	WG2148770
Total Xylenes	ND		0.00300	1	10/11/2023 01:10	WG2148770
(S) Toluene-d8	*97.2*		*80.0-120*		*10/11/2023 01:10*	WG2148770
(S) 4-Bromofluorobenzene	*93.8*		*77.0-126*		*10/11/2023 01:10*	WG2148770
(S) 1,2-Dichloroethane-d4	*121*		*70.0-130*		*10/11/2023 01:10*	WG2148770

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		0.100	1	10/19/2023 21:18	WG2152443
C28-C40 Oil Range	ND		0.100	1	10/19/2023 21:18	WG2152443
(S) o-Terphenyl	*121*		*52.0-156*		*10/19/2023 21:18*	WG2152443

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/09/2023 17:30	WG2147261
Acenaphthene	ND		0.0000500	1	10/09/2023 17:30	WG2147261
Acenaphthylene	ND		0.0000500	1	10/09/2023 17:30	WG2147261
Benzo(a)anthracene	ND		0.0000500	1	10/09/2023 17:30	WG2147261
Benzo(a)pyrene	ND		0.0000500	1	10/09/2023 17:30	WG2147261
Benzo(b)fluoranthene	ND		0.0000500	1	10/09/2023 17:30	WG2147261
Benzo(g,h,i)perylene	ND		0.0000500	1	10/09/2023 17:30	WG2147261
Benzo(k)fluoranthene	ND		0.0000500	1	10/09/2023 17:30	WG2147261
Chrysene	ND		0.0000500	1	10/09/2023 17:30	WG2147261
Dibenz(a,h)anthracene	ND		0.0000500	1	10/09/2023 17:30	WG2147261
Fluoranthene	ND		0.000100	1	10/09/2023 17:30	WG2147261
Fluorene	ND		0.0000500	1	10/09/2023 17:30	WG2147261
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/09/2023 17:30	WG2147261
Naphthalene	ND		0.000250	1	10/09/2023 17:30	WG2147261
Phenanthrene	ND		0.0000500	1	10/09/2023 17:30	WG2147261
Pyrene	ND		0.0000500	1	10/09/2023 17:30	WG2147261
1-Methylnaphthalene	ND		0.000250	1	10/09/2023 17:30	WG2147261
2-Methylnaphthalene	ND		0.000250	1	10/09/2023 17:30	WG2147261
2-Chloronaphthalene	ND		0.000250	1	10/09/2023 17:30	WG2147261
(S) Nitrobenzene-d5	*104*		*31.0-160*		*10/09/2023 17:30*	WG2147261
(S) 2-Fluorobiphenyl	*85.3*		*48.0-148*		*10/09/2023 17:30*	WG2147261
(S) p-Terphenyl-d14	*87.9*		*37.0-146*		*10/09/2023 17:30*	WG2147261

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/14/2023 22:26	WG2151294
(S) a,a,a-Trifluorotoluene(FID)	*92.5*		*78.0-120*		*10/14/2023 22:26*	WG2151294

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/11/2023 01:32	WG2148770
Toluene	ND		0.00100	1	10/11/2023 01:32	WG2148770
Ethylbenzene	ND		0.00100	1	10/11/2023 01:32	WG2148770
Total Xylenes	ND		0.00300	1	10/11/2023 01:32	WG2148770
(S) Toluene-d8	*92.4*		*80.0-120*		*10/11/2023 01:32*	WG2148770
(S) 4-Bromofluorobenzene	*91.5*		*77.0-126*		*10/11/2023 01:32*	WG2148770
(S) 1,2-Dichloroethane-d4	*116*		*70.0-130*		*10/11/2023 01:32*	WG2148770

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	0.156		0.100	1	10/19/2023 21:38	WG2152443
C28-C40 Oil Range	0.116		0.100	1	10/19/2023 21:38	WG2152443
(S) o-Terphenyl	*127*		*52.0-156*		*10/19/2023 21:38*	WG2152443

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/09/2023 17:48	WG2147261
Acenaphthene	ND		0.0000500	1	10/09/2023 17:48	WG2147261
Acenaphthylene	ND		0.0000500	1	10/09/2023 17:48	WG2147261
Benzo(a)anthracene	ND		0.0000500	1	10/09/2023 17:48	WG2147261
Benzo(a)pyrene	ND		0.0000500	1	10/09/2023 17:48	WG2147261
Benzo(b)fluoranthene	ND		0.0000500	1	10/09/2023 17:48	WG2147261
Benzo(g,h,i)perylene	ND		0.0000500	1	10/09/2023 17:48	WG2147261
Benzo(k)fluoranthene	ND		0.0000500	1	10/09/2023 17:48	WG2147261
Chrysene	ND		0.0000500	1	10/09/2023 17:48	WG2147261
Dibenz(a,h)anthracene	ND		0.0000500	1	10/09/2023 17:48	WG2147261
Fluoranthene	ND		0.000100	1	10/09/2023 17:48	WG2147261
Fluorene	ND		0.0000500	1	10/09/2023 17:48	WG2147261
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/09/2023 17:48	WG2147261
Naphthalene	ND		0.000250	1	10/09/2023 17:48	WG2147261
Phenanthrene	ND		0.0000500	1	10/09/2023 17:48	WG2147261
Pyrene	ND		0.0000500	1	10/09/2023 17:48	WG2147261
1-Methylnaphthalene	ND		0.000250	1	10/09/2023 17:48	WG2147261
2-Methylnaphthalene	ND		0.000250	1	10/09/2023 17:48	WG2147261
2-Chloronaphthalene	ND		0.000250	1	10/09/2023 17:48	WG2147261
(S) Nitrobenzene-d5	*104*		*31.0-160*		*10/09/2023 17:48*	WG2147261
(S) 2-Fluorobiphenyl	*88.9*		*48.0-148*		*10/09/2023 17:48*	WG2147261
(S) p-Terphenyl-d14	*91.1*		*37.0-146*		*10/09/2023 17:48*	WG2147261

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/16/2023 13:21	WG2151298
(S) a,a,a-Trifluorotoluene(FID)	*100*		*78.0-120*		*10/16/2023 13:21*	WG2151298

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/11/2023 01:53	WG2148770
Toluene	ND		0.00100	1	10/11/2023 01:53	WG2148770
Ethylbenzene	ND		0.00100	1	10/11/2023 01:53	WG2148770
Total Xylenes	ND		0.00300	1	10/11/2023 01:53	WG2148770
(S) Toluene-d8	*92.9*		*80.0-120*		*10/11/2023 01:53*	WG2148770
(S) 4-Bromofluorobenzene	*91.6*		*77.0-126*		*10/11/2023 01:53*	WG2148770
(S) 1,2-Dichloroethane-d4	*120*		*70.0-130*		*10/11/2023 01:53*	WG2148770

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		0.100	1	10/20/2023 08:49	WG2153241
C28-C40 Oil Range	ND		0.100	1	10/20/2023 08:49	WG2153241
(S) o-Terphenyl	*123*		*52.0-156*		*10/20/2023 08:49*	WG2153241

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/09/2023 18:05	WG2147261
Acenaphthene	ND		0.0000500	1	10/09/2023 18:05	WG2147261
Acenaphthylene	ND		0.0000500	1	10/09/2023 18:05	WG2147261
Benzo(a)anthracene	ND		0.0000500	1	10/09/2023 18:05	WG2147261
Benzo(a)pyrene	ND		0.0000500	1	10/09/2023 18:05	WG2147261
Benzo(b)fluoranthene	ND		0.0000500	1	10/09/2023 18:05	WG2147261
Benzo(g,h,i)perylene	ND		0.0000500	1	10/09/2023 18:05	WG2147261
Benzo(k)fluoranthene	ND		0.0000500	1	10/09/2023 18:05	WG2147261
Chrysene	ND		0.0000500	1	10/09/2023 18:05	WG2147261
Dibenz(a,h)anthracene	ND		0.0000500	1	10/09/2023 18:05	WG2147261
Fluoranthene	ND		0.000100	1	10/09/2023 18:05	WG2147261
Fluorene	ND		0.0000500	1	10/09/2023 18:05	WG2147261
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/09/2023 18:05	WG2147261
Naphthalene	ND		0.000250	1	10/09/2023 18:05	WG2147261
Phenanthrene	ND		0.0000500	1	10/09/2023 18:05	WG2147261
Pyrene	ND		0.0000500	1	10/09/2023 18:05	WG2147261
1-Methylnaphthalene	ND		0.000250	1	10/09/2023 18:05	WG2147261
2-Methylnaphthalene	ND		0.000250	1	10/09/2023 18:05	WG2147261
2-Chloronaphthalene	ND		0.000250	1	10/09/2023 18:05	WG2147261
(S) Nitrobenzene-d5	*105*		*31.0-160*		*10/09/2023 18:05*	WG2147261
(S) 2-Fluorobiphenyl	*87.4*		*48.0-148*		*10/09/2023 18:05*	WG2147261
(S) p-Terphenyl-d14	*87.4*		*37.0-146*		*10/09/2023 18:05*	WG2147261

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/16/2023 13:44	WG2151298
(S) a,a,a-Trifluorotoluene(FID)	*100*		*78.0-120*		*10/16/2023 13:44*	WG2151298

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/11/2023 02:15	WG2148770
Toluene	ND		0.00100	1	10/11/2023 02:15	WG2148770
Ethylbenzene	ND		0.00100	1	10/11/2023 02:15	WG2148770
Total Xylenes	ND		0.00300	1	10/11/2023 02:15	WG2148770
(S) Toluene-d8	*86.6*		*80.0-120*		*10/11/2023 02:15*	WG2148770
(S) 4-Bromofluorobenzene	*95.8*		*77.0-126*		*10/11/2023 02:15*	WG2148770
(S) 1,2-Dichloroethane-d4	*120*		*70.0-130*		*10/11/2023 02:15*	WG2148770

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	0.246	B	0.100	1	10/20/2023 09:09	WG2153241
C28-C40 Oil Range	0.126	B	0.100	1	10/20/2023 09:09	WG2153241
(S) o-Terphenyl	*124*		*52.0-156*		*10/20/2023 09:09*	WG2153241

Sample Narrative:

L1664135-04 WG2153241: Duplicate Analysis performed due to Blank contamination. Results confirm; reporting in-hold data.

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/13/2023 16:36	WG2148909
Acenaphthene	ND		0.0000500	1	10/13/2023 16:36	WG2148909
Acenaphthylene	ND		0.0000500	1	10/13/2023 16:36	WG2148909
Benzo(a)anthracene	ND		0.0000500	1	10/13/2023 16:36	WG2148909
Benzo(a)pyrene	ND	J3 J4	0.0000500	1	10/13/2023 16:36	WG2148909
Benzo(b)fluoranthene	ND	J3	0.0000500	1	10/13/2023 16:36	WG2148909
Benzo(g,h,i)perylene	ND	J3 J4	0.0000500	1	10/13/2023 16:36	WG2148909
Benzo(k)fluoranthene	ND	J3 J4	0.0000500	1	10/13/2023 16:36	WG2148909
Chrysene	ND	J3	0.0000500	1	10/13/2023 16:36	WG2148909
Dibenz(a,h)anthracene	ND	J3	0.0000500	1	10/13/2023 16:36	WG2148909
Fluoranthene	ND		0.000100	1	10/13/2023 16:36	WG2148909
Fluorene	ND		0.0000500	1	10/13/2023 16:36	WG2148909
Indeno(1,2,3-cd)pyrene	ND	J3	0.0000500	1	10/13/2023 16:36	WG2148909
Naphthalene	ND		0.000250	1	10/13/2023 16:36	WG2148909
Phenanthrene	ND		0.0000500	1	10/13/2023 16:36	WG2148909
Pyrene	ND		0.0000500	1	10/13/2023 16:36	WG2148909
1-Methylnaphthalene	ND		0.000250	1	10/13/2023 16:36	WG2148909
2-Methylnaphthalene	ND		0.000250	1	10/13/2023 16:36	WG2148909
2-Chloronaphthalene	ND		0.000250	1	10/13/2023 16:36	WG2148909
(S) Nitrobenzene-d5	*72.0*		*31.0-160*		*10/13/2023 16:36*	WG2148909
(S) 2-Fluorobiphenyl	*94.0*		*48.0-148*		*10/13/2023 16:36*	WG2148909
(S) p-Terphenyl-d14	*78.0*		*37.0-146*		*10/13/2023 16:36*	WG2148909

Sample Narrative:

L1664135-04 WG2148909: QC recovery marginally low, but within historical limits.

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/16/2023 14:07	WG2151298
(S) a,a,a-Trifluorotoluene(FID)	*99.3*		*78.0-120*		*10/16/2023 14:07*	WG2151298

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/11/2023 02:38	WG2148770
Toluene	ND		0.00100	1	10/11/2023 02:38	WG2148770
Ethylbenzene	ND		0.00100	1	10/11/2023 02:38	WG2148770
Total Xylenes	ND		0.00300	1	10/11/2023 02:38	WG2148770
(S) Toluene-d8	*92.2*		*80.0-120*		*10/11/2023 02:38*	WG2148770
(S) 4-Bromofluorobenzene	*93.0*		*77.0-126*		*10/11/2023 02:38*	WG2148770
(S) 1,2-Dichloroethane-d4	*120*		*70.0-130*		*10/11/2023 02:38*	WG2148770

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		0.100	1	10/20/2023 09:29	WG2153241
C28-C40 Oil Range	ND		0.100	1	10/20/2023 09:29	WG2153241
(S) o-Terphenyl	*124*		*52.0-156*		*10/20/2023 09:29*	WG2153241

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/13/2023 16:54	WG2148909
Acenaphthene	ND		0.0000500	1	10/13/2023 16:54	WG2148909
Acenaphthylene	ND		0.0000500	1	10/13/2023 16:54	WG2148909
Benzo(a)anthracene	ND		0.0000500	1	10/13/2023 16:54	WG2148909
Benzo(a)pyrene	ND	J3 J4	0.0000500	1	10/13/2023 16:54	WG2148909
Benzo(b)fluoranthene	ND	J3	0.0000500	1	10/13/2023 16:54	WG2148909
Benzo(g,h,i)perylene	ND	J3 J4	0.0000500	1	10/13/2023 16:54	WG2148909
Benzo(k)fluoranthene	ND	J3 J4	0.0000500	1	10/13/2023 16:54	WG2148909
Chrysene	ND	J3	0.0000500	1	10/13/2023 16:54	WG2148909
Dibenz(a,h)anthracene	ND	J3	0.0000500	1	10/13/2023 16:54	WG2148909
Fluoranthene	ND		0.000100	1	10/13/2023 16:54	WG2148909
Fluorene	ND		0.0000500	1	10/13/2023 16:54	WG2148909
Indeno(1,2,3-cd)pyrene	ND	J3	0.0000500	1	10/13/2023 16:54	WG2148909
Naphthalene	ND		0.000250	1	10/13/2023 16:54	WG2148909
Phenanthrene	ND		0.0000500	1	10/13/2023 16:54	WG2148909
Pyrene	ND		0.0000500	1	10/13/2023 16:54	WG2148909
1-Methylnaphthalene	ND		0.000250	1	10/13/2023 16:54	WG2148909
2-Methylnaphthalene	ND		0.000250	1	10/13/2023 16:54	WG2148909
2-Chloronaphthalene	ND		0.000250	1	10/13/2023 16:54	WG2148909
(S) Nitrobenzene-d5	*103*		*31.0-160*		*10/13/2023 16:54*	WG2148909
(S) 2-Fluorobiphenyl	*113*		*48.0-148*		*10/13/2023 16:54*	WG2148909
(S) p-Terphenyl-d14	*93.0*		*37.0-146*		*10/13/2023 16:54*	WG2148909

Sample Narrative:

L1664135-05 WG2148909: QC recovery marginally low, but within historical limits.

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/16/2023 14:30	WG2151298
(S) a,a,a-Trifluorotoluene(FID)	*99.9*		*78.0-120*		*10/16/2023 14:30*	WG2151298

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/11/2023 03:00	WG2148770
Toluene	ND		0.00100	1	10/11/2023 03:00	WG2148770
Ethylbenzene	ND		0.00100	1	10/11/2023 03:00	WG2148770
Total Xylenes	ND		0.00300	1	10/11/2023 03:00	WG2148770
(S) Toluene-d8	*93.3*		*80.0-120*		*10/11/2023 03:00*	WG2148770
(S) 4-Bromofluorobenzene	*95.4*		*77.0-126*		*10/11/2023 03:00*	WG2148770
(S) 1,2-Dichloroethane-d4	*120*		*70.0-130*		*10/11/2023 03:00*	WG2148770

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		0.100	1	10/20/2023 09:50	WG2153241
C28-C40 Oil Range	ND		0.100	1	10/20/2023 09:50	WG2153241
(S) o-Terphenyl	*126*		*52.0-156*		*10/20/2023 09:50*	WG2153241

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/13/2023 17:12	WG2148909
Acenaphthene	ND		0.0000500	1	10/13/2023 17:12	WG2148909
Acenaphthylene	ND		0.0000500	1	10/13/2023 17:12	WG2148909
Benzo(a)anthracene	ND		0.0000500	1	10/13/2023 17:12	WG2148909
Benzo(a)pyrene	ND	J3 J4	0.0000500	1	10/13/2023 17:12	WG2148909
Benzo(b)fluoranthene	ND	J3	0.0000500	1	10/13/2023 17:12	WG2148909
Benzo(g,h,i)perylene	ND	J3 J4	0.0000500	1	10/13/2023 17:12	WG2148909
Benzo(k)fluoranthene	ND	J3 J4	0.0000500	1	10/13/2023 17:12	WG2148909
Chrysene	ND	J3	0.0000500	1	10/13/2023 17:12	WG2148909
Dibenz(a,h)anthracene	ND	J3	0.0000500	1	10/13/2023 17:12	WG2148909
Fluoranthene	ND		0.000100	1	10/13/2023 17:12	WG2148909
Fluorene	ND		0.0000500	1	10/13/2023 17:12	WG2148909
Indeno(1,2,3-cd)pyrene	ND	J3	0.0000500	1	10/13/2023 17:12	WG2148909
Naphthalene	ND		0.000250	1	10/13/2023 17:12	WG2148909
Phenanthrene	ND		0.0000500	1	10/13/2023 17:12	WG2148909
Pyrene	ND		0.0000500	1	10/13/2023 17:12	WG2148909
1-Methylnaphthalene	ND		0.000250	1	10/13/2023 17:12	WG2148909
2-Methylnaphthalene	ND		0.000250	1	10/13/2023 17:12	WG2148909
2-Chloronaphthalene	ND		0.000250	1	10/13/2023 17:12	WG2148909
(S) Nitrobenzene-d5	*97.5*		*31.0-160*		*10/13/2023 17:12*	WG2148909
(S) 2-Fluorobiphenyl	*107*		*48.0-148*		*10/13/2023 17:12*	WG2148909
(S) p-Terphenyl-d14	*91.5*		*37.0-146*		*10/13/2023 17:12*	WG2148909

Sample Narrative:

L1664135-06 WG2148909: QC recovery marginally low, but within historical limits.

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/16/2023 14:53	WG2151298
(S) a,a,a-Trifluorotoluene(FID)	*101*		*78.0-120*		*10/16/2023 14:53*	WG2151298

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/11/2023 02:11	WG2148803
Toluene	ND		0.00100	1	10/11/2023 02:11	WG2148803
Ethylbenzene	ND		0.00100	1	10/11/2023 02:11	WG2148803
Total Xylenes	ND		0.00300	1	10/11/2023 02:11	WG2148803
(S) Toluene-d8	*109*		*80.0-120*		*10/11/2023 02:11*	WG2148803
(S) 4-Bromofluorobenzene	*108*		*77.0-126*		*10/11/2023 02:11*	WG2148803
(S) 1,2-Dichloroethane-d4	*90.8*		*70.0-130*		*10/11/2023 02:11*	WG2148803

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	0.395	B	0.100	1	10/20/2023 10:10	WG2153241
C28-C40 Oil Range	0.740	B	0.100	1	10/20/2023 10:10	WG2153241
(S) o-Terphenyl	*129*		*52.0-156*		*10/20/2023 10:10*	WG2153241

Sample Narrative:

L1664135-07 WG2153241: Duplicate Analysis performed due to Blank contamination. Results confirm; reporting in-hold data.

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/13/2023 17:30	WG2148909
Acenaphthene	ND		0.0000500	1	10/13/2023 17:30	WG2148909
Acenaphthylene	ND		0.0000500	1	10/13/2023 17:30	WG2148909
Benzo(a)anthracene	ND		0.0000500	1	10/13/2023 17:30	WG2148909
Benzo(a)pyrene	ND	J3 J4	0.0000500	1	10/13/2023 17:30	WG2148909
Benzo(b)fluoranthene	ND	J3	0.0000500	1	10/13/2023 17:30	WG2148909
Benzo(g,h,i)perylene	ND	J3 J4	0.0000500	1	10/13/2023 17:30	WG2148909
Benzo(k)fluoranthene	ND	J3 J4	0.0000500	1	10/13/2023 17:30	WG2148909
Chrysene	ND	J3	0.0000500	1	10/13/2023 17:30	WG2148909
Dibenz(a,h)anthracene	ND	J3	0.0000500	1	10/13/2023 17:30	WG2148909
Fluoranthene	ND		0.000100	1	10/13/2023 17:30	WG2148909
Fluorene	ND		0.0000500	1	10/13/2023 17:30	WG2148909
Indeno(1,2,3-cd)pyrene	ND	J3	0.0000500	1	10/13/2023 17:30	WG2148909
Naphthalene	ND		0.000250	1	10/13/2023 17:30	WG2148909
Phenanthrene	ND		0.0000500	1	10/13/2023 17:30	WG2148909
Pyrene	ND		0.0000500	1	10/13/2023 17:30	WG2148909
1-Methylnaphthalene	ND		0.000250	1	10/13/2023 17:30	WG2148909
2-Methylnaphthalene	ND		0.000250	1	10/13/2023 17:30	WG2148909
2-Chloronaphthalene	ND		0.000250	1	10/13/2023 17:30	WG2148909
(S) Nitrobenzene-d5	*72.0*		*31.0-160*		*10/13/2023 17:30*	WG2148909
(S) 2-Fluorobiphenyl	*75.0*		*48.0-148*		*10/13/2023 17:30*	WG2148909
(S) p-Terphenyl-d14	*60.5*		*37.0-146*		*10/13/2023 17:30*	WG2148909

Sample Narrative:

L1664135-07 WG2148909: QC recovery marginally low, but within historical limits.

Method Blank (MB)

(MB) R3986873-2 10/14/23 20:35

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPH (GC/FID) Low Fraction	U		0.0314	0.100
(S) a,a,a-Trifluorotoluene(FID)	*92.3*			*78.0-120*

Laboratory Control Sample (LCS)

(LCS) R3986873-1 10/14/23 18:24

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.94	108	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*96.3*	*78.0-120*	

Method Blank (MB)

(MB) R3987497-2 10/16/23 12:32

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPH (GC/FID) Low Fraction	U		0.0314	0.100
(S) a,a,a-Trifluorotoluene(FID)	*100*			*78.0-120*

Laboratory Control Sample (LCS)

(LCS) R3987497-1 10/16/23 11:23

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.55	101	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*103*	*78.0-120*	

Method Blank (MB)

(MB) R3985622-3 10/10/23 21:31

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0000941	0.00100
Toluene	U		0.000278	0.00100
Ethylbenzene	U		0.000137	0.00100
Total Xylenes	U		0.000174	0.00300
(S) Toluene-d8	*94.1*			*80.0-120*
(S) 4-Bromofluorobenzene	*96.4*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*118*			*70.0-130*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3985622-1 10/10/23 20:25 • (LCSD) R3985622-2 10/10/23 20:47

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.00500	0.00590	0.00585	118	117	70.0-123			0.851	20
Toluene	0.00500	0.00493	0.00492	98.6	98.4	79.0-120			0.203	20
Ethylbenzene	0.00500	0.00467	0.00490	93.4	98.0	79.0-123			4.81	20
Total Xylenes	0.0150	0.0143	0.0149	95.3	99.3	79.0-123			4.11	20
(S) Toluene-d8				*92.1*	*93.7*	*80.0-120*				
(S) 4-Bromofluorobenzene				*96.4*	*99.1*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*119*	*114*	*70.0-130*				

Method Blank (MB)

(MB) R3986818-1 10/10/23 23:44

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0000941	0.00100
Toluene	U		0.000278	0.00100
Ethylbenzene	U		0.000137	0.00100
Total Xylenes	U		0.000174	0.00300
(S) Toluene-d8	*109*			*80.0-120*
(S) 4-Bromofluorobenzene	*110*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*93.7*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3986818-2 10/11/23 00:46

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.00500	0.00434	86.8	70.0-123	
Toluene	0.00500	0.00504	101	79.0-120	
Ethylbenzene	0.00500	0.00562	112	79.0-123	
Total Xylenes	0.0150	0.0166	111	79.0-123	
(S) Toluene-d8			*108*	*80.0-120*	
(S) 4-Bromofluorobenzene			*110*	*77.0-126*	
(S) 1,2-Dichloroethane-d4			*101*	*70.0-130*	

Method Blank (MB)

(MB) R3988265-1 10/18/23 22:09

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
C10-C28 Diesel Range	U		0.0222	0.100
C28-C40 Oil Range	U		0.0118	0.100
(S) o-Terphenyl	*133*			*52.0-156*

Laboratory Control Sample (LCS)

(LCS) R3988265-2 10/18/23 22:29

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	1.50	1.30	86.7	50.0-150	
(S) o-Terphenyl			*125*	*52.0-156*	

L1665816-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1665816-01 10/20/23 03:01 • (MS) R3989177-1 10/20/23 03:21 • (MSD) R3989177-2 10/20/23 03:41

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	1.43	ND	7.38	6.34	516	443	1	50.0-150	J5	J5	15.2	20
(S) o-Terphenyl					*140*	*139*		*52.0-156*				

L1665820-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1665820-03 10/20/23 04:01 • (MS) R3989177-3 10/20/23 04:22 • (MSD) R3989177-4 10/20/23 04:42

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	1.43	ND	3.36	3.35	235	234	1	50.0-150	J5	J5	0.298	20
(S) o-Terphenyl					*143*	*149*		*52.0-156*				

Method Blank (MB)

(MB) R3989178-1 10/20/23 07:48

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
C10-C28 Diesel Range	0.0692	J	0.0222	0.100
C28-C40 Oil Range	0.148		0.0118	0.100
(S) o-Terphenyl	*122*			*52.0-156*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3989178-2 10/20/23 08:08 • (LCSD) R3989178-3 10/20/23 08:29

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	1.50	1.47	1.55	98.0	103	50.0-150			5.30	20
(S) o-Terphenyl				*113*	*135*	*52.0-156*				

Method Blank (MB)

(MB) R3984637-3 10/09/23 13:47

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Anthracene	U		0.0000190	0.0000500
Acenaphthene	U		0.0000190	0.0000500
Acenaphthylene	U		0.0000171	0.0000500
Benzo(a)anthracene	U		0.0000203	0.0000500
Benzo(a)pyrene	U		0.0000184	0.0000500
Benzo(b)fluoranthene	U		0.0000168	0.0000500
Benzo(g,h,i)perylene	U		0.0000184	0.0000500
Benzo(k)fluoranthene	U		0.0000202	0.0000500
Chrysene	U		0.0000179	0.0000500
Dibenz(a,h)anthracene	U		0.0000160	0.0000500
Fluoranthene	U		0.0000270	0.000100
Fluorene	U		0.0000169	0.0000500
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500
Naphthalene	U		0.0000917	0.000250
Phenanthrene	U		0.0000180	0.0000500
Pyrene	U		0.0000169	0.0000500
1-Methylnaphthalene	U		0.0000687	0.000250
2-Methylnaphthalene	U		0.0000674	0.000250
2-Chloronaphthalene	U		0.0000682	0.000250
(S) Nitrobenzene-d5	*108*			*31.0-160*
(S) 2-Fluorobiphenyl	*88.0*			*48.0-148*
(S) p-Terphenyl-d14	*92.5*			*37.0-146*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3984637-1 10/09/23 13:13 • (LCSD) R3984637-2 10/09/23 13:30

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Anthracene	0.00200	0.00184	0.00185	92.0	92.5	67.0-150			0.542	20
Acenaphthene	0.00200	0.00184	0.00177	92.0	88.5	65.0-138			3.88	20
Acenaphthylene	0.00200	0.00197	0.00191	98.5	95.5	66.0-140			3.09	20
Benzo(a)anthracene	0.00200	0.00208	0.00204	104	102	61.0-140			1.94	20
Benzo(a)pyrene	0.00200	0.00212	0.00206	106	103	60.0-143			2.87	20
Benzo(b)fluoranthene	0.00200	0.00188	0.00183	94.0	91.5	58.0-141			2.70	20
Benzo(g,h,i)perylene	0.00200	0.00186	0.00181	93.0	90.5	52.0-153			2.72	20
Benzo(k)fluoranthene	0.00200	0.00184	0.00181	92.0	90.5	58.0-148			1.64	20
Chrysene	0.00200	0.00193	0.00190	96.5	95.0	64.0-144			1.57	20
Dibenz(a,h)anthracene	0.00200	0.00198	0.00192	99.0	96.0	52.0-155			3.08	20
Fluoranthene	0.00200	0.00203	0.00201	102	100	69.0-153			0.990	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3984637-1 10/09/23 13:13 • (LCSD) R3984637-2 10/09/23 13:30

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Fluorene	0.00200	0.00195	0.00187	97.5	93.5	64.0-136			4.19	20
Indeno(1,2,3-cd)pyrene	0.00200	0.00221	0.00216	111	108	54.0-153			2.29	20
Naphthalene	0.00200	0.00173	0.00172	86.5	86.0	61.0-137			0.580	20
Phenanthrene	0.00200	0.00183	0.00177	91.5	88.5	62.0-137			3.33	20
Pyrene	0.00200	0.00193	0.00189	96.5	94.5	60.0-142			2.09	20
1-Methylnaphthalene	0.00200	0.00187	0.00183	93.5	91.5	66.0-142			2.16	20
2-Methylnaphthalene	0.00200	0.00192	0.00187	96.0	93.5	62.0-136			2.64	20
2-Chloronaphthalene	0.00200	0.00177	0.00170	88.5	85.0	64.0-140			4.03	20
(S) Nitrobenzene-d5				*101*	*99.0*	*31.0-160*				
(S) 2-Fluorobiphenyl				*88.0*	*85.5*	*48.0-148*				
(S) p-Terphenyl-d14				*90.0*	*87.5*	*37.0-146*				

Method Blank (MB)

(MB) R3986651-3 10/13/23 15:07

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Anthracene	U		0.0000190	0.0000500
Acenaphthene	U		0.0000190	0.0000500
Acenaphthylene	U		0.0000171	0.0000500
Benzo(a)anthracene	U		0.0000203	0.0000500
Benzo(a)pyrene	U		0.0000184	0.0000500
Benzo(b)fluoranthene	U		0.0000168	0.0000500
Benzo(g,h,i)perylene	U		0.0000184	0.0000500
Benzo(k)fluoranthene	U		0.0000202	0.0000500
Chrysene	U		0.0000179	0.0000500
Dibenz(a,h)anthracene	U		0.0000160	0.0000500
Fluoranthene	U		0.0000270	0.000100
Fluorene	U		0.0000169	0.0000500
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500
Naphthalene	U		0.0000917	0.000250
Phenanthrene	U		0.0000180	0.0000500
Pyrene	U		0.0000169	0.0000500
1-Methylnaphthalene	U		0.0000687	0.000250
2-Methylnaphthalene	U		0.0000674	0.000250
2-Chloronaphthalene	U		0.0000682	0.000250
(S) Nitrobenzene-d5	*86.0*			*31.0-160*
(S) 2-Fluorobiphenyl	*97.0*			*48.0-148*
(S) p-Terphenyl-d14	*80.0*			*37.0-146*

Method Blank (MB)

(MB) R3987948-1 10/16/23 15:39

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Anthracene	U		0.0000190	0.0000500
Acenaphthene	U		0.0000190	0.0000500
Acenaphthylene	U		0.0000171	0.0000500
Benzo(a)anthracene	U		0.0000203	0.0000500
Benzo(a)pyrene	U		0.0000184	0.0000500
Benzo(b)fluoranthene	U		0.0000168	0.0000500
Benzo(g,h,i)perylene	U		0.0000184	0.0000500
Benzo(k)fluoranthene	U		0.0000202	0.0000500
Chrysene	U		0.0000179	0.0000500
Dibenz(a,h)anthracene	U		0.0000160	0.0000500
Fluoranthene	U		0.0000270	0.000100

Method Blank (MB)

(MB) R3987948-1 10/16/23 15:39

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Fluorene	U		0.0000169	0.0000500
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500
Naphthalene	U		0.0000917	0.000250
Phenanthrene	U		0.0000180	0.0000500
Pyrene	U		0.0000169	0.0000500
1-Methylnaphthalene	U		0.0000687	0.000250
2-Methylnaphthalene	U		0.0000674	0.000250
2-Chloronaphthalene	U		0.0000682	0.000250
(S) Nitrobenzene-d5	*114*			*31.0-160*
(S) 2-Fluorobiphenyl	*92.5*			*48.0-148*
(S) p-Terphenyl-d14	*88.0*			*37.0-146*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3986651-1 10/13/23 14:31 • (LCSD) R3986651-2 10/13/23 14:49

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Anthracene	0.00200	0.00195	0.00195	97.5	97.5	67.0-150			0.000	20
Acenaphthene	0.00200	0.00166	0.00164	83.0	82.0	65.0-138			1.21	20
Acenaphthylene	0.00200	0.00168	0.00164	84.0	82.0	66.0-140			2.41	20
Benzo(a)anthracene	0.00200	0.00185	0.00156	92.5	78.0	61.0-140			17.0	20
Benzo(a)pyrene	0.00200	0.00152	0.00118	76.0	59.0	60.0-143		J3 J4	25.2	20
Benzo(b)fluoranthene	0.00200	0.00150	0.00122	75.0	61.0	58.0-141		J3	20.6	20
Benzo(g,h,i)perylene	0.00200	0.00138	0.00101	69.0	50.5	52.0-153		J3 J4	31.0	20
Benzo(k)fluoranthene	0.00200	0.00143	0.00110	71.5	55.0	58.0-148		J3 J4	26.1	20
Chrysene	0.00200	0.00179	0.00145	89.5	72.5	64.0-144		J3	21.0	20
Dibenz(a,h)anthracene	0.00200	0.00172	0.00125	86.0	62.5	52.0-155		J3	31.6	20
Fluoranthene	0.00200	0.00189	0.00189	94.5	94.5	69.0-153			0.000	20
Fluorene	0.00200	0.00179	0.00178	89.5	89.0	64.0-136			0.560	20
Indeno(1,2,3-cd)pyrene	0.00200	0.00168	0.00122	84.0	61.0	54.0-153		J3	31.7	20
Naphthalene	0.00200	0.00129	0.00129	64.5	64.5	61.0-137			0.000	20
Phenanthrene	0.00200	0.00197	0.00198	98.5	99.0	62.0-137			0.506	20
Pyrene	0.00200	0.00183	0.00182	91.5	91.0	60.0-142			0.548	20
1-Methylnaphthalene	0.00200	0.00133	0.00133	66.5	66.5	66.0-142			0.000	20
2-Methylnaphthalene	0.00200	0.00137	0.00137	68.5	68.5	62.0-136			0.000	20
2-Chloronaphthalene	0.00200	0.00175	0.00169	87.5	84.5	64.0-140			3.49	20
(S) Nitrobenzene-d5				*91.0*	*85.0*	*31.0-160*				
(S) 2-Fluorobiphenyl				*96.0*	*97.0*	*48.0-148*				
(S) p-Terphenyl-d14				*71.5*	*58.0*	*37.0-146*				

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

Qualifier	Description
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J4	The associated batch QC was outside the established quality control range for accuracy.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Company Name/Address:
Rio Grande Resources Corp

219 S 2nd St
Raton, NM 87740

Billing Information:
Bruce Norquist
PO Box 1150
Grants , NM 87020

Pres Chk

Report to: **Eric Roads**

Email To: **eroads@enganalytics.com;tdavis@enganalytics.**

Project Description: **Mt Taylor**

City/State Collected: Grants, New Mexico

Please Circle: PT MT CT ET

Phone: **970-488-3111**

Client Project # 111360

Lab Project # **RIOGRAGNM-MTTAYLOR**

Collected by (print): Tyler Davis

Site/Facility ID #

P.O. #

Collected by (signature): Tyler Davis

Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	DROOROLVI 40mlAmb-HCl-BT	GRO 40mlAmb HCl	PAHSIMLVI 40mlAmb-NoPres-WT	SV8270PAH 4ozClr-NoPres	V8260BTEX 40mlAmb-HCl	V8260BTEX 40mlAmb/MeOH10ml/Syr					Remarks	Sample # (lab only)
MT-GW-TS2865-DW12-100523-K3	Grab	GW	2865	10-5-23	1519	9	X	X	X		X							-01
MT-GW-TS-2865-DW12-100523	Grab	GW	2865	10-5-23	1714	9	X	X	X		X							-02
MT-GW-TS-1764-DW12-100623-K3	Grab	GW	1764	10-6-23	8:33	9	X	X	X		X							-03
MT-GW-TS-1764-DW12-100623	Grab	GW	1764	10-6-23	9:46	9	X	X	X		X							-04
MT-GW-TS-865-DW10-100623-K2	Grab	GW	865	10-6-23	1137	9	X	X	X		X							-05
MT-GW-TS-865-DW10-100623-K3	Grab	GW	865	10-6-23	1300	9	X	X	X		X							-06
MT-GW-TS-856-DW10-100623	Grab	GW	856	10-6-23	1352	9	X	X	X		X							-07
		GW				9	X	X	X		X							
		GW				9	X	X	X		X							
		GW				9	X	X	X		X							

Chain of Custody Page ___ of ___

Pace
PEOPLE ADVANCING SCIENCE

MT JULIET, TN

12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L1664135
D160

Acctnum: **RIOGRAGNM**
Template: **T238214**
Prelogin: **P1026344**
PM: **732 - Donna Eidson**
PB: NG 9/22/23

Shipped Via: **FedEX Ground**

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking # 6841 8849 3408

Sample Receipt Checklist

COC Seal Present/Intact:	NP	Y N
COC Signed/Accurate:		Y N
Bottles arrive intact:		Y N
Correct bottles used:		Y N
Sufficient volume sent:		Y N
If Applicable		
VOA Zero Headspace:		Y N
Preservation Correct/Checked:		Y N
RAD Screen <0.5 mR/hr:		Y N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	If preservation required by Login: Date/Time
Tyler Davis	10-6-23	1643			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: CAC °C Bottles Received: 5.2 TO=5.2 L3	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 10/7/23 Time: 0900	Hold: Condition: NCF / OK

Received for lab by: Alta Mitchell @

ANALYTICAL REPORT

October 23, 2023

Rio Grande Resources Corp

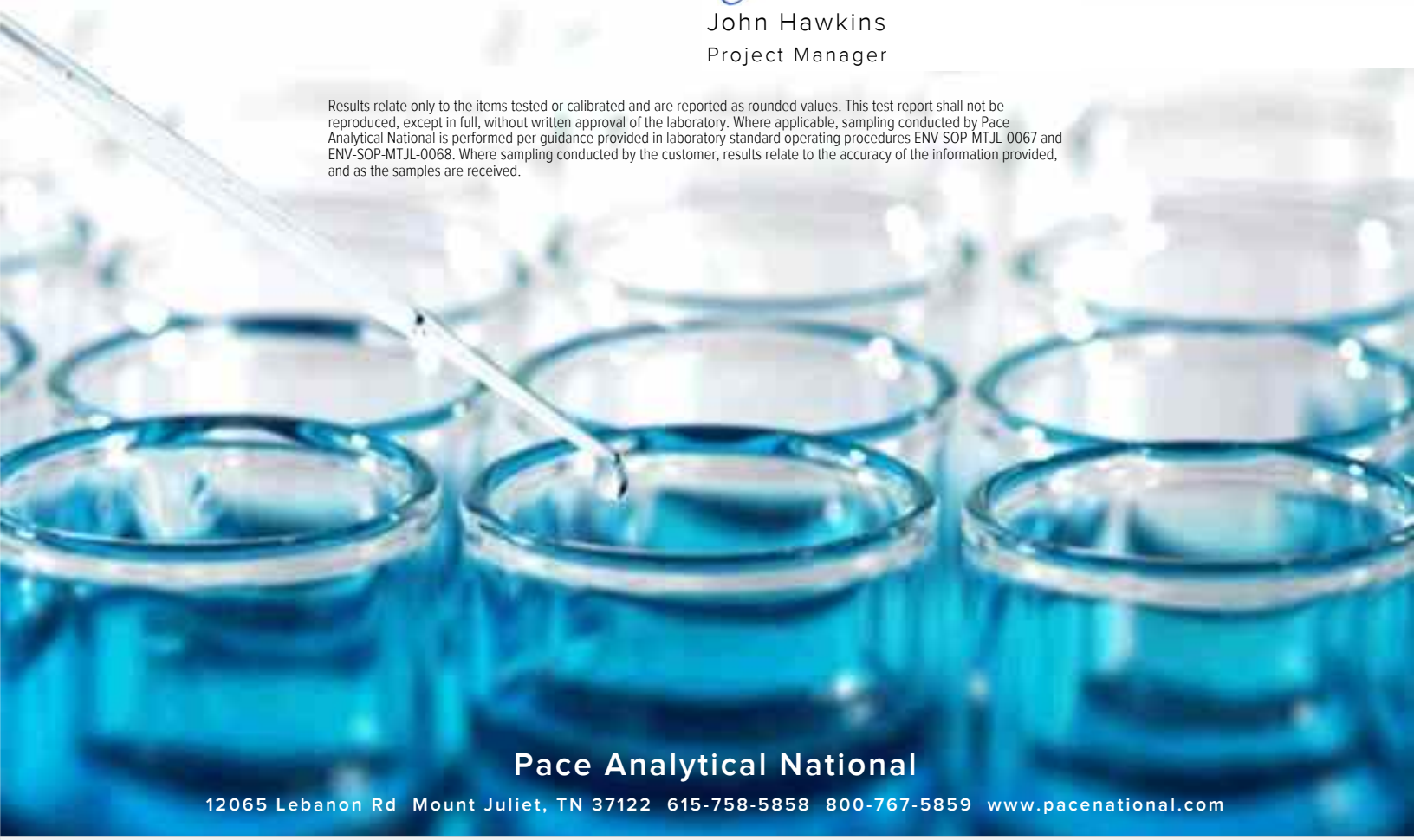
Sample Delivery Group:	L1664199
Samples Received:	10/07/2023
Project Number:	111360
Description:	Mt Taylor

Report To: Eric Roads
219 S 2nd St
Raton, NM 87740

Entire Report Reviewed By: John V Hawkins

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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MT-GW-TS-2760-DW9-100423-K3 L1664199-01 GW

Collected by: Tyler Davis | Collected date/time: 10/04/23 10:04 | Received date/time: 10/07/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2151135	1	10/14/23 07:47	10/14/23 07:47	NCD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2148803	1	10/11/23 02:30	10/11/23 02:30	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2152443	1	10/18/23 05:23	10/19/23 21:58	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2147644	1	10/11/23 08:11	10/11/23 18:03	JCH	Mt. Juliet, TN

MT-GW-TS-2760-DW9-100423-K2 L1664199-02 GW

Collected by: Tyler Davis | Collected date/time: 10/04/23 10:38 | Received date/time: 10/07/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2152377	1	10/17/23 13:07	10/17/23 13:07	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2148803	1	10/11/23 02:49	10/11/23 02:49	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2151593	3	10/17/23 07:38	10/17/23 22:52	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2147644	1	10/11/23 08:11	10/11/23 18:23	JCH	Mt. Juliet, TN

MT-GW-TS-2760-DW9-100423 L1664199-03 GW

Collected by: Tyler Davis | Collected date/time: 10/04/23 12:00 | Received date/time: 10/07/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2151291	1	10/16/23 10:49	10/16/23 10:49	KSD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2148803	1	10/11/23 03:09	10/11/23 03:09	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2152443	1	10/18/23 05:23	10/19/23 22:18	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2147644	1	10/11/23 08:11	10/11/23 21:38	DSH	Mt. Juliet, TN

MT-GW-TS-1655-DW9-100423-K3 L1664199-04 GW

Collected by: Tyler Davis | Collected date/time: 10/04/23 12:30 | Received date/time: 10/07/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2151291	1	10/16/23 11:11	10/16/23 11:11	KSD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2148803	1	10/11/23 03:28	10/11/23 03:28	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2152443	1	10/18/23 05:23	10/19/23 22:38	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2147644	1	10/11/23 08:11	10/11/23 18:42	DSH	Mt. Juliet, TN

MT-GW-TS-1655-DW9-100423 L1664199-05 GW

Collected by: Tyler Davis | Collected date/time: 10/04/23 13:34 | Received date/time: 10/07/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2151291	1	10/16/23 11:34	10/16/23 11:34	KSD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2148803	1	10/11/23 03:47	10/11/23 03:47	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2152443	1	10/18/23 05:23	10/19/23 22:59	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2147644	1	10/11/23 08:11	10/11/23 21:57	DSH	Mt. Juliet, TN

MT-GW-TS-1144-DW9-100423-K3 L1664199-06 GW

Collected by: Tyler Davis | Collected date/time: 10/04/23 14:00 | Received date/time: 10/07/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2151291	1	10/16/23 11:57	10/16/23 11:57	KSD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2148803	1	10/11/23 04:07	10/11/23 04:07	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2152443	1	10/18/23 05:23	10/19/23 23:19	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2147644	1	10/11/23 08:11	10/11/23 19:02	DSH	Mt. Juliet, TN

MT-GW-TS-1144-DW9-100423 L1664199-07 GW

Collected by: Tyler Davis | Collected date/time: 10/04/23 14:54 | Received date/time: 10/07/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2151291	1	10/16/23 12:19	10/16/23 12:19	KSD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2148803	1	10/11/23 04:26	10/11/23 04:26	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2152443	1	10/18/23 05:23	10/19/23 23:39	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2147644	1	10/11/23 08:11	10/11/23 22:17	DSH	Mt. Juliet, TN

MT-GW-TS-2770-DW2-100423-K3 L1664199-08 GW

Collected by: Tyler Davis | Collected date/time: 10/05/23 08:43 | Received date/time: 10/07/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2151294	1	10/14/23 22:51	10/14/23 22:51	NCD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2148803	1	10/11/23 04:46	10/11/23 04:46	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2152443	1	10/18/23 05:23	10/19/23 23:59	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2147661	1	10/11/23 08:05	10/11/23 18:08	DSH	Mt. Juliet, TN

MT-GW-TS-2770-DW2-100423-K2 L1664199-09 GW

Collected by: Tyler Davis | Collected date/time: 10/05/23 09:18 | Received date/time: 10/07/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2151295	1	10/14/23 16:02	10/14/23 16:02	AV	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2148803	1	10/11/23 05:05	10/11/23 05:05	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2152443	1	10/18/23 05:23	10/20/23 00:19	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2147661	1	10/11/23 08:05	10/11/23 16:05	DSH	Mt. Juliet, TN

MT-GW-TS-2480-DW2-100423 L1664199-10 GW

Collected by: Tyler Davis | Collected date/time: 10/05/23 12:54 | Received date/time: 10/07/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2151295	1	10/14/23 16:25	10/14/23 16:25	AV	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2148803	1	10/11/23 05:24	10/11/23 05:24	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2152443	1	10/18/23 05:23	10/20/23 00:40	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2147661	1	10/11/23 08:05	10/11/23 18:25	DSH	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Project Manager

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/14/2023 07:47	WG2151135
(S) a,a,a-Trifluorotoluene(FID)	*91.9*		*78.0-120*		*10/14/2023 07:47*	WG2151135

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/11/2023 02:30	WG2148803
Toluene	ND		0.00100	1	10/11/2023 02:30	WG2148803
Ethylbenzene	ND		0.00100	1	10/11/2023 02:30	WG2148803
Total Xylenes	ND		0.00300	1	10/11/2023 02:30	WG2148803
(S) Toluene-d8	*112*		*80.0-120*		*10/11/2023 02:30*	WG2148803
(S) 4-Bromofluorobenzene	*107*		*77.0-126*		*10/11/2023 02:30*	WG2148803
(S) 1,2-Dichloroethane-d4	*93.8*		*70.0-130*		*10/11/2023 02:30*	WG2148803

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		0.100	1	10/19/2023 21:58	WG2152443
C28-C40 Oil Range	ND		0.100	1	10/19/2023 21:58	WG2152443
(S) o-Terphenyl	*116*		*52.0-156*		*10/19/2023 21:58*	WG2152443

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/11/2023 18:03	WG2147644
Acenaphthene	ND		0.0000500	1	10/11/2023 18:03	WG2147644
Acenaphthylene	ND		0.0000500	1	10/11/2023 18:03	WG2147644
Benzo(a)anthracene	ND		0.0000500	1	10/11/2023 18:03	WG2147644
Benzo(a)pyrene	ND		0.0000500	1	10/11/2023 18:03	WG2147644
Benzo(b)fluoranthene	ND		0.0000500	1	10/11/2023 18:03	WG2147644
Benzo(g,h,i)perylene	ND		0.0000500	1	10/11/2023 18:03	WG2147644
Benzo(k)fluoranthene	ND		0.0000500	1	10/11/2023 18:03	WG2147644
Chrysene	ND		0.0000500	1	10/11/2023 18:03	WG2147644
Dibenz(a,h)anthracene	ND		0.0000500	1	10/11/2023 18:03	WG2147644
Fluoranthene	ND		0.000100	1	10/11/2023 18:03	WG2147644
Fluorene	ND		0.0000500	1	10/11/2023 18:03	WG2147644
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/11/2023 18:03	WG2147644
Naphthalene	ND		0.000250	1	10/11/2023 18:03	WG2147644
Phenanthrene	ND		0.0000500	1	10/11/2023 18:03	WG2147644
Pyrene	ND		0.0000500	1	10/11/2023 18:03	WG2147644
1-Methylnaphthalene	ND		0.000250	1	10/11/2023 18:03	WG2147644
2-Methylnaphthalene	ND		0.000250	1	10/11/2023 18:03	WG2147644
2-Chloronaphthalene	ND		0.000250	1	10/11/2023 18:03	WG2147644
(S) Nitrobenzene-d5	*178*	J1	*31.0-160*		*10/11/2023 18:03*	WG2147644
(S) 2-Fluorobiphenyl	*151*	J1	*48.0-148*		*10/11/2023 18:03*	WG2147644
(S) p-Terphenyl-d14	*175*	J1	*37.0-146*		*10/11/2023 18:03*	WG2147644

Sample Narrative:

L1664199-01 WG2147644: Duplicate analysis was performed.

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/17/2023 13:07	WG2152377
(S) a,a,a-Trifluorotoluene(FID)	*92.1*		*78.0-120*		*10/17/2023 13:07*	WG2152377

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/11/2023 02:49	WG2148803
Toluene	ND		0.00100	1	10/11/2023 02:49	WG2148803
Ethylbenzene	ND		0.00100	1	10/11/2023 02:49	WG2148803
Total Xylenes	ND		0.00300	1	10/11/2023 02:49	WG2148803
(S) Toluene-d8	*113*		*80.0-120*		*10/11/2023 02:49*	WG2148803
(S) 4-Bromofluorobenzene	*109*		*77.0-126*		*10/11/2023 02:49*	WG2148803
(S) 1,2-Dichloroethane-d4	*94.1*		*70.0-130*		*10/11/2023 02:49*	WG2148803

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		0.300	3	10/17/2023 22:52	WG2151593
C28-C40 Oil Range	ND		0.300	3	10/17/2023 22:52	WG2151593
(S) o-Terphenyl	*164*	J1	*52.0-156*		*10/17/2023 22:52*	WG2151593

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/11/2023 18:23	WG2147644
Acenaphthene	ND		0.0000500	1	10/11/2023 18:23	WG2147644
Acenaphthylene	ND		0.0000500	1	10/11/2023 18:23	WG2147644
Benzo(a)anthracene	ND		0.0000500	1	10/11/2023 18:23	WG2147644
Benzo(a)pyrene	ND		0.0000500	1	10/11/2023 18:23	WG2147644
Benzo(b)fluoranthene	ND		0.0000500	1	10/11/2023 18:23	WG2147644
Benzo(g,h,i)perylene	ND		0.0000500	1	10/11/2023 18:23	WG2147644
Benzo(k)fluoranthene	ND		0.0000500	1	10/11/2023 18:23	WG2147644
Chrysene	ND		0.0000500	1	10/11/2023 18:23	WG2147644
Dibenz(a,h)anthracene	ND		0.0000500	1	10/11/2023 18:23	WG2147644
Fluoranthene	ND		0.000100	1	10/11/2023 18:23	WG2147644
Fluorene	ND		0.0000500	1	10/11/2023 18:23	WG2147644
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/11/2023 18:23	WG2147644
Naphthalene	ND		0.000250	1	10/11/2023 18:23	WG2147644
Phenanthrene	ND		0.0000500	1	10/11/2023 18:23	WG2147644
Pyrene	ND		0.0000500	1	10/11/2023 18:23	WG2147644
1-Methylnaphthalene	ND		0.000250	1	10/11/2023 18:23	WG2147644
2-Methylnaphthalene	ND		0.000250	1	10/11/2023 18:23	WG2147644
2-Chloronaphthalene	ND		0.000250	1	10/11/2023 18:23	WG2147644
(S) Nitrobenzene-d5	*2220*	J1	*31.0-160*		*10/11/2023 18:23*	WG2147644
(S) 2-Fluorobiphenyl	*1880*	J1	*48.0-148*		*10/11/2023 18:23*	WG2147644
(S) p-Terphenyl-d14	*1550*	J1	*37.0-146*		*10/11/2023 18:23*	WG2147644

Sample Narrative:

L1664199-02 WG2147644: Duplicate analysis was performed.

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/16/2023 10:49	WG2151291
(S) a,a,a-Trifluorotoluene(FID)	*109*		*78.0-120*		*10/16/2023 10:49*	WG2151291

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/11/2023 03:09	WG2148803
Toluene	ND		0.00100	1	10/11/2023 03:09	WG2148803
Ethylbenzene	ND		0.00100	1	10/11/2023 03:09	WG2148803
Total Xylenes	ND		0.00300	1	10/11/2023 03:09	WG2148803
(S) Toluene-d8	*109*		*80.0-120*		*10/11/2023 03:09*	WG2148803
(S) 4-Bromofluorobenzene	*109*		*77.0-126*		*10/11/2023 03:09*	WG2148803
(S) 1,2-Dichloroethane-d4	*88.7*		*70.0-130*		*10/11/2023 03:09*	WG2148803

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	0.422		0.100	1	10/19/2023 22:18	WG2152443
C28-C40 Oil Range	1.68		0.100	1	10/19/2023 22:18	WG2152443
(S) o-Terphenyl	*125*		*52.0-156*		*10/19/2023 22:18*	WG2152443

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/11/2023 21:38	WG2147644
Acenaphthene	ND		0.0000500	1	10/11/2023 21:38	WG2147644
Acenaphthylene	ND		0.0000500	1	10/11/2023 21:38	WG2147644
Benzo(a)anthracene	ND		0.0000500	1	10/11/2023 21:38	WG2147644
Benzo(a)pyrene	ND		0.0000500	1	10/11/2023 21:38	WG2147644
Benzo(b)fluoranthene	ND		0.0000500	1	10/11/2023 21:38	WG2147644
Benzo(g,h,i)perylene	ND		0.0000500	1	10/11/2023 21:38	WG2147644
Benzo(k)fluoranthene	ND		0.0000500	1	10/11/2023 21:38	WG2147644
Chrysene	ND		0.0000500	1	10/11/2023 21:38	WG2147644
Dibenz(a,h)anthracene	ND		0.0000500	1	10/11/2023 21:38	WG2147644
Fluoranthene	ND		0.000100	1	10/11/2023 21:38	WG2147644
Fluorene	ND		0.0000500	1	10/11/2023 21:38	WG2147644
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/11/2023 21:38	WG2147644
Naphthalene	ND		0.000250	1	10/11/2023 21:38	WG2147644
Phenanthrene	ND		0.0000500	1	10/11/2023 21:38	WG2147644
Pyrene	ND		0.0000500	1	10/11/2023 21:38	WG2147644
1-Methylnaphthalene	ND		0.000250	1	10/11/2023 21:38	WG2147644
2-Methylnaphthalene	ND		0.000250	1	10/11/2023 21:38	WG2147644
2-Chloronaphthalene	ND		0.000250	1	10/11/2023 21:38	WG2147644
(S) Nitrobenzene-d5	*126*		*31.0-160*		*10/11/2023 21:38*	WG2147644
(S) 2-Fluorobiphenyl	*93.2*		*48.0-148*		*10/11/2023 21:38*	WG2147644
(S) p-Terphenyl-d14	*84.7*		*37.0-146*		*10/11/2023 21:38*	WG2147644

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/16/2023 11:11	WG2151291
(S) a,a,a-Trifluorotoluene(FID)	*108*		*78.0-120*		*10/16/2023 11:11*	WG2151291

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/11/2023 03:28	WG2148803
Toluene	ND		0.00100	1	10/11/2023 03:28	WG2148803
Ethylbenzene	ND		0.00100	1	10/11/2023 03:28	WG2148803
Total Xylenes	ND		0.00300	1	10/11/2023 03:28	WG2148803
(S) Toluene-d8	*114*		*80.0-120*		*10/11/2023 03:28*	WG2148803
(S) 4-Bromofluorobenzene	*109*		*77.0-126*		*10/11/2023 03:28*	WG2148803
(S) 1,2-Dichloroethane-d4	*93.8*		*70.0-130*		*10/11/2023 03:28*	WG2148803

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		0.100	1	10/19/2023 22:38	WG2152443
C28-C40 Oil Range	ND		0.100	1	10/19/2023 22:38	WG2152443
(S) o-Terphenyl	*121*		*52.0-156*		*10/19/2023 22:38*	WG2152443

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/11/2023 18:42	WG2147644
Acenaphthene	ND		0.0000500	1	10/11/2023 18:42	WG2147644
Acenaphthylene	ND		0.0000500	1	10/11/2023 18:42	WG2147644
Benzo(a)anthracene	ND		0.0000500	1	10/11/2023 18:42	WG2147644
Benzo(a)pyrene	ND		0.0000500	1	10/11/2023 18:42	WG2147644
Benzo(b)fluoranthene	ND		0.0000500	1	10/11/2023 18:42	WG2147644
Benzo(g,h,i)perylene	ND		0.0000500	1	10/11/2023 18:42	WG2147644
Benzo(k)fluoranthene	ND		0.0000500	1	10/11/2023 18:42	WG2147644
Chrysene	ND		0.0000500	1	10/11/2023 18:42	WG2147644
Dibenz(a,h)anthracene	ND		0.0000500	1	10/11/2023 18:42	WG2147644
Fluoranthene	ND		0.000100	1	10/11/2023 18:42	WG2147644
Fluorene	ND		0.0000500	1	10/11/2023 18:42	WG2147644
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/11/2023 18:42	WG2147644
Naphthalene	ND		0.000250	1	10/11/2023 18:42	WG2147644
Phenanthrene	ND		0.0000500	1	10/11/2023 18:42	WG2147644
Pyrene	ND		0.0000500	1	10/11/2023 18:42	WG2147644
1-Methylnaphthalene	ND		0.000250	1	10/11/2023 18:42	WG2147644
2-Methylnaphthalene	ND		0.000250	1	10/11/2023 18:42	WG2147644
2-Chloronaphthalene	ND		0.000250	1	10/11/2023 18:42	WG2147644
(S) Nitrobenzene-d5	*102*		*31.0-160*		*10/11/2023 18:42*	WG2147644
(S) 2-Fluorobiphenyl	*93.2*		*48.0-148*		*10/11/2023 18:42*	WG2147644
(S) p-Terphenyl-d14	*92.6*		*37.0-146*		*10/11/2023 18:42*	WG2147644

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/16/2023 11:34	WG2151291
(S) a,a,a-Trifluorotoluene(FID)	*108*		*78.0-120*		*10/16/2023 11:34*	WG2151291

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/11/2023 03:47	WG2148803
Toluene	ND		0.00100	1	10/11/2023 03:47	WG2148803
Ethylbenzene	ND		0.00100	1	10/11/2023 03:47	WG2148803
Total Xylenes	ND		0.00300	1	10/11/2023 03:47	WG2148803
(S) Toluene-d8	*111*		*80.0-120*		*10/11/2023 03:47*	WG2148803
(S) 4-Bromofluorobenzene	*109*		*77.0-126*		*10/11/2023 03:47*	WG2148803
(S) 1,2-Dichloroethane-d4	*91.8*		*70.0-130*		*10/11/2023 03:47*	WG2148803

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		0.100	1	10/19/2023 22:59	WG2152443
C28-C40 Oil Range	ND		0.100	1	10/19/2023 22:59	WG2152443
(S) o-Terphenyl	*121*		*52.0-156*		*10/19/2023 22:59*	WG2152443

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/11/2023 21:57	WG2147644
Acenaphthene	ND		0.0000500	1	10/11/2023 21:57	WG2147644
Acenaphthylene	ND		0.0000500	1	10/11/2023 21:57	WG2147644
Benzo(a)anthracene	ND		0.0000500	1	10/11/2023 21:57	WG2147644
Benzo(a)pyrene	ND		0.0000500	1	10/11/2023 21:57	WG2147644
Benzo(b)fluoranthene	ND		0.0000500	1	10/11/2023 21:57	WG2147644
Benzo(g,h,i)perylene	ND		0.0000500	1	10/11/2023 21:57	WG2147644
Benzo(k)fluoranthene	ND		0.0000500	1	10/11/2023 21:57	WG2147644
Chrysene	ND		0.0000500	1	10/11/2023 21:57	WG2147644
Dibenz(a,h)anthracene	ND		0.0000500	1	10/11/2023 21:57	WG2147644
Fluoranthene	ND		0.000100	1	10/11/2023 21:57	WG2147644
Fluorene	ND		0.0000500	1	10/11/2023 21:57	WG2147644
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/11/2023 21:57	WG2147644
Naphthalene	ND		0.000250	1	10/11/2023 21:57	WG2147644
Phenanthrene	ND		0.0000500	1	10/11/2023 21:57	WG2147644
Pyrene	ND		0.0000500	1	10/11/2023 21:57	WG2147644
1-Methylnaphthalene	ND		0.000250	1	10/11/2023 21:57	WG2147644
2-Methylnaphthalene	ND		0.000250	1	10/11/2023 21:57	WG2147644
2-Chloronaphthalene	ND		0.000250	1	10/11/2023 21:57	WG2147644
(S) Nitrobenzene-d5	*103*		*31.0-160*		*10/11/2023 21:57*	WG2147644
(S) 2-Fluorobiphenyl	*88.9*		*48.0-148*		*10/11/2023 21:57*	WG2147644
(S) p-Terphenyl-d14	*81.1*		*37.0-146*		*10/11/2023 21:57*	WG2147644

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/16/2023 11:57	WG2151291
(S) a,a,a-Trifluorotoluene(FID)	*109*		*78.0-120*		*10/16/2023 11:57*	WG2151291

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/11/2023 04:07	WG2148803
Toluene	ND		0.00100	1	10/11/2023 04:07	WG2148803
Ethylbenzene	ND		0.00100	1	10/11/2023 04:07	WG2148803
Total Xylenes	ND		0.00300	1	10/11/2023 04:07	WG2148803
(S) Toluene-d8	*108*		*80.0-120*		*10/11/2023 04:07*	WG2148803
(S) 4-Bromofluorobenzene	*110*		*77.0-126*		*10/11/2023 04:07*	WG2148803
(S) 1,2-Dichloroethane-d4	*96.4*		*70.0-130*		*10/11/2023 04:07*	WG2148803

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		0.100	1	10/19/2023 23:19	WG2152443
C28-C40 Oil Range	ND		0.100	1	10/19/2023 23:19	WG2152443
(S) o-Terphenyl	*123*		*52.0-156*		*10/19/2023 23:19*	WG2152443

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/11/2023 19:02	WG2147644
Acenaphthene	ND		0.0000500	1	10/11/2023 19:02	WG2147644
Acenaphthylene	ND		0.0000500	1	10/11/2023 19:02	WG2147644
Benzo(a)anthracene	ND		0.0000500	1	10/11/2023 19:02	WG2147644
Benzo(a)pyrene	ND		0.0000500	1	10/11/2023 19:02	WG2147644
Benzo(b)fluoranthene	ND		0.0000500	1	10/11/2023 19:02	WG2147644
Benzo(g,h,i)perylene	ND		0.0000500	1	10/11/2023 19:02	WG2147644
Benzo(k)fluoranthene	ND		0.0000500	1	10/11/2023 19:02	WG2147644
Chrysene	ND		0.0000500	1	10/11/2023 19:02	WG2147644
Dibenz(a,h)anthracene	ND		0.0000500	1	10/11/2023 19:02	WG2147644
Fluoranthene	ND		0.000100	1	10/11/2023 19:02	WG2147644
Fluorene	ND		0.0000500	1	10/11/2023 19:02	WG2147644
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/11/2023 19:02	WG2147644
Naphthalene	ND		0.000250	1	10/11/2023 19:02	WG2147644
Phenanthrene	ND		0.0000500	1	10/11/2023 19:02	WG2147644
Pyrene	ND		0.0000500	1	10/11/2023 19:02	WG2147644
1-Methylnaphthalene	ND		0.000250	1	10/11/2023 19:02	WG2147644
2-Methylnaphthalene	ND		0.000250	1	10/11/2023 19:02	WG2147644
2-Chloronaphthalene	ND		0.000250	1	10/11/2023 19:02	WG2147644
(S) Nitrobenzene-d5	*98.9*		*31.0-160*		*10/11/2023 19:02*	WG2147644
(S) 2-Fluorobiphenyl	*93.2*		*48.0-148*		*10/11/2023 19:02*	WG2147644
(S) p-Terphenyl-d14	*91.1*		*37.0-146*		*10/11/2023 19:02*	WG2147644

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/16/2023 12:19	WG2151291
(S) a,a,a-Trifluorotoluene(FID)	*108*		*78.0-120*		*10/16/2023 12:19*	WG2151291

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/11/2023 04:26	WG2148803
Toluene	ND		0.00100	1	10/11/2023 04:26	WG2148803
Ethylbenzene	ND		0.00100	1	10/11/2023 04:26	WG2148803
Total Xylenes	ND		0.00300	1	10/11/2023 04:26	WG2148803
(S) Toluene-d8	*110*		*80.0-120*		*10/11/2023 04:26*	WG2148803
(S) 4-Bromofluorobenzene	*108*		*77.0-126*		*10/11/2023 04:26*	WG2148803
(S) 1,2-Dichloroethane-d4	*92.9*		*70.0-130*		*10/11/2023 04:26*	WG2148803

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	0.193		0.100	1	10/19/2023 23:39	WG2152443
C28-C40 Oil Range	0.126		0.100	1	10/19/2023 23:39	WG2152443
(S) o-Terphenyl	*124*		*52.0-156*		*10/19/2023 23:39*	WG2152443

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/11/2023 22:17	WG2147644
Acenaphthene	ND		0.0000500	1	10/11/2023 22:17	WG2147644
Acenaphthylene	ND		0.0000500	1	10/11/2023 22:17	WG2147644
Benzo(a)anthracene	ND		0.0000500	1	10/11/2023 22:17	WG2147644
Benzo(a)pyrene	ND		0.0000500	1	10/11/2023 22:17	WG2147644
Benzo(b)fluoranthene	ND		0.0000500	1	10/11/2023 22:17	WG2147644
Benzo(g,h,i)perylene	ND		0.0000500	1	10/11/2023 22:17	WG2147644
Benzo(k)fluoranthene	ND		0.0000500	1	10/11/2023 22:17	WG2147644
Chrysene	ND		0.0000500	1	10/11/2023 22:17	WG2147644
Dibenz(a,h)anthracene	ND		0.0000500	1	10/11/2023 22:17	WG2147644
Fluoranthene	ND		0.000100	1	10/11/2023 22:17	WG2147644
Fluorene	ND		0.0000500	1	10/11/2023 22:17	WG2147644
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/11/2023 22:17	WG2147644
Naphthalene	ND		0.000250	1	10/11/2023 22:17	WG2147644
Phenanthrene	ND		0.0000500	1	10/11/2023 22:17	WG2147644
Pyrene	ND		0.0000500	1	10/11/2023 22:17	WG2147644
1-Methylnaphthalene	ND		0.000250	1	10/11/2023 22:17	WG2147644
2-Methylnaphthalene	ND		0.000250	1	10/11/2023 22:17	WG2147644
2-Chloronaphthalene	ND		0.000250	1	10/11/2023 22:17	WG2147644
(S) Nitrobenzene-d5	*107*		*31.0-160*		*10/11/2023 22:17*	WG2147644
(S) 2-Fluorobiphenyl	*88.9*		*48.0-148*		*10/11/2023 22:17*	WG2147644
(S) p-Terphenyl-d14	*81.6*		*37.0-146*		*10/11/2023 22:17*	WG2147644

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/14/2023 22:51	WG2151294
(S) a,a,a-Trifluorotoluene(FID)	*91.8*		*78.0-120*		*10/14/2023 22:51*	WG2151294

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/11/2023 04:46	WG2148803
Toluene	ND		0.00100	1	10/11/2023 04:46	WG2148803
Ethylbenzene	ND		0.00100	1	10/11/2023 04:46	WG2148803
Total Xylenes	ND		0.00300	1	10/11/2023 04:46	WG2148803
(S) Toluene-d8	*112*		*80.0-120*		*10/11/2023 04:46*	WG2148803
(S) 4-Bromofluorobenzene	*108*		*77.0-126*		*10/11/2023 04:46*	WG2148803
(S) 1,2-Dichloroethane-d4	*98.1*		*70.0-130*		*10/11/2023 04:46*	WG2148803

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		0.100	1	10/19/2023 23:59	WG2152443
C28-C40 Oil Range	ND		0.100	1	10/19/2023 23:59	WG2152443
(S) o-Terphenyl	*123*		*52.0-156*		*10/19/2023 23:59*	WG2152443

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/11/2023 18:08	WG2147661
Acenaphthene	ND		0.0000500	1	10/11/2023 18:08	WG2147661
Acenaphthylene	ND		0.0000500	1	10/11/2023 18:08	WG2147661
Benzo(a)anthracene	ND		0.0000500	1	10/11/2023 18:08	WG2147661
Benzo(a)pyrene	ND		0.0000500	1	10/11/2023 18:08	WG2147661
Benzo(b)fluoranthene	ND		0.0000500	1	10/11/2023 18:08	WG2147661
Benzo(g,h,i)perylene	ND		0.0000500	1	10/11/2023 18:08	WG2147661
Benzo(k)fluoranthene	ND		0.0000500	1	10/11/2023 18:08	WG2147661
Chrysene	ND		0.0000500	1	10/11/2023 18:08	WG2147661
Dibenz(a,h)anthracene	ND		0.0000500	1	10/11/2023 18:08	WG2147661
Fluoranthene	ND		0.000100	1	10/11/2023 18:08	WG2147661
Fluorene	ND		0.0000500	1	10/11/2023 18:08	WG2147661
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/11/2023 18:08	WG2147661
Naphthalene	ND		0.000250	1	10/11/2023 18:08	WG2147661
Phenanthrene	ND		0.0000500	1	10/11/2023 18:08	WG2147661
Pyrene	ND		0.0000500	1	10/11/2023 18:08	WG2147661
1-Methylnaphthalene	ND		0.000250	1	10/11/2023 18:08	WG2147661
2-Methylnaphthalene	ND		0.000250	1	10/11/2023 18:08	WG2147661
2-Chloronaphthalene	ND		0.000250	1	10/11/2023 18:08	WG2147661
(S) Nitrobenzene-d5	*127*		*31.0-160*		*10/11/2023 18:08*	WG2147661
(S) 2-Fluorobiphenyl	*106*		*48.0-148*		*10/11/2023 18:08*	WG2147661
(S) p-Terphenyl-d14	*98.4*		*37.0-146*		*10/11/2023 18:08*	WG2147661

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/14/2023 16:02	WG2151295
(S) a,a,a-Trifluorotoluene(FID)	*90.2*		*78.0-120*		*10/14/2023 16:02*	WG2151295

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/11/2023 05:05	WG2148803
Toluene	ND		0.00100	1	10/11/2023 05:05	WG2148803
Ethylbenzene	ND		0.00100	1	10/11/2023 05:05	WG2148803
Total Xylenes	ND		0.00300	1	10/11/2023 05:05	WG2148803
(S) Toluene-d8	*110*		*80.0-120*		*10/11/2023 05:05*	WG2148803
(S) 4-Bromofluorobenzene	*110*		*77.0-126*		*10/11/2023 05:05*	WG2148803
(S) 1,2-Dichloroethane-d4	*95.6*		*70.0-130*		*10/11/2023 05:05*	WG2148803

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		0.100	1	10/20/2023 00:19	WG2152443
C28-C40 Oil Range	ND		0.100	1	10/20/2023 00:19	WG2152443
(S) o-Terphenyl	*125*		*52.0-156*		*10/20/2023 00:19*	WG2152443

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/11/2023 16:05	WG2147661
Acenaphthene	ND		0.0000500	1	10/11/2023 16:05	WG2147661
Acenaphthylene	ND		0.0000500	1	10/11/2023 16:05	WG2147661
Benzo(a)anthracene	ND		0.0000500	1	10/11/2023 16:05	WG2147661
Benzo(a)pyrene	ND		0.0000500	1	10/11/2023 16:05	WG2147661
Benzo(b)fluoranthene	ND		0.0000500	1	10/11/2023 16:05	WG2147661
Benzo(g,h,i)perylene	ND		0.0000500	1	10/11/2023 16:05	WG2147661
Benzo(k)fluoranthene	ND		0.0000500	1	10/11/2023 16:05	WG2147661
Chrysene	ND		0.0000500	1	10/11/2023 16:05	WG2147661
Dibenz(a,h)anthracene	ND		0.0000500	1	10/11/2023 16:05	WG2147661
Fluoranthene	ND		0.000100	1	10/11/2023 16:05	WG2147661
Fluorene	ND		0.0000500	1	10/11/2023 16:05	WG2147661
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/11/2023 16:05	WG2147661
Naphthalene	ND		0.000250	1	10/11/2023 16:05	WG2147661
Phenanthrene	ND		0.0000500	1	10/11/2023 16:05	WG2147661
Pyrene	ND		0.0000500	1	10/11/2023 16:05	WG2147661
1-Methylnaphthalene	ND		0.000250	1	10/11/2023 16:05	WG2147661
2-Methylnaphthalene	ND		0.000250	1	10/11/2023 16:05	WG2147661
2-Chloronaphthalene	ND		0.000250	1	10/11/2023 16:05	WG2147661
(S) Nitrobenzene-d5	*124*		*31.0-160*		*10/11/2023 16:05*	WG2147661
(S) 2-Fluorobiphenyl	*103*		*48.0-148*		*10/11/2023 16:05*	WG2147661
(S) p-Terphenyl-d14	*95.8*		*37.0-146*		*10/11/2023 16:05*	WG2147661

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/14/2023 16:25	WG2151295
(S) a,a,a-Trifluorotoluene(FID)	*91.1*		*78.0-120*		*10/14/2023 16:25*	WG2151295

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/11/2023 05:24	WG2148803
Toluene	ND		0.00100	1	10/11/2023 05:24	WG2148803
Ethylbenzene	ND		0.00100	1	10/11/2023 05:24	WG2148803
Total Xylenes	ND		0.00300	1	10/11/2023 05:24	WG2148803
(S) Toluene-d8	*109*		*80.0-120*		*10/11/2023 05:24*	WG2148803
(S) 4-Bromofluorobenzene	*113*		*77.0-126*		*10/11/2023 05:24*	WG2148803
(S) 1,2-Dichloroethane-d4	*95.8*		*70.0-130*		*10/11/2023 05:24*	WG2148803

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	0.463		0.100	1	10/20/2023 00:40	WG2152443
C28-C40 Oil Range	0.359		0.100	1	10/20/2023 00:40	WG2152443
(S) o-Terphenyl	*134*		*52.0-156*		*10/20/2023 00:40*	WG2152443

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/11/2023 18:25	WG2147661
Acenaphthene	ND		0.0000500	1	10/11/2023 18:25	WG2147661
Acenaphthylene	ND		0.0000500	1	10/11/2023 18:25	WG2147661
Benzo(a)anthracene	ND		0.0000500	1	10/11/2023 18:25	WG2147661
Benzo(a)pyrene	ND		0.0000500	1	10/11/2023 18:25	WG2147661
Benzo(b)fluoranthene	ND		0.0000500	1	10/11/2023 18:25	WG2147661
Benzo(g,h,i)perylene	ND		0.0000500	1	10/11/2023 18:25	WG2147661
Benzo(k)fluoranthene	ND		0.0000500	1	10/11/2023 18:25	WG2147661
Chrysene	ND		0.0000500	1	10/11/2023 18:25	WG2147661
Dibenz(a,h)anthracene	ND		0.0000500	1	10/11/2023 18:25	WG2147661
Fluoranthene	ND		0.000100	1	10/11/2023 18:25	WG2147661
Fluorene	ND		0.0000500	1	10/11/2023 18:25	WG2147661
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/11/2023 18:25	WG2147661
Naphthalene	ND		0.000250	1	10/11/2023 18:25	WG2147661
Phenanthrene	0.0000639		0.0000500	1	10/11/2023 18:25	WG2147661
Pyrene	ND		0.0000500	1	10/11/2023 18:25	WG2147661
1-Methylnaphthalene	ND		0.000250	1	10/11/2023 18:25	WG2147661
2-Methylnaphthalene	ND		0.000250	1	10/11/2023 18:25	WG2147661
2-Chloronaphthalene	ND		0.000250	1	10/11/2023 18:25	WG2147661
(S) Nitrobenzene-d5	*96.3*		*31.0-160*		*10/11/2023 18:25*	WG2147661
(S) 2-Fluorobiphenyl	*101*		*48.0-148*		*10/11/2023 18:25*	WG2147661
(S) p-Terphenyl-d14	*91.6*		*37.0-146*		*10/11/2023 18:25*	WG2147661

Method Blank (MB)

(MB) R3986843-4 10/14/23 04:56

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPH (GC/FID) Low Fraction	U		0.0314	0.100
(S) a,a,a-Trifluorotoluene(FID)	*92.0*			*78.0-120*

Laboratory Control Sample (LCS)

(LCS) R3986843-3 10/14/23 03:16

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.98	109	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*100*	*78.0-120*	

L1665738-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1665738-08 10/14/23 10:14 • (MS) R3986843-5 10/14/23 15:57 • (MSD) R3986843-6 10/14/23 16:22

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	0.139	6.05	5.87	107	104	1	10.0-160			3.02	22
(S) a,a,a-Trifluorotoluene(FID)					*99.8*	*101*		*78.0-120*				

Method Blank (MB)

(MB) R3987756-2 10/16/23 09:55

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPH (GC/FID) Low Fraction	U		0.0314	0.100
(S) a,a,a-Trifluorotoluene(FID)	*108*			*78.0-120*

Laboratory Control Sample (LCS)

(LCS) R3987756-1 10/16/23 08:49

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.24	95.3	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*114*	*78.0-120*	

Method Blank (MB)

(MB) R3986873-2 10/14/23 20:35

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPH (GC/FID) Low Fraction	U		0.0314	0.100
(S) a,a,a-Trifluorotoluene(FID)	*92.3*			*78.0-120*

Laboratory Control Sample (LCS)

(LCS) R3986873-1 10/14/23 18:24

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.94	108	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*96.3*	*78.0-120*	

Method Blank (MB)

(MB) R3987934-2 10/14/23 14:52

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPH (GC/FID) Low Fraction	U		0.0314	0.100
(S) a,a,a-Trifluorotoluene(FID)	*90.8*			*78.0-120*

Laboratory Control Sample (LCS)

(LCS) R3987934-1 10/14/23 13:43

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	6.31	115	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*101*	*78.0-120*	

L1664199-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1664199-09 10/14/23 16:02 • (MS) R3987934-3 10/14/23 23:36 • (MSD) R3987934-4 10/14/23 23:59

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	ND	5.06	4.48	92.0	81.5	1	10.0-160			12.2	22
(S) a,a,a-Trifluorotoluene(FID)					*97.1*	*96.1*		*78.0-120*				

Method Blank (MB)

(MB) R3987845-2 10/17/23 12:17

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPH (GC/FID) Low Fraction	U		0.0314	0.100
(S) a,a,a-Trifluorotoluene(FID)	*92.4*			*78.0-120*

Laboratory Control Sample (LCS)

(LCS) R3987845-1 10/17/23 11:15

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.06	92.0	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*99.1*	*78.0-120*	

Method Blank (MB)

(MB) R3986818-1 10/10/23 23:44

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0000941	0.00100
Toluene	U		0.000278	0.00100
Ethylbenzene	U		0.000137	0.00100
Total Xylenes	U		0.000174	0.00300
(S) Toluene-d8	*109*			*80.0-120*
(S) 4-Bromofluorobenzene	*110*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*93.7*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3986818-2 10/11/23 00:46

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.00500	0.00434	86.8	70.0-123	
Toluene	0.00500	0.00504	101	79.0-120	
Ethylbenzene	0.00500	0.00562	112	79.0-123	
Total Xylenes	0.0150	0.0166	111	79.0-123	
(S) Toluene-d8			*108*	*80.0-120*	
(S) 4-Bromofluorobenzene			*110*	*77.0-126*	
(S) 1,2-Dichloroethane-d4			*101*	*70.0-130*	

Method Blank (MB)

(MB) R3987480-1 10/17/23 18:58

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
C10-C28 Diesel Range	U		0.0222	0.100
C28-C40 Oil Range	U		0.0118	0.100
(S) o-Terphenyl	*78.0*			*52.0-156*

Laboratory Control Sample (LCS)

(LCS) R3987480-2 10/17/23 19:17

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	1.50	1.63	109	50.0-150	
(S) o-Terphenyl			*81.5*	*52.0-156*	

L1665738-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1665738-08 10/17/23 21:53 • (MS) R3987480-3 10/17/23 22:13 • (MSD) R3987480-4 10/17/23 22:32

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	1.43	ND	1.60	1.57	112	110	1	50.0-150			1.89	20
(S) o-Terphenyl					*86.3*	*83.2*		*52.0-156*				

Method Blank (MB)

(MB) R3988265-1 10/18/23 22:09

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
C10-C28 Diesel Range	U		0.0222	0.100
C28-C40 Oil Range	U		0.0118	0.100
(S) o-Terphenyl	*133*			*52.0-156*

Laboratory Control Sample (LCS)

(LCS) R3988265-2 10/18/23 22:29

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	1.50	1.30	86.7	50.0-150	
(S) o-Terphenyl			*125*	*52.0-156*	

L1665816-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1665816-01 10/20/23 03:01 • (MS) R3989177-1 10/20/23 03:21 • (MSD) R3989177-2 10/20/23 03:41

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	1.43	ND	7.38	6.34	516	443	1	50.0-150	J5	J5	15.2	20
(S) o-Terphenyl					*140*	*139*		*52.0-156*				

L1665820-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1665820-03 10/20/23 04:01 • (MS) R3989177-3 10/20/23 04:22 • (MSD) R3989177-4 10/20/23 04:42

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	1.43	ND	3.36	3.35	235	234	1	50.0-150	J5	J5	0.298	20
(S) o-Terphenyl					*143*	*149*		*52.0-156*				

Method Blank (MB)

(MB) R3985224-2 10/11/23 16:45

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Anthracene	U		0.0000190	0.0000500
Acenaphthene	U		0.0000190	0.0000500
Acenaphthylene	U		0.0000171	0.0000500
Benzo(a)anthracene	U		0.0000203	0.0000500
Benzo(a)pyrene	U		0.0000184	0.0000500
Benzo(b)fluoranthene	U		0.0000168	0.0000500
Benzo(g,h,i)perylene	U		0.0000184	0.0000500
Benzo(k)fluoranthene	U		0.0000202	0.0000500
Chrysene	U		0.0000179	0.0000500
Dibenz(a,h)anthracene	U		0.0000160	0.0000500
Fluoranthene	U		0.0000270	0.000100
Fluorene	U		0.0000169	0.0000500
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500
Naphthalene	U		0.0000917	0.000250
Phenanthrene	U		0.0000180	0.0000500
Pyrene	U		0.0000169	0.0000500
1-Methylnaphthalene	U		0.0000687	0.000250
2-Methylnaphthalene	U		0.0000674	0.000250
2-Chloronaphthalene	U		0.0000682	0.000250
(S) Nitrobenzene-d5	*135*			*31.0-160*
(S) 2-Fluorobiphenyl	*120*			*48.0-148*
(S) p-Terphenyl-d14	*112*			*37.0-146*

Laboratory Control Sample (LCS)

(LCS) R3985224-1 10/11/23 16:26

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.00200	0.00204	102	67.0-150	
Acenaphthene	0.00200	0.00190	95.0	65.0-138	
Acenaphthylene	0.00200	0.00206	103	66.0-140	
Benzo(a)anthracene	0.00200	0.00229	115	61.0-140	
Benzo(a)pyrene	0.00200	0.00201	100	60.0-143	
Benzo(b)fluoranthene	0.00200	0.00174	87.0	58.0-141	
Benzo(g,h,i)perylene	0.00200	0.00158	79.0	52.0-153	
Benzo(k)fluoranthene	0.00200	0.00172	86.0	58.0-148	
Chrysene	0.00200	0.00204	102	64.0-144	
Dibenz(a,h)anthracene	0.00200	0.00175	87.5	52.0-155	
Fluoranthene	0.00200	0.00209	104	69.0-153	

Laboratory Control Sample (LCS)

(LCS) R3985224-1 10/11/23 16:26

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.00200	0.00204	102	64.0-136	
Indeno(1,2,3-cd)pyrene	0.00200	0.00194	97.0	54.0-153	
Naphthalene	0.00200	0.00201	100	61.0-137	
Phenanthrene	0.00200	0.00199	99.5	62.0-137	
Pyrene	0.00200	0.00202	101	60.0-142	
1-Methylnaphthalene	0.00200	0.00202	101	66.0-142	
2-Methylnaphthalene	0.00200	0.00207	104	62.0-136	
2-Chloronaphthalene	0.00200	0.00191	95.5	64.0-140	
(S) Nitrobenzene-d5			*108*	*31.0-160*	
(S) 2-Fluorobiphenyl			*95.0*	*48.0-148*	
(S) p-Terphenyl-d14			*89.5*	*37.0-146*	

L1663857-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1663857-02 10/11/23 17:05 • (MS) R3985224-3 10/11/23 17:24 • (MSD) R3985224-4 10/11/23 17:44

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.00190	ND	0.00181	0.00178	95.3	93.7	1	56.0-156			1.67	20
Acenaphthene	0.00190	ND	0.00172	0.00174	90.5	91.6	1	44.0-153			1.16	20
Acenaphthylene	0.00190	ND	0.00186	0.00188	97.9	98.9	1	53.0-150			1.07	20
Benzo(a)anthracene	0.00190	ND	0.00201	0.00163	106	85.8	1	47.0-151		J3	20.9	20
Benzo(a)pyrene	0.00190	ND	0.00179	0.000963	94.2	50.7	1	45.0-146		J3	60.1	20
Benzo(b)fluoranthene	0.00190	ND	0.00155	0.000892	81.6	46.9	1	43.0-142		J3	53.9	20
Benzo(g,h,i)perylene	0.00190	ND	0.00138	0.000492	72.6	25.9	1	40.0-147		J3 J6	94.9	20
Benzo(k)fluoranthene	0.00190	ND	0.00160	0.000791	84.2	41.6	1	43.0-148		J3 J6	67.7	21
Chrysene	0.00190	ND	0.00184	0.00150	96.8	78.9	1	50.0-148		J3	20.4	20
Dibenz(a,h)anthracene	0.00190	ND	0.00152	0.000443	80.0	23.3	1	37.0-151		J3 J6	110	20
Fluoranthene	0.00190	ND	0.00186	0.00181	97.9	95.3	1	56.0-157			2.72	20
Fluorene	0.00190	ND	0.00184	0.00185	96.8	97.4	1	48.0-148			0.542	20
Indeno(1,2,3-cd)pyrene	0.00190	ND	0.00170	0.000543	89.5	28.6	1	41.0-148		J3 J6	103	20
Naphthalene	0.00190	ND	0.00182	0.00183	95.8	96.3	1	10.0-160			0.548	20
Phenanthrene	0.00190	ND	0.00175	0.00175	92.1	92.1	1	47.0-147			0.000	20
Pyrene	0.00190	ND	0.00182	0.00180	95.8	94.7	1	51.0-148			1.10	20
1-Methylnaphthalene	0.00190	ND	0.00183	0.00183	96.3	96.3	1	21.0-160			0.000	20
2-Methylnaphthalene	0.00190	ND	0.00188	0.00188	98.9	98.9	1	31.0-160			0.000	20
2-Chloronaphthalene	0.00190	ND	0.00174	0.00175	91.6	92.1	1	52.0-148			0.573	20
(S) Nitrobenzene-d5					*101*	*99.5*		*31.0-160*				
(S) 2-Fluorobiphenyl					*91.6*	*90.5*		*48.0-148*				
(S) p-Terphenyl-d14					*86.3*	*53.7*		*37.0-146*				

Method Blank (MB)

(MB) R3984860-3 10/11/23 14:06

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Anthracene	U		0.0000190	0.0000500
Acenaphthene	U		0.0000190	0.0000500
Acenaphthylene	U		0.0000171	0.0000500
Benzo(a)anthracene	U		0.0000203	0.0000500
Benzo(a)pyrene	U		0.0000184	0.0000500
Benzo(b)fluoranthene	U		0.0000168	0.0000500
Benzo(g,h,i)perylene	U		0.0000184	0.0000500
Benzo(k)fluoranthene	U		0.0000202	0.0000500
Chrysene	U		0.0000179	0.0000500
Dibenz(a,h)anthracene	U		0.0000160	0.0000500
Fluoranthene	U		0.0000270	0.000100
Fluorene	U		0.0000169	0.0000500
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500
Naphthalene	U		0.0000917	0.000250
Phenanthrene	U		0.0000180	0.0000500
Pyrene	U		0.0000169	0.0000500
1-Methylnaphthalene	U		0.0000687	0.000250
2-Methylnaphthalene	U		0.0000674	0.000250
2-Chloronaphthalene	U		0.0000682	0.000250
(S) Nitrobenzene-d5	*139*			*31.0-160*
(S) 2-Fluorobiphenyl	*114*			*48.0-148*
(S) p-Terphenyl-d14	*108*			*37.0-146*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3984860-1 10/11/23 13:31 • (LCSD) R3984860-2 10/11/23 13:48

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Anthracene	0.00200	0.00194	0.00189	97.0	94.5	67.0-150			2.61	20
Acenaphthene	0.00200	0.00186	0.00181	93.0	90.5	65.0-138			2.72	20
Acenaphthylene	0.00200	0.00192	0.00188	96.0	94.0	66.0-140			2.11	20
Benzo(a)anthracene	0.00200	0.00212	0.00205	106	103	61.0-140			3.36	20
Benzo(a)pyrene	0.00200	0.00208	0.00201	104	100	60.0-143			3.42	20
Benzo(b)fluoranthene	0.00200	0.00207	0.00205	104	103	58.0-141			0.971	20
Benzo(g,h,i)perylene	0.00200	0.00198	0.00191	99.0	95.5	52.0-153			3.60	20
Benzo(k)fluoranthene	0.00200	0.00205	0.00197	103	98.5	58.0-148			3.98	20
Chrysene	0.00200	0.00203	0.00201	102	100	64.0-144			0.990	20
Dibenz(a,h)anthracene	0.00200	0.00209	0.00203	104	102	52.0-155			2.91	20
Fluoranthene	0.00200	0.00195	0.00195	97.5	97.5	69.0-153			0.000	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3984860-1 10/11/23 13:31 • (LCSD) R3984860-2 10/11/23 13:48

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Fluorene	0.00200	0.00205	0.00199	103	99.5	64.0-136			2.97	20
Indeno(1,2,3-cd)pyrene	0.00200	0.00220	0.00213	110	106	54.0-153			3.23	20
Naphthalene	0.00200	0.00191	0.00193	95.5	96.5	61.0-137			1.04	20
Phenanthrene	0.00200	0.00195	0.00193	97.5	96.5	62.0-137			1.03	20
Pyrene	0.00200	0.00200	0.00196	100	98.0	60.0-142			2.02	20
1-Methylnaphthalene	0.00200	0.00190	0.00193	95.0	96.5	66.0-142			1.57	20
2-Methylnaphthalene	0.00200	0.00207	0.00207	104	104	62.0-136			0.000	20
2-Chloronaphthalene	0.00200	0.00219	0.00212	109	106	64.0-140			3.25	20
(S) Nitrobenzene-d5				*132*	*122*	*31.0-160*				
(S) 2-Fluorobiphenyl				*110*	*102*	*48.0-148*				
(S) p-Terphenyl-d14				*99.5*	*94.0*	*37.0-146*				

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Company Name/Address:
Rio Grande Resources Corp

219 S 2nd St
Raton, NM 87740

Billing Information:
Bruce Norquist
PO Box 1150
Grants , NM 87020

Pres Chk

Report to: **Eric Roads** / Melissa Chalona

Email To: **eroads@enganalytics.com;tdavis@enganalytics.**

Project Description: **Mt Taylor**

City/State Collected: Grants, New Mexico

Please Circle: PT MT CT ET

Phone: **970-488-3111**

Client Project # 111360

Lab Project # **RIOGRAGNM-MTTAYLOR**

Collected by (print): Tyler Davis

Site/Facility ID #

P.O. #

Collected by (signature): Tyler Davis

Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Date Results Needed

Quote #

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	DROOROLVI 40mlAmb-HCl-BT	GRO 40mlAmb HCl	PAHSIMLVI 40mlAmb-NoPres-WT	SV8270PAH 4ozClr-NoPres	V8260BTEX 40mlAmb-HCl	V8260BTEX 40mlAmb/MeOH10ml/Syr	Remarks	Sample # (lab only)
MT-GW-TS-2760-DW9-100423-K3	Grab	GW	2760	10/4/2023	1004	9	X	X	X		X			-01
MT-GW-TS-2760-DW9-100423-K2	Grab	GW	2760	10/4/23	1038	9	X	X	X		X			-02
MT-GW-TS-2760-DW9-100423	Grab	GW	2760	10/4/23	12:00	9	X	X	X		X			-03
MT-GW-TS-1655-DW9-100423-K3	Grab	GW	1655	10/4/23	12:30	9	X	X	X		X			-04
MT-GW-TS-1655-DW9-100423-	Grab	GW	1655	10/4/23	1334	9	X	X	X		X			-05
MT-GW-TS-1144-DW9-100423-K3	Grab	GW	1144	10/4/23	1400	9	X	X	X		X			-06
MT-GW-TS-1144-DW9-100423-	Grab	GW	1144	10/4/23	1454	9	X	X	X		X			-07
MT-GW-TS-2770-DW2-100523-K3	Grab	GW	2480	10/5/23	0843	9	X	X	X		X			-08
MT-GW-TS-2770-DW2-100523-K2	Grab	GW	2480	10/5/23	0918	9	X	X	X		X			-09
MT-GW-TS-2480-DW2-100523-	Grab	GW	2480	10/5/23	1254	9	X	X	X		X			-10

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking # 6841 8349 2835

Chain of Custody Page ___ of ___

Pace
PEOPLE ADVANCING SCIENCE

MT JULIET, TN

12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # 166499
B134

Acctnum: **RIOGRAGNM**
Template: **T238214**
Prelogin: **P1026344**
PM: **732 - Donna Eidson**
PB: NG 9122123

Shipped Via: **FedEX Ground**

Sample Receipt Checklist

COC Seal Present/Intact:	NP	Y N
COC Signed/Accurate:		Y N
Bottles arrive intact:		Y N
Correct bottles used:		Y N
Sufficient volume sent:		Y N
If Applicable		
VOA Zero Headspace:		Y N
Preservation Correct/Checked:		Y N
RAD Screen <0.5 mR/hr:		Y N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	
Tyler Davis	10-6-23	1641			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received: CCA8 3.3 4oz 3.3	If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 10-7-23 Time: 9:00	Hold: / Condition: NCF / OK

ANALYTICAL REPORT

October 31, 2023

Revised Report

Rio Grande Resources Corp

Sample Delivery Group:	L1666511
Samples Received:	10/13/2023
Project Number:	111360
Description:	Mt Taylor

Report To: Eric Roads
219 S 2nd St
Raton, NM 87740

Entire Report Reviewed By:

Tony Gibson
Project Manager

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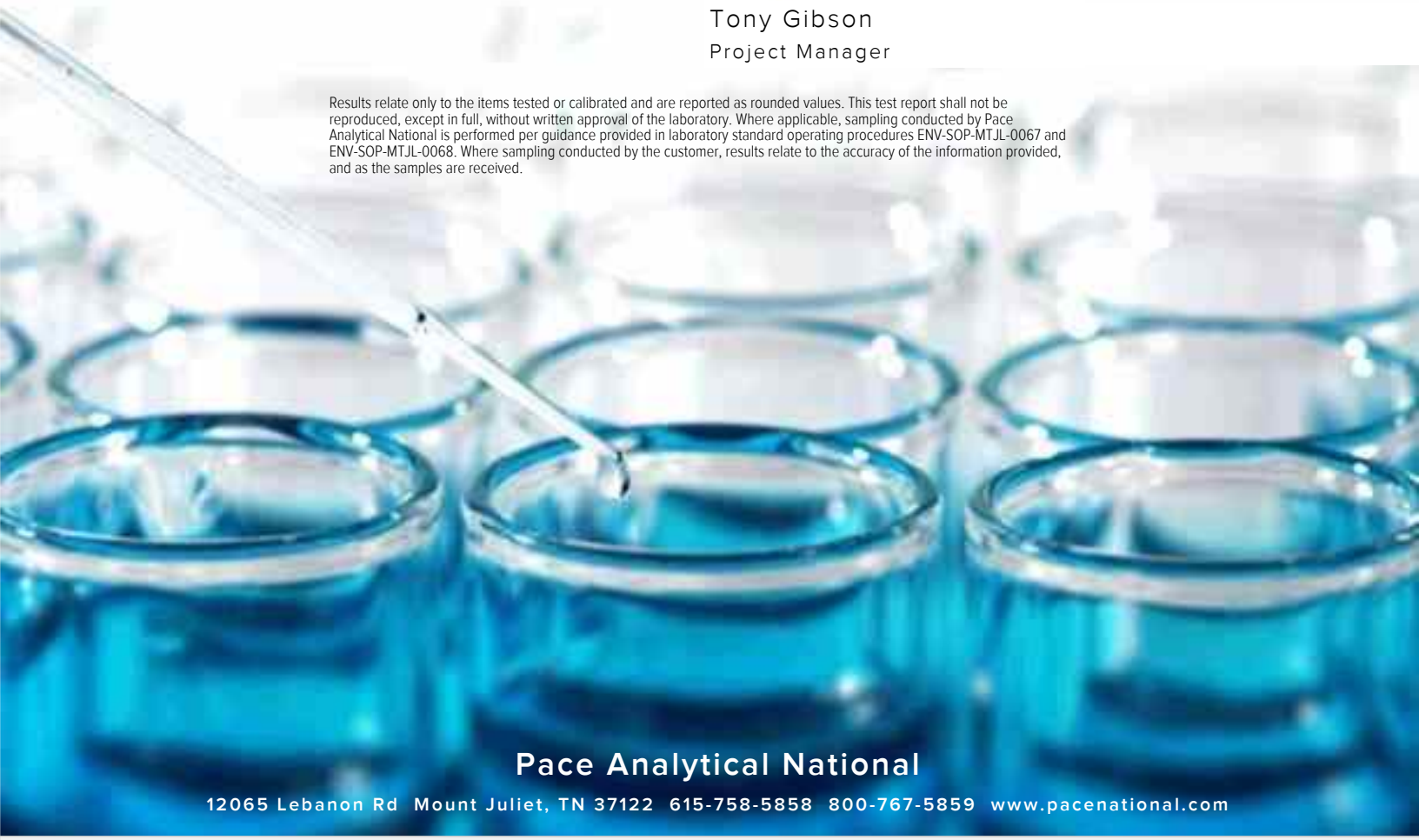

Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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MT-GW-TS-2849-DW11-101023-K2 L1666511-01 GW

Collected by: Tyler Davis | Collected date/time: 10/10/23 09:32 | Received date/time: 10/13/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2154045	1	10/19/23 12:26	10/19/23 12:26	NCD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2151529	1	10/15/23 05:04	10/15/23 05:04	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2156771	1	10/20/23 07:57	10/24/23 15:25	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2151859	1	10/17/23 08:57	10/17/23 15:12	DSH	Mt. Juliet, TN

MT-GW-TS-2849-DW11-101023-K3 L1666511-02 GW

Collected by: Tyler Davis | Collected date/time: 10/10/23 10:18 | Received date/time: 10/13/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2154045	1	10/19/23 12:46	10/19/23 12:46	NCD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2151529	1	10/15/23 05:25	10/15/23 05:25	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2156771	1	10/20/23 07:57	10/24/23 14:25	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2151859	1	10/17/23 08:57	10/17/23 15:29	DSH	Mt. Juliet, TN

MT-GW-TS-1750-DW11-101023 L1666511-03 GW

Collected by: Tyler Davis | Collected date/time: 10/10/23 12:09 | Received date/time: 10/13/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2154045	1	10/19/23 13:05	10/19/23 13:05	NCD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2151529	1	10/15/23 05:46	10/15/23 05:46	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2156771	5	10/20/23 07:57	10/24/23 23:57	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2151859	1	10/17/23 08:57	10/17/23 15:47	DSH	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2151859	50	10/17/23 08:57	10/24/23 00:27	DSH	Mt. Juliet, TN

MT-GW-TS-1100-DW11-101023-K3 L1666511-04 GW

Collected by: Tyler Davis | Collected date/time: 10/10/23 12:45 | Received date/time: 10/13/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2154045	1	10/19/23 13:25	10/19/23 13:25	NCD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2151529	1	10/15/23 06:07	10/15/23 06:07	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2156771	1	10/20/23 07:57	10/24/23 14:45	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2151859	1	10/17/23 08:57	10/17/23 16:05	DSH	Mt. Juliet, TN

MT-GW-TS-1100-DW11-101023 L1666511-05 GW

Collected by: Tyler Davis | Collected date/time: 10/10/23 13:42 | Received date/time: 10/13/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2154045	1	10/19/23 13:44	10/19/23 13:44	NCD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2151529	1	10/15/23 06:28	10/15/23 06:28	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2156771	5	10/20/23 07:57	10/25/23 00:17	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2151859	1	10/17/23 08:57	10/17/23 16:23	DSH	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2151859	50	10/17/23 08:57	10/24/23 00:46	DSH	Mt. Juliet, TN

MT-GW-TS904-DW11-101023-K3 L1666511-06 GW

Collected by: Tyler Davis | Collected date/time: 10/10/23 14:10 | Received date/time: 10/13/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2154045	1	10/19/23 14:03	10/19/23 14:03	NCD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2151529	1	10/15/23 06:49	10/15/23 06:49	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2156771	1	10/20/23 07:57	10/24/23 15:05	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2151859	1	10/17/23 08:57	10/17/23 16:40	DSH	Mt. Juliet, TN

MT-GW-TS904-DW11-101023 L1666511-07 GW

Collected by: Tyler Davis | Collected date/time: 10/10/23 15:30 | Received date/time: 10/13/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2154045	1	10/19/23 14:23	10/19/23 14:23	NCD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2151529	1	10/15/23 07:10	10/15/23 07:10	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2154086	5	10/21/23 14:00	10/24/23 04:01	MAA	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2154086	5	10/21/23 14:00	10/25/23 10:14	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2151859	1	10/17/23 08:57	10/17/23 16:58	DSH	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2151859	50	10/17/23 08:57	10/24/23 01:06	DSH	Mt. Juliet, TN

MT-GW-TS1005-DW3-101123 L1666511-08 GW

Collected by: Tyler Davis | Collected date/time: 10/11/23 14:00 | Received date/time: 10/13/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2154045	1	10/19/23 14:42	10/19/23 14:42	NCD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2151529	1	10/15/23 07:30	10/15/23 07:30	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2154086	1	10/21/23 14:00	10/23/23 19:36	MAA	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2154086	1	10/21/23 14:00	10/25/23 04:31	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2152447	1	10/17/23 16:45	10/18/23 12:00	DSH	Mt. Juliet, TN

MT-GW-TS-896-DW3-101123 L1666511-09 GW

Collected by: Tyler Davis | Collected date/time: 10/11/23 15:52 | Received date/time: 10/13/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2154045	1	10/19/23 15:01	10/19/23 15:01	NCD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2151529	1	10/15/23 07:51	10/15/23 07:51	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2154086	1	10/21/23 14:00	10/23/23 19:56	MAA	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2154086	1	10/21/23 14:00	10/25/23 04:51	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2152447	1	10/17/23 16:45	10/18/23 12:18	DSH	Mt. Juliet, TN

MT-GW-TS-596-DW3-101123 L1666511-10 GW

Collected by: Tyler Davis | Collected date/time: 10/11/23 17:41 | Received date/time: 10/13/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2154045	1	10/19/23 15:21	10/19/23 15:21	NCD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2151529	1	10/15/23 08:12	10/15/23 08:12	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2154086	1	10/21/23 14:00	10/23/23 20:17	MAA	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2154086	1	10/21/23 14:00	10/25/23 05:11	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2152447	1	10/17/23 16:45	10/18/23 12:35	DSH	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Tony Gibson
Project Manager

Report Revision History

Level II Report - Version 1: 10/25/23 16:01

Project Narrative

Updated sample id for sample -10 - Tony Gibson 10/31/23

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/19/2023 12:26	WG2154045
(S) a,a,a-Trifluorotoluene(FID)	*97.0*		*78.0-120*		*10/19/2023 12:26*	WG2154045

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/15/2023 05:04	WG2151529
Toluene	ND		0.00100	1	10/15/2023 05:04	WG2151529
Ethylbenzene	ND		0.00100	1	10/15/2023 05:04	WG2151529
Total Xylenes	ND		0.00300	1	10/15/2023 05:04	WG2151529
(S) Toluene-d8	*114*		*80.0-120*		*10/15/2023 05:04*	WG2151529
(S) 4-Bromofluorobenzene	*117*		*77.0-126*		*10/15/2023 05:04*	WG2151529
(S) 1,2-Dichloroethane-d4	*103*		*70.0-130*		*10/15/2023 05:04*	WG2151529

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		0.100	1	10/24/2023 15:25	WG2156771
C28-C40 Oil Range	ND		0.100	1	10/24/2023 15:25	WG2156771
(S) o-Terphenyl	*126*		*52.0-156*		*10/24/2023 15:25*	WG2156771

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/17/2023 15:12	WG2151859
Acenaphthene	ND		0.0000500	1	10/17/2023 15:12	WG2151859
Acenaphthylene	ND		0.0000500	1	10/17/2023 15:12	WG2151859
Benzo(a)anthracene	ND		0.0000500	1	10/17/2023 15:12	WG2151859
Benzo(a)pyrene	ND		0.0000500	1	10/17/2023 15:12	WG2151859
Benzo(b)fluoranthene	ND		0.0000500	1	10/17/2023 15:12	WG2151859
Benzo(g,h,i)perylene	ND		0.0000500	1	10/17/2023 15:12	WG2151859
Benzo(k)fluoranthene	ND		0.0000500	1	10/17/2023 15:12	WG2151859
Chrysene	ND		0.0000500	1	10/17/2023 15:12	WG2151859
Dibenz(a,h)anthracene	ND		0.0000500	1	10/17/2023 15:12	WG2151859
Fluoranthene	ND		0.000100	1	10/17/2023 15:12	WG2151859
Fluorene	ND		0.0000500	1	10/17/2023 15:12	WG2151859
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/17/2023 15:12	WG2151859
Naphthalene	ND		0.000250	1	10/17/2023 15:12	WG2151859
Phenanthrene	ND		0.0000500	1	10/17/2023 15:12	WG2151859
Pyrene	ND		0.0000500	1	10/17/2023 15:12	WG2151859
1-Methylnaphthalene	ND		0.000250	1	10/17/2023 15:12	WG2151859
2-Methylnaphthalene	ND		0.000250	1	10/17/2023 15:12	WG2151859
2-Chloronaphthalene	ND		0.000250	1	10/17/2023 15:12	WG2151859
(S) Nitrobenzene-d5	*86.3*		*31.0-160*		*10/17/2023 15:12*	WG2151859
(S) 2-Fluorobiphenyl	*85.8*		*48.0-148*		*10/17/2023 15:12*	WG2151859
(S) p-Terphenyl-d14	*88.9*		*37.0-146*		*10/17/2023 15:12*	WG2151859

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/19/2023 12:46	WG2154045
(S) a,a,a-Trifluorotoluene(FID)	*96.3*		*78.0-120*		*10/19/2023 12:46*	WG2154045

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/15/2023 05:25	WG2151529
Toluene	ND		0.00100	1	10/15/2023 05:25	WG2151529
Ethylbenzene	ND		0.00100	1	10/15/2023 05:25	WG2151529
Total Xylenes	ND		0.00300	1	10/15/2023 05:25	WG2151529
(S) Toluene-d8	*112*		*80.0-120*		*10/15/2023 05:25*	WG2151529
(S) 4-Bromofluorobenzene	*117*		*77.0-126*		*10/15/2023 05:25*	WG2151529
(S) 1,2-Dichloroethane-d4	*102*		*70.0-130*		*10/15/2023 05:25*	WG2151529

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		0.100	1	10/24/2023 14:25	WG2156771
C28-C40 Oil Range	ND		0.100	1	10/24/2023 14:25	WG2156771
(S) o-Terphenyl	*126*		*52.0-156*		*10/24/2023 14:25*	WG2156771

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/17/2023 15:29	WG2151859
Acenaphthene	ND		0.0000500	1	10/17/2023 15:29	WG2151859
Acenaphthylene	ND		0.0000500	1	10/17/2023 15:29	WG2151859
Benzo(a)anthracene	ND		0.0000500	1	10/17/2023 15:29	WG2151859
Benzo(a)pyrene	ND		0.0000500	1	10/17/2023 15:29	WG2151859
Benzo(b)fluoranthene	ND		0.0000500	1	10/17/2023 15:29	WG2151859
Benzo(g,h,i)perylene	ND		0.0000500	1	10/17/2023 15:29	WG2151859
Benzo(k)fluoranthene	ND		0.0000500	1	10/17/2023 15:29	WG2151859
Chrysene	ND		0.0000500	1	10/17/2023 15:29	WG2151859
Dibenz(a,h)anthracene	ND		0.0000500	1	10/17/2023 15:29	WG2151859
Fluoranthene	ND		0.000100	1	10/17/2023 15:29	WG2151859
Fluorene	ND		0.0000500	1	10/17/2023 15:29	WG2151859
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/17/2023 15:29	WG2151859
Naphthalene	ND		0.000250	1	10/17/2023 15:29	WG2151859
Phenanthrene	ND		0.0000500	1	10/17/2023 15:29	WG2151859
Pyrene	ND		0.0000500	1	10/17/2023 15:29	WG2151859
1-Methylnaphthalene	ND		0.000250	1	10/17/2023 15:29	WG2151859
2-Methylnaphthalene	ND		0.000250	1	10/17/2023 15:29	WG2151859
2-Chloronaphthalene	ND		0.000250	1	10/17/2023 15:29	WG2151859
(S) Nitrobenzene-d5	*95.3*		*31.0-160*		*10/17/2023 15:29*	WG2151859
(S) 2-Fluorobiphenyl	*97.4*		*48.0-148*		*10/17/2023 15:29*	WG2151859
(S) p-Terphenyl-d14	*98.4*		*37.0-146*		*10/17/2023 15:29*	WG2151859

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/19/2023 13:05	WG2154045
(S) a,a,a-Trifluorotoluene(FID)	*98.4*		*78.0-120*		*10/19/2023 13:05*	WG2154045

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.00137	B	0.00100	1	10/15/2023 05:46	WG2151529
Toluene	0.00258		0.00100	1	10/15/2023 05:46	WG2151529
Ethylbenzene	ND		0.00100	1	10/15/2023 05:46	WG2151529
Total Xylenes	ND		0.00300	1	10/15/2023 05:46	WG2151529
(S) Toluene-d8	*110*		*80.0-120*		*10/15/2023 05:46*	WG2151529
(S) 4-Bromofluorobenzene	*113*		*77.0-126*		*10/15/2023 05:46*	WG2151529
(S) 1,2-Dichloroethane-d4	*102*		*70.0-130*		*10/15/2023 05:46*	WG2151529

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	13.0		0.500	5	10/24/2023 23:57	WG2156771
C28-C40 Oil Range	7.42		0.500	5	10/24/2023 23:57	WG2156771
(S) o-Terphenyl	*138*		*52.0-156*		*10/24/2023 23:57*	WG2156771

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/17/2023 15:47	WG2151859
Acenaphthene	0.0105		0.0000500	1	10/17/2023 15:47	WG2151859
Acenaphthylene	ND		0.0000500	1	10/17/2023 15:47	WG2151859
Benzo(a)anthracene	ND		0.0000500	1	10/17/2023 15:47	WG2151859
Benzo(a)pyrene	ND		0.0000500	1	10/17/2023 15:47	WG2151859
Benzo(b)fluoranthene	ND		0.0000500	1	10/17/2023 15:47	WG2151859
Benzo(g,h,i)perylene	ND		0.0000500	1	10/17/2023 15:47	WG2151859
Benzo(k)fluoranthene	ND		0.0000500	1	10/17/2023 15:47	WG2151859
Chrysene	ND		0.0000500	1	10/17/2023 15:47	WG2151859
Dibenz(a,h)anthracene	ND		0.0000500	1	10/17/2023 15:47	WG2151859
Fluoranthene	ND		0.000100	1	10/17/2023 15:47	WG2151859
Fluorene	0.00238		0.0000500	1	10/17/2023 15:47	WG2151859
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/17/2023 15:47	WG2151859
Naphthalene	0.550		0.0125	50	10/24/2023 00:27	WG2151859
Phenanthrene	0.000536		0.0000500	1	10/17/2023 15:47	WG2151859
Pyrene	0.0000768		0.0000500	1	10/17/2023 15:47	WG2151859
1-Methylnaphthalene	ND		0.0125	50	10/24/2023 00:27	WG2151859
2-Methylnaphthalene	0.0155		0.0125	50	10/24/2023 00:27	WG2151859
2-Chloronaphthalene	ND		0.000250	1	10/17/2023 15:47	WG2151859
(S) Nitrobenzene-d5	*0.000*	J7	*31.0-160*		*10/24/2023 00:27*	WG2151859
(S) Nitrobenzene-d5	*229*	J1	*31.0-160*		*10/17/2023 15:47*	WG2151859
(S) 2-Fluorobiphenyl	*93.2*		*48.0-148*		*10/17/2023 15:47*	WG2151859
(S) 2-Fluorobiphenyl	*122*	J7	*48.0-148*		*10/24/2023 00:27*	WG2151859
(S) p-Terphenyl-d14	*83.2*		*37.0-146*		*10/17/2023 15:47*	WG2151859
(S) p-Terphenyl-d14	*131*	J7	*37.0-146*		*10/24/2023 00:27*	WG2151859

Sample Narrative:

L1666511-03 WG2151859: Surrogate failure due to matrix interference

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/19/2023 13:25	WG2154045
(S) a,a,a-Trifluorotoluene(FID)	*95.4*		*78.0-120*		*10/19/2023 13:25*	WG2154045

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/15/2023 06:07	WG2151529
Toluene	ND		0.00100	1	10/15/2023 06:07	WG2151529
Ethylbenzene	ND		0.00100	1	10/15/2023 06:07	WG2151529
Total Xylenes	ND		0.00300	1	10/15/2023 06:07	WG2151529
(S) Toluene-d8	*114*		*80.0-120*		*10/15/2023 06:07*	WG2151529
(S) 4-Bromofluorobenzene	*120*		*77.0-126*		*10/15/2023 06:07*	WG2151529
(S) 1,2-Dichloroethane-d4	*103*		*70.0-130*		*10/15/2023 06:07*	WG2151529

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		0.100	1	10/24/2023 14:45	WG2156771
C28-C40 Oil Range	ND		0.100	1	10/24/2023 14:45	WG2156771
(S) o-Terphenyl	*128*		*52.0-156*		*10/24/2023 14:45*	WG2156771

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/17/2023 16:05	WG2151859
Acenaphthene	0.0000800		0.0000500	1	10/17/2023 16:05	WG2151859
Acenaphthylene	ND		0.0000500	1	10/17/2023 16:05	WG2151859
Benzo(a)anthracene	ND		0.0000500	1	10/17/2023 16:05	WG2151859
Benzo(a)pyrene	ND		0.0000500	1	10/17/2023 16:05	WG2151859
Benzo(b)fluoranthene	ND		0.0000500	1	10/17/2023 16:05	WG2151859
Benzo(g,h,i)perylene	ND		0.0000500	1	10/17/2023 16:05	WG2151859
Benzo(k)fluoranthene	ND		0.0000500	1	10/17/2023 16:05	WG2151859
Chrysene	ND		0.0000500	1	10/17/2023 16:05	WG2151859
Dibenz(a,h)anthracene	ND		0.0000500	1	10/17/2023 16:05	WG2151859
Fluoranthene	ND		0.000100	1	10/17/2023 16:05	WG2151859
Fluorene	ND		0.0000500	1	10/17/2023 16:05	WG2151859
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/17/2023 16:05	WG2151859
Naphthalene	0.000258		0.000250	1	10/17/2023 16:05	WG2151859
Phenanthrene	ND		0.0000500	1	10/17/2023 16:05	WG2151859
Pyrene	ND		0.0000500	1	10/17/2023 16:05	WG2151859
1-Methylnaphthalene	ND		0.000250	1	10/17/2023 16:05	WG2151859
2-Methylnaphthalene	ND		0.000250	1	10/17/2023 16:05	WG2151859
2-Chloronaphthalene	ND		0.000250	1	10/17/2023 16:05	WG2151859
(S) Nitrobenzene-d5	*102*		*31.0-160*		*10/17/2023 16:05*	WG2151859
(S) 2-Fluorobiphenyl	*96.3*		*48.0-148*		*10/17/2023 16:05*	WG2151859
(S) p-Terphenyl-d14	*97.9*		*37.0-146*		*10/17/2023 16:05*	WG2151859

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/19/2023 13:44	WG2154045
(S) a,a,a-Trifluorotoluene(FID)	*98.9*		*78.0-120*		*10/19/2023 13:44*	WG2154045

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.00143	B	0.00100	1	10/15/2023 06:28	WG2151529
Toluene	0.00280		0.00100	1	10/15/2023 06:28	WG2151529
Ethylbenzene	ND		0.00100	1	10/15/2023 06:28	WG2151529
Total Xylenes	ND		0.00300	1	10/15/2023 06:28	WG2151529
(S) Toluene-d8	*109*		*80.0-120*		*10/15/2023 06:28*	WG2151529
(S) 4-Bromofluorobenzene	*114*		*77.0-126*		*10/15/2023 06:28*	WG2151529
(S) 1,2-Dichloroethane-d4	*102*		*70.0-130*		*10/15/2023 06:28*	WG2151529

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	13.1		0.500	5	10/25/2023 00:17	WG2156771
C28-C40 Oil Range	8.62		0.500	5	10/25/2023 00:17	WG2156771
(S) o-Terphenyl	*126*		*52.0-156*		*10/25/2023 00:17*	WG2156771

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/17/2023 16:23	WG2151859
Acenaphthene	0.00915		0.0000500	1	10/17/2023 16:23	WG2151859
Acenaphthylene	ND		0.0000500	1	10/17/2023 16:23	WG2151859
Benzo(a)anthracene	ND		0.0000500	1	10/17/2023 16:23	WG2151859
Benzo(a)pyrene	ND		0.0000500	1	10/17/2023 16:23	WG2151859
Benzo(b)fluoranthene	ND		0.0000500	1	10/17/2023 16:23	WG2151859
Benzo(g,h,i)perylene	ND		0.0000500	1	10/17/2023 16:23	WG2151859
Benzo(k)fluoranthene	ND		0.0000500	1	10/17/2023 16:23	WG2151859
Chrysene	ND		0.0000500	1	10/17/2023 16:23	WG2151859
Dibenz(a,h)anthracene	ND		0.0000500	1	10/17/2023 16:23	WG2151859
Fluoranthene	ND		0.000100	1	10/17/2023 16:23	WG2151859
Fluorene	0.00226		0.0000500	1	10/17/2023 16:23	WG2151859
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/17/2023 16:23	WG2151859
Naphthalene	0.485		0.0125	50	10/24/2023 00:46	WG2151859
Phenanthrene	0.000609		0.0000500	1	10/17/2023 16:23	WG2151859
Pyrene	0.0000600		0.0000500	1	10/17/2023 16:23	WG2151859
1-Methylnaphthalene	ND		0.0125	50	10/24/2023 00:46	WG2151859
2-Methylnaphthalene	0.0136		0.0125	50	10/24/2023 00:46	WG2151859
2-Chloronaphthalene	ND		0.000250	1	10/17/2023 16:23	WG2151859
(S) Nitrobenzene-d5	*0.000*	J7	*31.0-160*		*10/24/2023 00:46*	WG2151859
(S) Nitrobenzene-d5	*226*	J1	*31.0-160*		*10/17/2023 16:23*	WG2151859
(S) 2-Fluorobiphenyl	*91.6*		*48.0-148*		*10/17/2023 16:23*	WG2151859
(S) 2-Fluorobiphenyl	*117*	J7	*48.0-148*		*10/24/2023 00:46*	WG2151859
(S) p-Terphenyl-d14	*81.6*		*37.0-146*		*10/17/2023 16:23*	WG2151859
(S) p-Terphenyl-d14	*124*	J7	*37.0-146*		*10/24/2023 00:46*	WG2151859

Sample Narrative:

L1666511-05 WG2151859: Surrogate failure due to matrix interference

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/19/2023 14:03	WG2154045
(S) a,a,a-Trifluorotoluene(FID)	*96.8*		*78.0-120*		*10/19/2023 14:03*	WG2154045

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/15/2023 06:49	WG2151529
Toluene	ND		0.00100	1	10/15/2023 06:49	WG2151529
Ethylbenzene	ND		0.00100	1	10/15/2023 06:49	WG2151529
Total Xylenes	ND		0.00300	1	10/15/2023 06:49	WG2151529
(S) Toluene-d8	*114*		*80.0-120*		*10/15/2023 06:49*	WG2151529
(S) 4-Bromofluorobenzene	*123*		*77.0-126*		*10/15/2023 06:49*	WG2151529
(S) 1,2-Dichloroethane-d4	*105*		*70.0-130*		*10/15/2023 06:49*	WG2151529

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		0.100	1	10/24/2023 15:05	WG2156771
C28-C40 Oil Range	ND		0.100	1	10/24/2023 15:05	WG2156771
(S) o-Terphenyl	*131*		*52.0-156*		*10/24/2023 15:05*	WG2156771

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/17/2023 16:40	WG2151859
Acenaphthene	0.000118		0.0000500	1	10/17/2023 16:40	WG2151859
Acenaphthylene	ND		0.0000500	1	10/17/2023 16:40	WG2151859
Benzo(a)anthracene	ND		0.0000500	1	10/17/2023 16:40	WG2151859
Benzo(a)pyrene	ND		0.0000500	1	10/17/2023 16:40	WG2151859
Benzo(b)fluoranthene	ND		0.0000500	1	10/17/2023 16:40	WG2151859
Benzo(g,h,i)perylene	ND		0.0000500	1	10/17/2023 16:40	WG2151859
Benzo(k)fluoranthene	ND		0.0000500	1	10/17/2023 16:40	WG2151859
Chrysene	ND		0.0000500	1	10/17/2023 16:40	WG2151859
Dibenz(a,h)anthracene	ND		0.0000500	1	10/17/2023 16:40	WG2151859
Fluoranthene	ND		0.000100	1	10/17/2023 16:40	WG2151859
Fluorene	ND		0.0000500	1	10/17/2023 16:40	WG2151859
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/17/2023 16:40	WG2151859
Naphthalene	0.000424		0.000250	1	10/17/2023 16:40	WG2151859
Phenanthrene	ND		0.0000500	1	10/17/2023 16:40	WG2151859
Pyrene	ND		0.0000500	1	10/17/2023 16:40	WG2151859
1-Methylnaphthalene	ND		0.000250	1	10/17/2023 16:40	WG2151859
2-Methylnaphthalene	ND		0.000250	1	10/17/2023 16:40	WG2151859
2-Chloronaphthalene	ND		0.000250	1	10/17/2023 16:40	WG2151859
(S) Nitrobenzene-d5	*94.2*		*31.0-160*		*10/17/2023 16:40*	WG2151859
(S) 2-Fluorobiphenyl	*85.3*		*48.0-148*		*10/17/2023 16:40*	WG2151859
(S) p-Terphenyl-d14	*87.9*		*37.0-146*		*10/17/2023 16:40*	WG2151859

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/19/2023 14:23	WG2154045
(S) a,a,a-Trifluorotoluene(FID)	*98.9*		*78.0-120*		*10/19/2023 14:23*	WG2154045

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/15/2023 07:10	WG2151529
Toluene	0.00185		0.00100	1	10/15/2023 07:10	WG2151529
Ethylbenzene	ND		0.00100	1	10/15/2023 07:10	WG2151529
Total Xylenes	ND		0.00300	1	10/15/2023 07:10	WG2151529
(S) Toluene-d8	*110*		*80.0-120*		*10/15/2023 07:10*	WG2151529
(S) 4-Bromofluorobenzene	*112*		*77.0-126*		*10/15/2023 07:10*	WG2151529
(S) 1,2-Dichloroethane-d4	*105*		*70.0-130*		*10/15/2023 07:10*	WG2151529

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	12.5		0.500	5	10/24/2023 04:01	WG2154086
C28-C40 Oil Range	9.50		0.500	5	10/25/2023 10:14	WG2154086
(S) o-Terphenyl	*133*		*52.0-156*		*10/25/2023 10:14*	WG2154086
(S) o-Terphenyl	*184*	J1	*52.0-156*		*10/24/2023 04:01*	WG2154086

Sample Narrative:

L1666511-07 WG2154086: Surrogate failure due to matrix interference

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/17/2023 16:58	WG2151859
Acenaphthene	0.00775		0.0000500	1	10/17/2023 16:58	WG2151859
Acenaphthylene	ND		0.0000500	1	10/17/2023 16:58	WG2151859
Benzo(a)anthracene	ND		0.0000500	1	10/17/2023 16:58	WG2151859
Benzo(a)pyrene	ND		0.0000500	1	10/17/2023 16:58	WG2151859
Benzo(b)fluoranthene	ND		0.0000500	1	10/17/2023 16:58	WG2151859
Benzo(g,h,i)perylene	ND		0.0000500	1	10/17/2023 16:58	WG2151859
Benzo(k)fluoranthene	ND		0.0000500	1	10/17/2023 16:58	WG2151859
Chrysene	ND		0.0000500	1	10/17/2023 16:58	WG2151859
Dibenz(a,h)anthracene	ND		0.0000500	1	10/17/2023 16:58	WG2151859
Fluoranthene	ND		0.000100	1	10/17/2023 16:58	WG2151859
Fluorene	0.00204		0.0000500	1	10/17/2023 16:58	WG2151859
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/17/2023 16:58	WG2151859
Naphthalene	0.404		0.0125	50	10/24/2023 01:06	WG2151859
Phenanthrene	0.000577		0.0000500	1	10/17/2023 16:58	WG2151859
Pyrene	0.0000516		0.0000500	1	10/17/2023 16:58	WG2151859
1-Methylnaphthalene	ND		0.0125	50	10/24/2023 01:06	WG2151859
2-Methylnaphthalene	ND		0.0125	50	10/24/2023 01:06	WG2151859
2-Chloronaphthalene	ND		0.000250	1	10/17/2023 16:58	WG2151859
(S) Nitrobenzene-d5	*0.000*	J7	*31.0-160*		*10/24/2023 01:06*	WG2151859
(S) Nitrobenzene-d5	*0.000*	J2	*31.0-160*		*10/17/2023 16:58*	WG2151859
(S) 2-Fluorobiphenyl	*91.1*		*48.0-148*		*10/17/2023 16:58*	WG2151859
(S) 2-Fluorobiphenyl	*127*	J7	*48.0-148*		*10/24/2023 01:06*	WG2151859
(S) p-Terphenyl-d14	*132*	J7	*37.0-146*		*10/24/2023 01:06*	WG2151859
(S) p-Terphenyl-d14	*81.6*		*37.0-146*		*10/17/2023 16:58*	WG2151859

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	

Sample Narrative:

L1666511-07 WG2151859: Surrogate failure due to matrix interference

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/19/2023 14:42	WG2154045
(S) a,a,a-Trifluorotoluene(FID)	*97.5*		*78.0-120*		*10/19/2023 14:42*	WG2154045

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/15/2023 07:30	WG2151529
Toluene	ND		0.00100	1	10/15/2023 07:30	WG2151529
Ethylbenzene	ND		0.00100	1	10/15/2023 07:30	WG2151529
Total Xylenes	ND		0.00300	1	10/15/2023 07:30	WG2151529
(S) Toluene-d8	*111*		*80.0-120*		*10/15/2023 07:30*	WG2151529
(S) 4-Bromofluorobenzene	*119*		*77.0-126*		*10/15/2023 07:30*	WG2151529
(S) 1,2-Dichloroethane-d4	*105*		*70.0-130*		*10/15/2023 07:30*	WG2151529

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	2.30		0.100	1	10/23/2023 19:36	WG2154086
C28-C40 Oil Range	0.347		0.100	1	10/25/2023 04:31	WG2154086
(S) o-Terphenyl	*142*		*52.0-156*		*10/23/2023 19:36*	WG2154086
(S) o-Terphenyl	*139*		*52.0-156*		*10/25/2023 04:31*	WG2154086

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/18/2023 12:00	WG2152447
Acenaphthene	0.000104		0.0000500	1	10/18/2023 12:00	WG2152447
Acenaphthylene	ND		0.0000500	1	10/18/2023 12:00	WG2152447
Benzo(a)anthracene	ND		0.0000500	1	10/18/2023 12:00	WG2152447
Benzo(a)pyrene	ND		0.0000500	1	10/18/2023 12:00	WG2152447
Benzo(b)fluoranthene	ND		0.0000500	1	10/18/2023 12:00	WG2152447
Benzo(g,h,i)perylene	ND		0.0000500	1	10/18/2023 12:00	WG2152447
Benzo(k)fluoranthene	ND		0.0000500	1	10/18/2023 12:00	WG2152447
Chrysene	ND		0.0000500	1	10/18/2023 12:00	WG2152447
Dibenz(a,h)anthracene	ND		0.0000500	1	10/18/2023 12:00	WG2152447
Fluoranthene	ND		0.000100	1	10/18/2023 12:00	WG2152447
Fluorene	0.000183		0.0000500	1	10/18/2023 12:00	WG2152447
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/18/2023 12:00	WG2152447
Naphthalene	ND		0.000250	1	10/18/2023 12:00	WG2152447
Phenanthrene	0.000245		0.0000500	1	10/18/2023 12:00	WG2152447
Pyrene	ND		0.0000500	1	10/18/2023 12:00	WG2152447
1-Methylnaphthalene	0.000599		0.000250	1	10/18/2023 12:00	WG2152447
2-Methylnaphthalene	0.000701		0.000250	1	10/18/2023 12:00	WG2152447
2-Chloronaphthalene	ND		0.000250	1	10/18/2023 12:00	WG2152447
(S) Nitrobenzene-d5	*116*		*31.0-160*		*10/18/2023 12:00*	WG2152447
(S) 2-Fluorobiphenyl	*90.0*		*48.0-148*		*10/18/2023 12:00*	WG2152447
(S) p-Terphenyl-d14	*85.5*		*37.0-146*		*10/18/2023 12:00*	WG2152447

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/19/2023 15:01	WG2154045
(S) a,a,a-Trifluorotoluene(FID)	*98.1*		*78.0-120*		*10/19/2023 15:01*	WG2154045

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/15/2023 07:51	WG2151529
Toluene	ND		0.00100	1	10/15/2023 07:51	WG2151529
Ethylbenzene	ND		0.00100	1	10/15/2023 07:51	WG2151529
Total Xylenes	ND		0.00300	1	10/15/2023 07:51	WG2151529
(S) Toluene-d8	*110*		*80.0-120*		*10/15/2023 07:51*	WG2151529
(S) 4-Bromofluorobenzene	*116*		*77.0-126*		*10/15/2023 07:51*	WG2151529
(S) 1,2-Dichloroethane-d4	*103*		*70.0-130*		*10/15/2023 07:51*	WG2151529

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	0.620		0.100	1	10/23/2023 19:56	WG2154086
C28-C40 Oil Range	0.158		0.100	1	10/25/2023 04:51	WG2154086
(S) o-Terphenyl	*136*		*52.0-156*		*10/25/2023 04:51*	WG2154086
(S) o-Terphenyl	*142*		*52.0-156*		*10/23/2023 19:56*	WG2154086

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/18/2023 12:18	WG2152447
Acenaphthene	ND		0.0000500	1	10/18/2023 12:18	WG2152447
Acenaphthylene	ND		0.0000500	1	10/18/2023 12:18	WG2152447
Benzo(a)anthracene	ND		0.0000500	1	10/18/2023 12:18	WG2152447
Benzo(a)pyrene	ND		0.0000500	1	10/18/2023 12:18	WG2152447
Benzo(b)fluoranthene	ND		0.0000500	1	10/18/2023 12:18	WG2152447
Benzo(g,h,i)perylene	ND		0.0000500	1	10/18/2023 12:18	WG2152447
Benzo(k)fluoranthene	ND		0.0000500	1	10/18/2023 12:18	WG2152447
Chrysene	ND		0.0000500	1	10/18/2023 12:18	WG2152447
Dibenz(a,h)anthracene	ND		0.0000500	1	10/18/2023 12:18	WG2152447
Fluoranthene	ND		0.000100	1	10/18/2023 12:18	WG2152447
Fluorene	0.0000566		0.0000500	1	10/18/2023 12:18	WG2152447
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/18/2023 12:18	WG2152447
Naphthalene	ND		0.000250	1	10/18/2023 12:18	WG2152447
Phenanthrene	0.0000815		0.0000500	1	10/18/2023 12:18	WG2152447
Pyrene	ND		0.0000500	1	10/18/2023 12:18	WG2152447
1-Methylnaphthalene	ND		0.000250	1	10/18/2023 12:18	WG2152447
2-Methylnaphthalene	ND		0.000250	1	10/18/2023 12:18	WG2152447
2-Chloronaphthalene	ND		0.000250	1	10/18/2023 12:18	WG2152447
(S) Nitrobenzene-d5	*112*		*31.0-160*		*10/18/2023 12:18*	WG2152447
(S) 2-Fluorobiphenyl	*85.5*		*48.0-148*		*10/18/2023 12:18*	WG2152447
(S) p-Terphenyl-d14	*79.5*		*37.0-146*		*10/18/2023 12:18*	WG2152447

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/19/2023 15:21	WG2154045
(S) a,a,a-Trifluorotoluene(FID)	*98.4*		*78.0-120*		*10/19/2023 15:21*	WG2154045

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/15/2023 08:12	WG2151529
Toluene	ND		0.00100	1	10/15/2023 08:12	WG2151529
Ethylbenzene	ND		0.00100	1	10/15/2023 08:12	WG2151529
Total Xylenes	ND		0.00300	1	10/15/2023 08:12	WG2151529
(S) Toluene-d8	*112*		*80.0-120*		*10/15/2023 08:12*	WG2151529
(S) 4-Bromofluorobenzene	*120*		*77.0-126*		*10/15/2023 08:12*	WG2151529
(S) 1,2-Dichloroethane-d4	*105*		*70.0-130*		*10/15/2023 08:12*	WG2151529

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	1.37		0.100	1	10/23/2023 20:17	WG2154086
C28-C40 Oil Range	0.147		0.100	1	10/25/2023 05:11	WG2154086
(S) o-Terphenyl	*143*		*52.0-156*		*10/25/2023 05:11*	WG2154086
(S) o-Terphenyl	*140*		*52.0-156*		*10/23/2023 20:17*	WG2154086

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/18/2023 12:35	WG2152447
Acenaphthene	0.000477		0.0000500	1	10/18/2023 12:35	WG2152447
Acenaphthylene	ND		0.0000500	1	10/18/2023 12:35	WG2152447
Benzo(a)anthracene	ND		0.0000500	1	10/18/2023 12:35	WG2152447
Benzo(a)pyrene	ND		0.0000500	1	10/18/2023 12:35	WG2152447
Benzo(b)fluoranthene	ND		0.0000500	1	10/18/2023 12:35	WG2152447
Benzo(g,h,i)perylene	ND		0.0000500	1	10/18/2023 12:35	WG2152447
Benzo(k)fluoranthene	ND		0.0000500	1	10/18/2023 12:35	WG2152447
Chrysene	ND		0.0000500	1	10/18/2023 12:35	WG2152447
Dibenz(a,h)anthracene	ND		0.0000500	1	10/18/2023 12:35	WG2152447
Fluoranthene	ND		0.000100	1	10/18/2023 12:35	WG2152447
Fluorene	0.00161		0.0000500	1	10/18/2023 12:35	WG2152447
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/18/2023 12:35	WG2152447
Naphthalene	0.00134		0.000250	1	10/18/2023 12:35	WG2152447
Phenanthrene	0.00181		0.0000500	1	10/18/2023 12:35	WG2152447
Pyrene	ND		0.0000500	1	10/18/2023 12:35	WG2152447
1-Methylnaphthalene	0.0105		0.000250	1	10/18/2023 12:35	WG2152447
2-Methylnaphthalene	0.0118		0.000250	1	10/18/2023 12:35	WG2152447
2-Chloronaphthalene	ND		0.000250	1	10/18/2023 12:35	WG2152447
(S) Nitrobenzene-d5	*63.5*		*31.0-160*		*10/18/2023 12:35*	WG2152447
(S) 2-Fluorobiphenyl	*88.0*		*48.0-148*		*10/18/2023 12:35*	WG2152447
(S) p-Terphenyl-d14	*83.5*		*37.0-146*		*10/18/2023 12:35*	WG2152447

Method Blank (MB)

(MB) R3988703-2 10/19/23 11:38

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPH (GC/FID) Low Fraction	U		0.0314	0.100
(S) a,a,a-Trifluorotoluene(FID)	*96.3*			*78.0-120*

Laboratory Control Sample (LCS)

(LCS) R3988703-1 10/19/23 10:52

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.78	105	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*102*	*78.0-120*	

Method Blank (MB)

(MB) R3987957-3 10/15/23 04:42

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	0.000316	J	0.0000941	0.00100
Toluene	U		0.000278	0.00100
Ethylbenzene	U		0.000137	0.00100
Total Xylenes	U		0.000174	0.00300
(S) Toluene-d8	*114*			*80.0-120*
(S) 4-Bromofluorobenzene	*117*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*103*			*70.0-130*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3987957-1 10/15/23 03:18 • (LCSD) R3987957-2 10/15/23 03:39

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.00500	0.00523	0.00493	105	98.6	70.0-123			5.91	20
Toluene	0.00500	0.00488	0.00468	97.6	93.6	79.0-120			4.18	20
Ethylbenzene	0.00500	0.00457	0.00447	91.4	89.4	79.0-123			2.21	20
Total Xylenes	0.0150	0.0141	0.0136	94.0	90.7	79.0-123			3.61	20
(S) Toluene-d8				*109*	*110*	*80.0-120*				
(S) 4-Bromofluorobenzene				*115*	*114*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*106*	*102*	*70.0-130*				

Method Blank (MB)

(MB) R3990654-1 10/23/23 18:15

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
C10-C28 Diesel Range	U		0.0222	0.100
C28-C40 Oil Range	U		0.0118	0.100
(S) o-Terphenyl	*120*			*52.0-156*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3990654-2 10/23/23 18:35 • (LCSD) R3990654-3 10/23/23 18:56

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	1.50	1.36	1.52	90.7	101	50.0-150			11.1	20
(S) o-Terphenyl				*136*	*134*	*52.0-156*				

Method Blank (MB)

(MB) R3990673-3 10/24/23 14:04

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
C10-C28 Diesel Range	U		0.0222	0.100
C28-C40 Oil Range	U		0.0118	0.100
(S) o-Terphenyl	*155*			*52.0-156*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3990673-1 10/24/23 13:24 • (LCSD) R3990673-2 10/24/23 13:44

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	1.50	1.81	1.54	121	103	50.0-150			16.1	20
(S) o-Terphenyl				*151*	*136*	*52.0-156*				

Method Blank (MB)

(MB) R3988816-3 10/17/23 13:43

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Anthracene	U		0.0000190	0.0000500
Acenaphthene	U		0.0000190	0.0000500
Acenaphthylene	U		0.0000171	0.0000500
Benzo(a)anthracene	U		0.0000203	0.0000500
Benzo(a)pyrene	U		0.0000184	0.0000500
Benzo(b)fluoranthene	U		0.0000168	0.0000500
Benzo(g,h,i)perylene	U		0.0000184	0.0000500
Benzo(k)fluoranthene	U		0.0000202	0.0000500
Chrysene	U		0.0000179	0.0000500
Dibenz(a,h)anthracene	U		0.0000160	0.0000500
Fluoranthene	U		0.0000270	0.000100
Fluorene	U		0.0000169	0.0000500
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500
Naphthalene	U		0.0000917	0.000250
Phenanthrene	U		0.0000180	0.0000500
Pyrene	U		0.0000169	0.0000500
1-Methylnaphthalene	U		0.0000687	0.000250
2-Methylnaphthalene	U		0.0000674	0.000250
2-Chloronaphthalene	U		0.0000682	0.000250
(S) Nitrobenzene-d5	*96.0*			*31.0-160*
(S) 2-Fluorobiphenyl	*98.5*			*48.0-148*
(S) p-Terphenyl-d14	*94.0*			*37.0-146*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3988816-1 10/17/23 13:08 • (LCSD) R3988816-2 10/17/23 13:25

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0100	0.00967	0.00934	96.7	93.4	67.0-150			3.47	20
Acenaphthene	0.0100	0.00911	0.00890	91.1	89.0	65.0-138			2.33	20
Acenaphthylene	0.0100	0.0102	0.00993	102	99.3	66.0-140			2.68	20
Benzo(a)anthracene	0.0100	0.0100	0.00960	100	96.0	61.0-140			4.08	20
Benzo(a)pyrene	0.0100	0.00967	0.00925	96.7	92.5	60.0-143			4.44	20
Benzo(b)fluoranthene	0.0100	0.00941	0.00897	94.1	89.7	58.0-141			4.79	20
Benzo(g,h,i)perylene	0.0100	0.00828	0.00792	82.8	79.2	52.0-153			4.44	20
Benzo(k)fluoranthene	0.0100	0.00907	0.00867	90.7	86.7	58.0-148			4.51	20
Chrysene	0.0100	0.0100	0.00961	100	96.1	64.0-144			3.98	20
Dibenz(a,h)anthracene	0.0100	0.00892	0.00864	89.2	86.4	52.0-155			3.19	20
Fluoranthene	0.0100	0.0103	0.00984	103	98.4	69.0-153			4.57	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3988816-1 10/17/23 13:08 • (LCSD) R3988816-2 10/17/23 13:25

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Fluorene	0.0100	0.0106	0.0101	106	101	64.0-136			4.83	20
Indeno(1,2,3-cd)pyrene	0.0100	0.00969	0.00924	96.9	92.4	54.0-153			4.75	20
Naphthalene	0.0100	0.00988	0.00966	98.8	96.6	61.0-137			2.25	20
Phenanthrene	0.0100	0.0101	0.00973	101	97.3	62.0-137			3.73	20
Pyrene	0.0100	0.0104	0.0102	104	102	60.0-142			1.94	20
1-Methylnaphthalene	0.0100	0.0106	0.0104	106	104	66.0-142			1.90	20
2-Methylnaphthalene	0.0100	0.00996	0.00980	99.6	98.0	62.0-136			1.62	20
2-Chloronaphthalene	0.0100	0.00973	0.00954	97.3	95.4	64.0-140			1.97	20
(S) Nitrobenzene-d5				*101*	*95.0*	*31.0-160*				
(S) 2-Fluorobiphenyl				*103*	*96.5*	*48.0-148*				
(S) p-Terphenyl-d14				*90.0*	*82.5*	*37.0-146*				

Method Blank (MB)

(MB) R3989711-3 10/18/23 10:14

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Anthracene	U		0.0000190	0.0000500
Acenaphthene	U		0.0000190	0.0000500
Acenaphthylene	U		0.0000171	0.0000500
Benzo(a)anthracene	U		0.0000203	0.0000500
Benzo(a)pyrene	U		0.0000184	0.0000500
Benzo(b)fluoranthene	U		0.0000168	0.0000500
Benzo(g,h,i)perylene	U		0.0000184	0.0000500
Benzo(k)fluoranthene	U		0.0000202	0.0000500
Chrysene	U		0.0000179	0.0000500
Dibenz(a,h)anthracene	U		0.0000160	0.0000500
Fluoranthene	U		0.0000270	0.000100
Fluorene	U		0.0000169	0.0000500
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500
Naphthalene	U		0.0000917	0.000250
Phenanthrene	U		0.0000180	0.0000500
Pyrene	U		0.0000169	0.0000500
1-Methylnaphthalene	U		0.0000687	0.000250
2-Methylnaphthalene	U		0.0000674	0.000250
2-Chloronaphthalene	U		0.0000682	0.000250
(S) Nitrobenzene-d5	*92.0*			*31.0-160*
(S) 2-Fluorobiphenyl	*93.0*			*48.0-148*
(S) p-Terphenyl-d14	*87.5*			*37.0-146*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3989711-1 10/18/23 09:39 • (LCSD) R3989711-2 10/18/23 09:57

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Anthracene	0.00200	0.00171	0.00174	85.5	87.0	67.0-150			1.74	20
Acenaphthene	0.00200	0.00171	0.00178	85.5	89.0	65.0-138			4.01	20
Acenaphthylene	0.00200	0.00178	0.00183	89.0	91.5	66.0-140			2.77	20
Benzo(a)anthracene	0.00200	0.00172	0.00177	86.0	88.5	61.0-140			2.87	20
Benzo(a)pyrene	0.00200	0.00168	0.00173	84.0	86.5	60.0-143			2.93	20
Benzo(b)fluoranthene	0.00200	0.00174	0.00174	87.0	87.0	58.0-141			0.000	20
Benzo(g,h,i)perylene	0.00200	0.00160	0.00165	80.0	82.5	52.0-153			3.08	20
Benzo(k)fluoranthene	0.00200	0.00167	0.00168	83.5	84.0	58.0-148			0.597	20
Chrysene	0.00200	0.00178	0.00184	89.0	92.0	64.0-144			3.31	20
Dibenz(a,h)anthracene	0.00200	0.00156	0.00160	78.0	80.0	52.0-155			2.53	20
Fluoranthene	0.00200	0.00178	0.00184	89.0	92.0	69.0-153			3.31	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3989711-1 10/18/23 09:39 • (LCSD) R3989711-2 10/18/23 09:57

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Fluorene	0.00200	0.00181	0.00188	90.5	94.0	64.0-136			3.79	20
Indeno(1,2,3-cd)pyrene	0.00200	0.00158	0.00164	79.0	82.0	54.0-153			3.73	20
Naphthalene	0.00200	0.00183	0.00189	91.5	94.5	61.0-137			3.23	20
Phenanthrene	0.00200	0.00178	0.00185	89.0	92.5	62.0-137			3.86	20
Pyrene	0.00200	0.00183	0.00187	91.5	93.5	60.0-142			2.16	20
1-Methylnaphthalene	0.00200	0.00182	0.00189	91.0	94.5	66.0-142			3.77	20
2-Methylnaphthalene	0.00200	0.00187	0.00193	93.5	96.5	62.0-136			3.16	20
2-Chloronaphthalene	0.00200	0.00176	0.00184	88.0	92.0	64.0-140			4.44	20
(S) Nitrobenzene-d5				*93.0*	*92.5*	*31.0-160*				
(S) 2-Fluorobiphenyl				*89.0*	*92.0*	*48.0-148*				
(S) p-Terphenyl-d14				*81.0*	*82.0*	*37.0-146*				

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Company Name/Address:
Rio Grande Resources Corp

219 S 2nd St
Raton, NM 87740

Billing Information:
Bruce Norquist
PO Box 1150
Grants , NM 87020

Pres Chk

Report to: **Eric Roads**

Email To: **eroads@enganalytics.com;tdavis@enganalytics.**

Project Description: **Mt Taylor**

City/State Collected: Grants, New Mexico

Please Circle: PT MT CT ET

Phone: **970-488-3111**

Client Project # 111360

Lab Project # **RIOGRAGNM-MTTAYLOR**

Collected by (print): Tyler Davis

Site/Facility ID #

P.O. #

Collected by (signature): Tyler Davis

Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Date Results Needed

Quote #

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

Pace
PEOPLE ADVANCING SCIENCE

MT JULIET, TN

12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L1dd0511

Tal 1130

Acctnum: **RIOGRAGNM**
Template: **T238214**
Prelogin: **P1026344**
PM: **732 - Donna Eidson**
PB: NG 9122123

Shipped Via: **FedEX Ground**

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	DROORDLVI 40mlAmb-HCl-BT	GRO 40mlAmb HCl	PAHSIMLVI 40mlAmb-NoPres-WT	SV8270PAH 4ozClr-NoPres	V8260BTEX 40mlAmb-HCl	V8260BTEX 40mlAmb/MeOH10ml/Syr					Remarks	Sample # (lab only)
MT-GW-TS-2849-DW11-101023-K2	Grab	GW	2849	10-10-23	9:32	9	X	X	X		X							-01
MT-GW-TS-2849-DW11-101023-K3	Grab	GW	2849	10-10-23	1018	9	X	X	X		X							-02
MT-GW-TS-1750-DW11-101023	Grab	GW	1750	10-10-23	1209	9	X	X	X		X							-03
MT-GW-TS-1100-DW11-101023-K3	Grab	GW	1100	10-10-23	1245	9	X	X	X		X							-04
MT-GW-TS1100-DW11-101023	Grab	GW	1100	10-10-23	1342	9	X	X	X		X							-05
MT-GW-TS904-DW11-101023-K3	Grab	GW	903.6	10-10-23	1410	9	X	X	X		X							-06
MT-GW-TS904-DW11-10-10-23-	Grab	GW	903.6	10-10-23	1530	9	X	X	X		X							-07
MT-GW-TS1005-DW3-101123	Grab	GW	1005	10-11-23	1400	9	X	X	X		X							-08
MT-GW-TS-896-DW3-101123	Grab	GW	896	10-11-23	1552	9	X	X	X		X							-09
MT-GW-TS-596-DW3-101123	Grab	GW	596	10-11-23	1741	9	X	X	X		X							-10

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks: Some samples have effervescence that caused air bubbles after bottle was sealed.

Red cooler

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking # 6841 8349 2607

Sample Receipt Checklist

COC Seal Present/Intact:	NP	Y N
COC Signed/Accurate:		Y N
Bottles arrive intact:		Y N
Correct bottles used:		Y N
Sufficient volume sent:		Y N
If Applicable		
VOA Zero Headspace:		Y N
Preservation Correct/Checked:		Y N
RAD Screen <0.5 mR/hr:		Y N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCl / MeoH TBR	If preservation required by Login: Date/Time
[signature]	10-12-2023	1725		1	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received:	
			CCAB30+0=3.0	90	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date:	Time:
			[signature]	10.12.23	0900

Hold: | Condition: NCF / OK

ANALYTICAL REPORT

October 27, 2023

Rio Grande Resources Corp

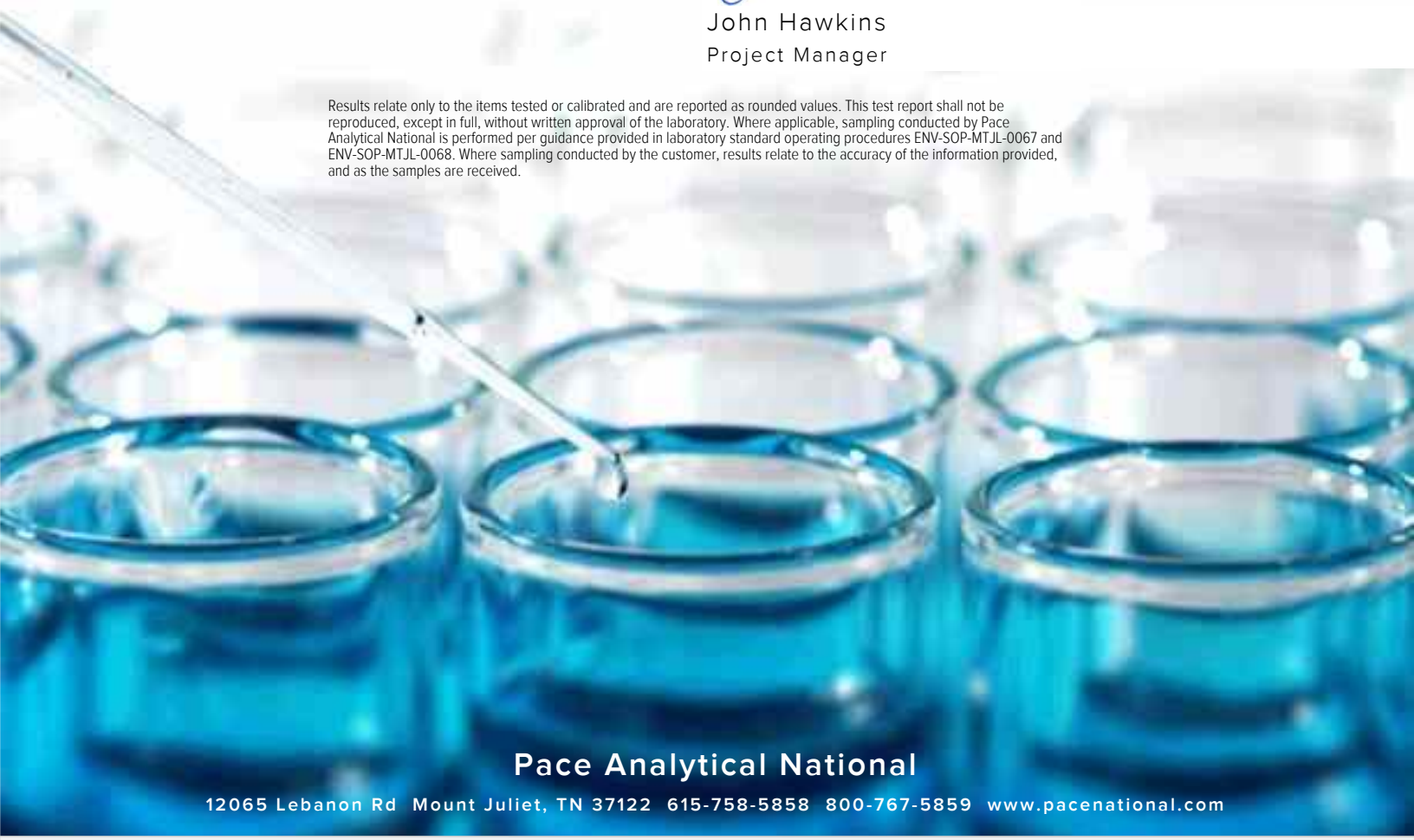
Sample Delivery Group:	L1666516
Samples Received:	10/13/2023
Project Number:	111360
Description:	Mt Taylor

Report To: Eric Roads
219 S 2nd St
Raton, NM 87740

Entire Report Reviewed By:

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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MT-GW-PD-DW6-101023 L1666516-01 GW

Collected by: Tyler Davis | Collected date/time: 10/10/23 16:07 | Received date/time: 10/13/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2155551	1	10/21/23 15:03	10/21/23 15:03	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2152373	1	10/16/23 22:01	10/16/23 22:01	JBE	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2154087	1	10/23/23 18:32	10/25/23 00:07	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2151859	1	10/17/23 08:57	10/17/23 17:16	DSH	Mt. Juliet, TN

MT-GW-PD-DW2A-101123 L1666516-02 GW

Collected by: Tyler Davis | Collected date/time: 10/11/23 08:45 | Received date/time: 10/13/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2155551	1	10/21/23 15:26	10/21/23 15:26	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2152373	1	10/16/23 22:20	10/16/23 22:20	JBE	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2156704	1	10/25/23 15:02	10/26/23 20:35	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2152447	1	10/17/23 16:45	10/18/23 12:53	DSH	Mt. Juliet, TN

MT-GW-TS-1005-DW3-101123-K3 L1666516-03 GW

Collected by: Tyler Davis | Collected date/time: 10/11/23 10:41 | Received date/time: 10/13/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2155551	1	10/21/23 15:50	10/21/23 15:50	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2152373	1	10/16/23 22:39	10/16/23 22:39	JBE	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2156704	1	10/25/23 15:02	10/26/23 20:55	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2152447	1	10/17/23 16:45	10/18/23 13:11	DSH	Mt. Juliet, TN

MT-GW-TS-1005-DW3-101123-K2 L1666516-04 GW

Collected by: Tyler Davis | Collected date/time: 10/11/23 09:33 | Received date/time: 10/13/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2155551	1	10/21/23 16:13	10/21/23 16:13	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2152373	1	10/16/23 22:59	10/16/23 22:59	JBE	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2156704	1	10/25/23 15:02	10/26/23 21:15	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2152447	1	10/17/23 16:45	10/18/23 13:28	DSH	Mt. Juliet, TN

MT-GW-TS-1005-DW3-101123-K1 L1666516-05 GW

Collected by: Tyler Davis | Collected date/time: 10/11/23 14:00 | Received date/time: 10/13/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2155551	1	10/21/23 16:36	10/21/23 16:36	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2152373	1	10/16/23 23:18	10/16/23 23:18	JBE	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2156704	1	10/25/23 15:02	10/26/23 21:36	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2152447	1	10/17/23 16:45	10/18/23 13:46	DSH	Mt. Juliet, TN

MT-GW-TS-886-DW-101123-K3 L1666516-06 GW

Collected by: Tyler Davis | Collected date/time: 10/11/23 14:45 | Received date/time: 10/13/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2155551	1	10/21/23 16:59	10/21/23 16:59	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2152373	1	10/16/23 23:38	10/16/23 23:38	JBE	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2156704	1	10/25/23 15:02	10/26/23 21:56	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2152447	1	10/17/23 16:45	10/18/23 14:04	DSH	Mt. Juliet, TN

SAMPLE SUMMARY

MT-GW-TS-596-DW3-101123-K3 L1666516-07 GW

Collected by: Tyler Davis
Collected date/time: 10/11/23 16:26
Received date/time: 10/13/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2155551	1	10/21/23 17:22	10/21/23 17:22	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2152373	1	10/16/23 23:56	10/16/23 23:56	JBE	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2156704	1	10/25/23 15:02	10/26/23 22:16	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2152447	1	10/17/23 16:45	10/18/23 14:21	DSH	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Project Manager

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/21/2023 15:03	WG2155551
(S) a,a,a-Trifluorotoluene(FID)	*101*		*78.0-120*		*10/21/2023 15:03*	WG2155551

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/16/2023 22:01	WG2152373
Toluene	ND		0.00100	1	10/16/2023 22:01	WG2152373
Ethylbenzene	ND		0.00100	1	10/16/2023 22:01	WG2152373
Total Xylenes	ND		0.00300	1	10/16/2023 22:01	WG2152373
(S) Toluene-d8	*79.1*	J2	*80.0-120*		*10/16/2023 22:01*	WG2152373
(S) 4-Bromofluorobenzene	*103*		*77.0-126*		*10/16/2023 22:01*	WG2152373
(S) 1,2-Dichloroethane-d4	*138*	J1	*70.0-130*		*10/16/2023 22:01*	WG2152373

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	0.115		0.100	1	10/25/2023 00:07	WG2154087
C28-C40 Oil Range	0.366		0.100	1	10/25/2023 00:07	WG2154087
(S) o-Terphenyl	*71.0*		*52.0-156*		*10/25/2023 00:07*	WG2154087

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/17/2023 17:16	WG2151859
Acenaphthene	ND		0.0000500	1	10/17/2023 17:16	WG2151859
Acenaphthylene	ND		0.0000500	1	10/17/2023 17:16	WG2151859
Benzo(a)anthracene	ND		0.0000500	1	10/17/2023 17:16	WG2151859
Benzo(a)pyrene	ND		0.0000500	1	10/17/2023 17:16	WG2151859
Benzo(b)fluoranthene	ND		0.0000500	1	10/17/2023 17:16	WG2151859
Benzo(g,h,i)perylene	ND		0.0000500	1	10/17/2023 17:16	WG2151859
Benzo(k)fluoranthene	ND		0.0000500	1	10/17/2023 17:16	WG2151859
Chrysene	ND		0.0000500	1	10/17/2023 17:16	WG2151859
Dibenz(a,h)anthracene	ND		0.0000500	1	10/17/2023 17:16	WG2151859
Fluoranthene	ND		0.000100	1	10/17/2023 17:16	WG2151859
Fluorene	ND		0.0000500	1	10/17/2023 17:16	WG2151859
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/17/2023 17:16	WG2151859
Naphthalene	ND		0.000250	1	10/17/2023 17:16	WG2151859
Phenanthrene	ND		0.0000500	1	10/17/2023 17:16	WG2151859
Pyrene	ND		0.0000500	1	10/17/2023 17:16	WG2151859
1-Methylnaphthalene	ND		0.000250	1	10/17/2023 17:16	WG2151859
2-Methylnaphthalene	ND		0.000250	1	10/17/2023 17:16	WG2151859
2-Chloronaphthalene	ND		0.000250	1	10/17/2023 17:16	WG2151859
(S) Nitrobenzene-d5	*103*		*31.0-160*		*10/17/2023 17:16*	WG2151859
(S) 2-Fluorobiphenyl	*95.8*		*48.0-148*		*10/17/2023 17:16*	WG2151859
(S) p-Terphenyl-d14	*93.7*		*37.0-146*		*10/17/2023 17:16*	WG2151859

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/21/2023 15:26	WG2155551
(S) a,a,a-Trifluorotoluene(FID)	*101*		*78.0-120*		*10/21/2023 15:26*	WG2155551

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/16/2023 22:20	WG2152373
Toluene	ND		0.00100	1	10/16/2023 22:20	WG2152373
Ethylbenzene	ND		0.00100	1	10/16/2023 22:20	WG2152373
Total Xylenes	ND		0.00300	1	10/16/2023 22:20	WG2152373
(S) Toluene-d8	*80.4*		*80.0-120*		*10/16/2023 22:20*	WG2152373
(S) 4-Bromofluorobenzene	*103*		*77.0-126*		*10/16/2023 22:20*	WG2152373
(S) 1,2-Dichloroethane-d4	*115*		*70.0-130*		*10/16/2023 22:20*	WG2152373

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		0.100	1	10/26/2023 20:35	WG2156704
C28-C40 Oil Range	ND		0.100	1	10/26/2023 20:35	WG2156704
(S) o-Terphenyl	*96.5*		*52.0-156*		*10/26/2023 20:35*	WG2156704

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/18/2023 12:53	WG2152447
Acenaphthene	ND		0.0000500	1	10/18/2023 12:53	WG2152447
Acenaphthylene	ND		0.0000500	1	10/18/2023 12:53	WG2152447
Benzo(a)anthracene	ND		0.0000500	1	10/18/2023 12:53	WG2152447
Benzo(a)pyrene	ND		0.0000500	1	10/18/2023 12:53	WG2152447
Benzo(b)fluoranthene	ND		0.0000500	1	10/18/2023 12:53	WG2152447
Benzo(g,h,i)perylene	ND		0.0000500	1	10/18/2023 12:53	WG2152447
Benzo(k)fluoranthene	ND		0.0000500	1	10/18/2023 12:53	WG2152447
Chrysene	ND		0.0000500	1	10/18/2023 12:53	WG2152447
Dibenz(a,h)anthracene	ND		0.0000500	1	10/18/2023 12:53	WG2152447
Fluoranthene	ND		0.000100	1	10/18/2023 12:53	WG2152447
Fluorene	ND		0.0000500	1	10/18/2023 12:53	WG2152447
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/18/2023 12:53	WG2152447
Naphthalene	ND		0.000250	1	10/18/2023 12:53	WG2152447
Phenanthrene	ND		0.0000500	1	10/18/2023 12:53	WG2152447
Pyrene	ND		0.0000500	1	10/18/2023 12:53	WG2152447
1-Methylnaphthalene	ND		0.000250	1	10/18/2023 12:53	WG2152447
2-Methylnaphthalene	ND		0.000250	1	10/18/2023 12:53	WG2152447
2-Chloronaphthalene	ND		0.000250	1	10/18/2023 12:53	WG2152447
(S) Nitrobenzene-d5	*89.0*		*31.0-160*		*10/18/2023 12:53*	WG2152447
(S) 2-Fluorobiphenyl	*90.0*		*48.0-148*		*10/18/2023 12:53*	WG2152447
(S) p-Terphenyl-d14	*85.0*		*37.0-146*		*10/18/2023 12:53*	WG2152447

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/21/2023 15:50	WG2155551
(S) a,a,a-Trifluorotoluene(FID)	*101*		*78.0-120*		*10/21/2023 15:50*	WG2155551

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/16/2023 22:39	WG2152373
Toluene	ND		0.00100	1	10/16/2023 22:39	WG2152373
Ethylbenzene	ND		0.00100	1	10/16/2023 22:39	WG2152373
Total Xylenes	ND		0.00300	1	10/16/2023 22:39	WG2152373
(S) Toluene-d8	*99.1*		*80.0-120*		*10/16/2023 22:39*	WG2152373
(S) 4-Bromofluorobenzene	*119*		*77.0-126*		*10/16/2023 22:39*	WG2152373
(S) 1,2-Dichloroethane-d4	*141*	J1	*70.0-130*		*10/16/2023 22:39*	WG2152373

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		0.100	1	10/26/2023 20:55	WG2156704
C28-C40 Oil Range	ND		0.100	1	10/26/2023 20:55	WG2156704
(S) o-Terphenyl	*112*		*52.0-156*		*10/26/2023 20:55*	WG2156704

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/18/2023 13:11	WG2152447
Acenaphthene	ND		0.0000500	1	10/18/2023 13:11	WG2152447
Acenaphthylene	ND		0.0000500	1	10/18/2023 13:11	WG2152447
Benzo(a)anthracene	ND		0.0000500	1	10/18/2023 13:11	WG2152447
Benzo(a)pyrene	ND		0.0000500	1	10/18/2023 13:11	WG2152447
Benzo(b)fluoranthene	ND		0.0000500	1	10/18/2023 13:11	WG2152447
Benzo(g,h,i)perylene	ND		0.0000500	1	10/18/2023 13:11	WG2152447
Benzo(k)fluoranthene	ND		0.0000500	1	10/18/2023 13:11	WG2152447
Chrysene	ND		0.0000500	1	10/18/2023 13:11	WG2152447
Dibenz(a,h)anthracene	ND		0.0000500	1	10/18/2023 13:11	WG2152447
Fluoranthene	ND		0.000100	1	10/18/2023 13:11	WG2152447
Fluorene	ND		0.0000500	1	10/18/2023 13:11	WG2152447
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/18/2023 13:11	WG2152447
Naphthalene	ND		0.000250	1	10/18/2023 13:11	WG2152447
Phenanthrene	ND		0.0000500	1	10/18/2023 13:11	WG2152447
Pyrene	ND		0.0000500	1	10/18/2023 13:11	WG2152447
1-Methylnaphthalene	ND		0.000250	1	10/18/2023 13:11	WG2152447
2-Methylnaphthalene	ND		0.000250	1	10/18/2023 13:11	WG2152447
2-Chloronaphthalene	ND		0.000250	1	10/18/2023 13:11	WG2152447
(S) Nitrobenzene-d5	*94.5*		*31.0-160*		*10/18/2023 13:11*	WG2152447
(S) 2-Fluorobiphenyl	*92.5*		*48.0-148*		*10/18/2023 13:11*	WG2152447
(S) p-Terphenyl-d14	*89.0*		*37.0-146*		*10/18/2023 13:11*	WG2152447

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/21/2023 16:13	WG2155551
(S) a,a,a-Trifluorotoluene(FID)	*101*		*78.0-120*		*10/21/2023 16:13*	WG2155551

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/16/2023 22:59	WG2152373
Toluene	ND		0.00100	1	10/16/2023 22:59	WG2152373
Ethylbenzene	ND		0.00100	1	10/16/2023 22:59	WG2152373
Total Xylenes	ND		0.00300	1	10/16/2023 22:59	WG2152373
(S) Toluene-d8	*94.6*		*80.0-120*		*10/16/2023 22:59*	WG2152373
(S) 4-Bromofluorobenzene	*103*		*77.0-126*		*10/16/2023 22:59*	WG2152373
(S) 1,2-Dichloroethane-d4	*129*		*70.0-130*		*10/16/2023 22:59*	WG2152373

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		0.100	1	10/26/2023 21:15	WG2156704
C28-C40 Oil Range	ND		0.100	1	10/26/2023 21:15	WG2156704
(S) o-Terphenyl	*103*		*52.0-156*		*10/26/2023 21:15*	WG2156704

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/18/2023 13:28	WG2152447
Acenaphthene	ND		0.0000500	1	10/18/2023 13:28	WG2152447
Acenaphthylene	ND		0.0000500	1	10/18/2023 13:28	WG2152447
Benzo(a)anthracene	ND		0.0000500	1	10/18/2023 13:28	WG2152447
Benzo(a)pyrene	ND		0.0000500	1	10/18/2023 13:28	WG2152447
Benzo(b)fluoranthene	ND		0.0000500	1	10/18/2023 13:28	WG2152447
Benzo(g,h,i)perylene	ND		0.0000500	1	10/18/2023 13:28	WG2152447
Benzo(k)fluoranthene	ND		0.0000500	1	10/18/2023 13:28	WG2152447
Chrysene	ND		0.0000500	1	10/18/2023 13:28	WG2152447
Dibenz(a,h)anthracene	ND		0.0000500	1	10/18/2023 13:28	WG2152447
Fluoranthene	ND		0.000100	1	10/18/2023 13:28	WG2152447
Fluorene	ND		0.0000500	1	10/18/2023 13:28	WG2152447
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/18/2023 13:28	WG2152447
Naphthalene	ND		0.000250	1	10/18/2023 13:28	WG2152447
Phenanthrene	ND		0.0000500	1	10/18/2023 13:28	WG2152447
Pyrene	ND		0.0000500	1	10/18/2023 13:28	WG2152447
1-Methylnaphthalene	ND		0.000250	1	10/18/2023 13:28	WG2152447
2-Methylnaphthalene	ND		0.000250	1	10/18/2023 13:28	WG2152447
2-Chloronaphthalene	ND		0.000250	1	10/18/2023 13:28	WG2152447
(S) Nitrobenzene-d5	*90.0*		*31.0-160*		*10/18/2023 13:28*	WG2152447
(S) 2-Fluorobiphenyl	*91.5*		*48.0-148*		*10/18/2023 13:28*	WG2152447
(S) p-Terphenyl-d14	*87.5*		*37.0-146*		*10/18/2023 13:28*	WG2152447

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/21/2023 16:36	WG2155551
(S) a,a,a-Trifluorotoluene(FID)	*102*		*78.0-120*		*10/21/2023 16:36*	WG2155551

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/16/2023 23:18	WG2152373
Toluene	ND		0.00100	1	10/16/2023 23:18	WG2152373
Ethylbenzene	ND		0.00100	1	10/16/2023 23:18	WG2152373
Total Xylenes	ND		0.00300	1	10/16/2023 23:18	WG2152373
(S) Toluene-d8	*86.3*		*80.0-120*		*10/16/2023 23:18*	WG2152373
(S) 4-Bromofluorobenzene	*115*		*77.0-126*		*10/16/2023 23:18*	WG2152373
(S) 1,2-Dichloroethane-d4	*123*		*70.0-130*		*10/16/2023 23:18*	WG2152373

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	1.70		0.100	1	10/26/2023 21:36	WG2156704
C28-C40 Oil Range	0.156		0.100	1	10/26/2023 21:36	WG2156704
(S) o-Terphenyl	*129*		*52.0-156*		*10/26/2023 21:36*	WG2156704

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/18/2023 13:46	WG2152447
Acenaphthene	0.000111		0.0000500	1	10/18/2023 13:46	WG2152447
Acenaphthylene	ND		0.0000500	1	10/18/2023 13:46	WG2152447
Benzo(a)anthracene	ND		0.0000500	1	10/18/2023 13:46	WG2152447
Benzo(a)pyrene	ND		0.0000500	1	10/18/2023 13:46	WG2152447
Benzo(b)fluoranthene	ND		0.0000500	1	10/18/2023 13:46	WG2152447
Benzo(g,h,i)perylene	ND		0.0000500	1	10/18/2023 13:46	WG2152447
Benzo(k)fluoranthene	ND		0.0000500	1	10/18/2023 13:46	WG2152447
Chrysene	ND		0.0000500	1	10/18/2023 13:46	WG2152447
Dibenz(a,h)anthracene	ND		0.0000500	1	10/18/2023 13:46	WG2152447
Fluoranthene	ND		0.000100	1	10/18/2023 13:46	WG2152447
Fluorene	0.000180		0.0000500	1	10/18/2023 13:46	WG2152447
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/18/2023 13:46	WG2152447
Naphthalene	ND		0.000250	1	10/18/2023 13:46	WG2152447
Phenanthrene	0.000252		0.0000500	1	10/18/2023 13:46	WG2152447
Pyrene	ND		0.0000500	1	10/18/2023 13:46	WG2152447
1-Methylnaphthalene	0.000580		0.000250	1	10/18/2023 13:46	WG2152447
2-Methylnaphthalene	0.000680		0.000250	1	10/18/2023 13:46	WG2152447
2-Chloronaphthalene	ND		0.000250	1	10/18/2023 13:46	WG2152447
(S) Nitrobenzene-d5	*116*		*31.0-160*		*10/18/2023 13:46*	WG2152447
(S) 2-Fluorobiphenyl	*86.5*		*48.0-148*		*10/18/2023 13:46*	WG2152447
(S) p-Terphenyl-d14	*83.5*		*37.0-146*		*10/18/2023 13:46*	WG2152447

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/21/2023 16:59	WG2155551
(S) a,a,a-Trifluorotoluene(FID)	*101*		*78.0-120*		*10/21/2023 16:59*	WG2155551

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/16/2023 23:38	WG2152373
Toluene	ND		0.00100	1	10/16/2023 23:38	WG2152373
Ethylbenzene	ND		0.00100	1	10/16/2023 23:38	WG2152373
Total Xylenes	ND		0.00300	1	10/16/2023 23:38	WG2152373
(S) Toluene-d8	*91.4*		*80.0-120*		*10/16/2023 23:38*	WG2152373
(S) 4-Bromofluorobenzene	*87.4*		*77.0-126*		*10/16/2023 23:38*	WG2152373
(S) 1,2-Dichloroethane-d4	*110*		*70.0-130*		*10/16/2023 23:38*	WG2152373

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		0.100	1	10/26/2023 21:56	WG2156704
C28-C40 Oil Range	ND		0.100	1	10/26/2023 21:56	WG2156704
(S) o-Terphenyl	*116*		*52.0-156*		*10/26/2023 21:56*	WG2156704

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/18/2023 14:04	WG2152447
Acenaphthene	ND		0.0000500	1	10/18/2023 14:04	WG2152447
Acenaphthylene	ND		0.0000500	1	10/18/2023 14:04	WG2152447
Benzo(a)anthracene	ND		0.0000500	1	10/18/2023 14:04	WG2152447
Benzo(a)pyrene	ND		0.0000500	1	10/18/2023 14:04	WG2152447
Benzo(b)fluoranthene	ND		0.0000500	1	10/18/2023 14:04	WG2152447
Benzo(g,h,i)perylene	ND		0.0000500	1	10/18/2023 14:04	WG2152447
Benzo(k)fluoranthene	ND		0.0000500	1	10/18/2023 14:04	WG2152447
Chrysene	ND		0.0000500	1	10/18/2023 14:04	WG2152447
Dibenz(a,h)anthracene	ND		0.0000500	1	10/18/2023 14:04	WG2152447
Fluoranthene	ND		0.000100	1	10/18/2023 14:04	WG2152447
Fluorene	ND		0.0000500	1	10/18/2023 14:04	WG2152447
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/18/2023 14:04	WG2152447
Naphthalene	ND		0.000250	1	10/18/2023 14:04	WG2152447
Phenanthrene	ND		0.0000500	1	10/18/2023 14:04	WG2152447
Pyrene	ND		0.0000500	1	10/18/2023 14:04	WG2152447
1-Methylnaphthalene	ND		0.000250	1	10/18/2023 14:04	WG2152447
2-Methylnaphthalene	ND		0.000250	1	10/18/2023 14:04	WG2152447
2-Chloronaphthalene	ND		0.000250	1	10/18/2023 14:04	WG2152447
(S) Nitrobenzene-d5	*87.0*		*31.0-160*		*10/18/2023 14:04*	WG2152447
(S) 2-Fluorobiphenyl	*88.5*		*48.0-148*		*10/18/2023 14:04*	WG2152447
(S) p-Terphenyl-d14	*83.0*		*37.0-146*		*10/18/2023 14:04*	WG2152447

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/21/2023 17:22	WG2155551
(S) a,a,a-Trifluorotoluene(FID)	*102*		*78.0-120*		*10/21/2023 17:22*	WG2155551

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/16/2023 23:56	WG2152373
Toluene	ND		0.00100	1	10/16/2023 23:56	WG2152373
Ethylbenzene	ND		0.00100	1	10/16/2023 23:56	WG2152373
Total Xylenes	ND		0.00300	1	10/16/2023 23:56	WG2152373
(S) Toluene-d8	*90.2*		*80.0-120*		*10/16/2023 23:56*	WG2152373
(S) 4-Bromofluorobenzene	*98.9*		*77.0-126*		*10/16/2023 23:56*	WG2152373
(S) 1,2-Dichloroethane-d4	*121*		*70.0-130*		*10/16/2023 23:56*	WG2152373

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		0.100	1	10/26/2023 22:16	WG2156704
C28-C40 Oil Range	ND		0.100	1	10/26/2023 22:16	WG2156704
(S) o-Terphenyl	*117*		*52.0-156*		*10/26/2023 22:16*	WG2156704

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/18/2023 14:21	WG2152447
Acenaphthene	ND		0.0000500	1	10/18/2023 14:21	WG2152447
Acenaphthylene	ND		0.0000500	1	10/18/2023 14:21	WG2152447
Benzo(a)anthracene	ND		0.0000500	1	10/18/2023 14:21	WG2152447
Benzo(a)pyrene	ND		0.0000500	1	10/18/2023 14:21	WG2152447
Benzo(b)fluoranthene	ND		0.0000500	1	10/18/2023 14:21	WG2152447
Benzo(g,h,i)perylene	ND		0.0000500	1	10/18/2023 14:21	WG2152447
Benzo(k)fluoranthene	ND		0.0000500	1	10/18/2023 14:21	WG2152447
Chrysene	ND		0.0000500	1	10/18/2023 14:21	WG2152447
Dibenz(a,h)anthracene	ND		0.0000500	1	10/18/2023 14:21	WG2152447
Fluoranthene	ND		0.000100	1	10/18/2023 14:21	WG2152447
Fluorene	ND		0.0000500	1	10/18/2023 14:21	WG2152447
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/18/2023 14:21	WG2152447
Naphthalene	ND		0.000250	1	10/18/2023 14:21	WG2152447
Phenanthrene	ND		0.0000500	1	10/18/2023 14:21	WG2152447
Pyrene	ND		0.0000500	1	10/18/2023 14:21	WG2152447
1-Methylnaphthalene	ND		0.000250	1	10/18/2023 14:21	WG2152447
2-Methylnaphthalene	ND		0.000250	1	10/18/2023 14:21	WG2152447
2-Chloronaphthalene	ND		0.000250	1	10/18/2023 14:21	WG2152447
(S) Nitrobenzene-d5	*89.5*		*31.0-160*		*10/18/2023 14:21*	WG2152447
(S) 2-Fluorobiphenyl	*89.0*		*48.0-148*		*10/18/2023 14:21*	WG2152447
(S) p-Terphenyl-d14	*85.0*		*37.0-146*		*10/18/2023 14:21*	WG2152447

Method Blank (MB)

(MB) R3990324-3 10/21/23 13:43

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPH (GC/FID) Low Fraction	U		0.0314	0.100
(S) a,a,a-Trifluorotoluene(FID)	*101*			*78.0-120*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3990324-1 10/21/23 12:34 • (LCSD) R3990324-2 10/21/23 12:57

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	5.42	5.40	98.5	98.2	72.0-127			0.370	20
(S) a,a,a-Trifluorotoluene(FID)				*104*	*104*	*78.0-120*				

Method Blank (MB)

(MB) R3988570-3 10/16/23 21:07

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0000941	0.00100
Toluene	U		0.000278	0.00100
Ethylbenzene	U		0.000137	0.00100
Total Xylenes	U		0.000174	0.00300
(S) Toluene-d8	*86.7*			*80.0-120*
(S) 4-Bromofluorobenzene	*104*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*127*			*70.0-130*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3988570-1 10/16/23 19:49 • (LCSD) R3988570-2 10/16/23 20:09

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.00500	0.00574	0.00552	115	110	70.0-123			3.91	20
Toluene	0.00500	0.00563	0.00513	113	103	79.0-120			9.29	20
Ethylbenzene	0.00500	0.00507	0.00500	101	100	79.0-123			1.39	20
Total Xylenes	0.0150	0.0176	0.0156	117	104	79.0-123			12.0	20
(S) Toluene-d8				*105*	*94.8*	*80.0-120*				
(S) 4-Bromofluorobenzene				*122*	*106*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*118*	*128*	*70.0-130*				

Method Blank (MB)

(MB) R3990674-1 10/24/23 11:49

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
C10-C28 Diesel Range	U		0.0222	0.100
C28-C40 Oil Range	U		0.0118	0.100
(S) o-Terphenyl	*84.5*			*52.0-156*

Laboratory Control Sample (LCS)

(LCS) R3990674-2 10/24/23 12:09

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	1.50	1.19	79.3	50.0-150	
(S) o-Terphenyl			*86.5*	*52.0-156*	

Method Blank (MB)

(MB) R3991767-1 10/26/23 09:55

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
C10-C28 Diesel Range	U		0.0222	0.100
C28-C40 Oil Range	U		0.0118	0.100
(S) o-Terphenyl	*113*			*52.0-156*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3991767-2 10/26/23 10:15 • (LCSD) R3991767-3 10/26/23 10:36

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	1.50	1.43	1.45	95.3	96.7	50.0-150			1.39	20
(S) o-Terphenyl				*128*	*126*	*52.0-156*				

Method Blank (MB)

(MB) R3988816-3 10/17/23 13:43

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Anthracene	U		0.0000190	0.0000500
Acenaphthene	U		0.0000190	0.0000500
Acenaphthylene	U		0.0000171	0.0000500
Benzo(a)anthracene	U		0.0000203	0.0000500
Benzo(a)pyrene	U		0.0000184	0.0000500
Benzo(b)fluoranthene	U		0.0000168	0.0000500
Benzo(g,h,i)perylene	U		0.0000184	0.0000500
Benzo(k)fluoranthene	U		0.0000202	0.0000500
Chrysene	U		0.0000179	0.0000500
Dibenz(a,h)anthracene	U		0.0000160	0.0000500
Fluoranthene	U		0.0000270	0.000100
Fluorene	U		0.0000169	0.0000500
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500
Naphthalene	U		0.0000917	0.000250
Phenanthrene	U		0.0000180	0.0000500
Pyrene	U		0.0000169	0.0000500
1-Methylnaphthalene	U		0.0000687	0.000250
2-Methylnaphthalene	U		0.0000674	0.000250
2-Chloronaphthalene	U		0.0000682	0.000250
(S) Nitrobenzene-d5	*96.0*			*31.0-160*
(S) 2-Fluorobiphenyl	*98.5*			*48.0-148*
(S) p-Terphenyl-d14	*94.0*			*37.0-146*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3988816-1 10/17/23 13:08 • (LCSD) R3988816-2 10/17/23 13:25

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0100	0.00967	0.00934	96.7	93.4	67.0-150			3.47	20
Acenaphthene	0.0100	0.00911	0.00890	91.1	89.0	65.0-138			2.33	20
Acenaphthylene	0.0100	0.0102	0.00993	102	99.3	66.0-140			2.68	20
Benzo(a)anthracene	0.0100	0.0100	0.00960	100	96.0	61.0-140			4.08	20
Benzo(a)pyrene	0.0100	0.00967	0.00925	96.7	92.5	60.0-143			4.44	20
Benzo(b)fluoranthene	0.0100	0.00941	0.00897	94.1	89.7	58.0-141			4.79	20
Benzo(g,h,i)perylene	0.0100	0.00828	0.00792	82.8	79.2	52.0-153			4.44	20
Benzo(k)fluoranthene	0.0100	0.00907	0.00867	90.7	86.7	58.0-148			4.51	20
Chrysene	0.0100	0.0100	0.00961	100	96.1	64.0-144			3.98	20
Dibenz(a,h)anthracene	0.0100	0.00892	0.00864	89.2	86.4	52.0-155			3.19	20
Fluoranthene	0.0100	0.0103	0.00984	103	98.4	69.0-153			4.57	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3988816-1 10/17/23 13:08 • (LCSD) R3988816-2 10/17/23 13:25

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Fluorene	0.0100	0.0106	0.0101	106	101	64.0-136			4.83	20
Indeno(1,2,3-cd)pyrene	0.0100	0.00969	0.00924	96.9	92.4	54.0-153			4.75	20
Naphthalene	0.0100	0.00988	0.00966	98.8	96.6	61.0-137			2.25	20
Phenanthrene	0.0100	0.0101	0.00973	101	97.3	62.0-137			3.73	20
Pyrene	0.0100	0.0104	0.0102	104	102	60.0-142			1.94	20
1-Methylnaphthalene	0.0100	0.0106	0.0104	106	104	66.0-142			1.90	20
2-Methylnaphthalene	0.0100	0.00996	0.00980	99.6	98.0	62.0-136			1.62	20
2-Chloronaphthalene	0.0100	0.00973	0.00954	97.3	95.4	64.0-140			1.97	20
(S) Nitrobenzene-d5				*101*	*95.0*	*31.0-160*				
(S) 2-Fluorobiphenyl				*103*	*96.5*	*48.0-148*				
(S) p-Terphenyl-d14				*90.0*	*82.5*	*37.0-146*				

Method Blank (MB)

(MB) R3989711-3 10/18/23 10:14

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Anthracene	U		0.0000190	0.0000500
Acenaphthene	U		0.0000190	0.0000500
Acenaphthylene	U		0.0000171	0.0000500
Benzo(a)anthracene	U		0.0000203	0.0000500
Benzo(a)pyrene	U		0.0000184	0.0000500
Benzo(b)fluoranthene	U		0.0000168	0.0000500
Benzo(g,h,i)perylene	U		0.0000184	0.0000500
Benzo(k)fluoranthene	U		0.0000202	0.0000500
Chrysene	U		0.0000179	0.0000500
Dibenz(a,h)anthracene	U		0.0000160	0.0000500
Fluoranthene	U		0.0000270	0.000100
Fluorene	U		0.0000169	0.0000500
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500
Naphthalene	U		0.0000917	0.000250
Phenanthrene	U		0.0000180	0.0000500
Pyrene	U		0.0000169	0.0000500
1-Methylnaphthalene	U		0.0000687	0.000250
2-Methylnaphthalene	U		0.0000674	0.000250
2-Chloronaphthalene	U		0.0000682	0.000250
(S) Nitrobenzene-d5	*92.0*			*31.0-160*
(S) 2-Fluorobiphenyl	*93.0*			*48.0-148*
(S) p-Terphenyl-d14	*87.5*			*37.0-146*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3989711-1 10/18/23 09:39 • (LCSD) R3989711-2 10/18/23 09:57

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Anthracene	0.00200	0.00171	0.00174	85.5	87.0	67.0-150			1.74	20
Acenaphthene	0.00200	0.00171	0.00178	85.5	89.0	65.0-138			4.01	20
Acenaphthylene	0.00200	0.00178	0.00183	89.0	91.5	66.0-140			2.77	20
Benzo(a)anthracene	0.00200	0.00172	0.00177	86.0	88.5	61.0-140			2.87	20
Benzo(a)pyrene	0.00200	0.00168	0.00173	84.0	86.5	60.0-143			2.93	20
Benzo(b)fluoranthene	0.00200	0.00174	0.00174	87.0	87.0	58.0-141			0.000	20
Benzo(g,h,i)perylene	0.00200	0.00160	0.00165	80.0	82.5	52.0-153			3.08	20
Benzo(k)fluoranthene	0.00200	0.00167	0.00168	83.5	84.0	58.0-148			0.597	20
Chrysene	0.00200	0.00178	0.00184	89.0	92.0	64.0-144			3.31	20
Dibenz(a,h)anthracene	0.00200	0.00156	0.00160	78.0	80.0	52.0-155			2.53	20
Fluoranthene	0.00200	0.00178	0.00184	89.0	92.0	69.0-153			3.31	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3989711-1 10/18/23 09:39 • (LCSD) R3989711-2 10/18/23 09:57

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Fluorene	0.00200	0.00181	0.00188	90.5	94.0	64.0-136			3.79	20
Indeno(1,2,3-cd)pyrene	0.00200	0.00158	0.00164	79.0	82.0	54.0-153			3.73	20
Naphthalene	0.00200	0.00183	0.00189	91.5	94.5	61.0-137			3.23	20
Phenanthrene	0.00200	0.00178	0.00185	89.0	92.5	62.0-137			3.86	20
Pyrene	0.00200	0.00183	0.00187	91.5	93.5	60.0-142			2.16	20
1-Methylnaphthalene	0.00200	0.00182	0.00189	91.0	94.5	66.0-142			3.77	20
2-Methylnaphthalene	0.00200	0.00187	0.00193	93.5	96.5	62.0-136			3.16	20
2-Chloronaphthalene	0.00200	0.00176	0.00184	88.0	92.0	64.0-140			4.44	20
(S) Nitrobenzene-d5				*93.0*	*92.5*	*31.0-160*				
(S) 2-Fluorobiphenyl				*89.0*	*92.0*	*48.0-148*				
(S) p-Terphenyl-d14				*81.0*	*82.0*	*37.0-146*				

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Company Name/Address:
Rio Grande Resources Corp
219 S 2nd St
Raton, NM 87740

Billing Information:
Bruce Norquist
PO Box 1150
Grants , NM 87020

Pres Chk

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

Pace PEOPLE ADVANCING SCIENCE

MT JULIET, TN
12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

Report to: Eric Roads

Email To: eroads@enganalytics.com;tdavis@enganalytics.

Project Description: Mt Taylor

City/State Collected: Grants, New Mexico

Please Circle: PT MT CT ET

Phone: 970-488-3111

Client Project # 111360

Lab Project # RIOGRAGNM-MTTAYLOR

SDG # U666516

E185

Collected by (print): Tyler Davis

Site/Facility ID #

P.O. #

Acctnum: RIOGRAGNM
Template: T238214
Prelogin: P1026344
PM: 732 - Donna Eidson
PB: NG 9/22/23
Shipped Via: FedEX Ground

Collected by (signature): Tyler Davis

Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	DROOROLVI 40mlAmb-HCl-BT	GRO 40mlAmb HCl	PAHSIMLVI 40mlAmb-NoPres-WT	SV8270PAH 4ozClr-NoPres	V8260BTEX 40mlAmb-HCl	V8260BTEX 40mlAmb/MeOH10ml/Syr					Remarks	Sample # (lab only)
MT-GW-PD-DW6-101023	Grab	GW	0	10-10-23	1607	9	X	X	X		X							-01
MT-GW-PD-DW2a-101123	Grab	GW	0	10-11-23	0845	9	X	X	X		X							-02
MT-GW-TS-1005-DW3-101123-K3	Grab	GW	1005	10-11-23	1041	9	X	X	X		X							-03
MT-GW-TS-1005-DW3-101123-K2	Grab	GW	1005	10-11-23	0933	9	X	X	X		X							-04
MT-GW-TS-1005-DW3-101123-K1	Grab	GW	1005	10-11-23	1400	9	X	X	X		X							-05
MT-GW-TS-896-DW3-101123 K3	Grab	GW	896	10-11-23	1445	9	X	X	X		X							-06
MT-GW-TS-596-DW3-101123 K3	Grab	GW	596	10-11-23	1626	9	X	X	X		X							-07
		GW				9	X	X	X		X							
		GW				9	X	X	X		X							
		GW				9	X	X	X		X							

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks: Some Samples have effervescence that caused air bubbles after sealed
Blue Cooler

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: __NP ✓Y __N
COC Signed/Accurate: ✓Y __N
Bottles arrive intact: ✓Y __N
Correct bottles used: ✓Y __N
Sufficient volume sent: ✓Y __N
If Applicable
VOA Zero Headspace: ✓Y __N
Preservation Correct/Checked: __Y __N
RAD Screen <0.5 mR/hr: ✓Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	
[signature]	10-12-2023	1656			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 5.3+0=5.3 °C Bottles Received: 63	If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) Hand Minechiwa	Date: 10/13 Time: 0900	Hold: Condition: NCF / OK

ANALYTICAL REPORT

October 23, 2023

Rio Grande Resources Corp

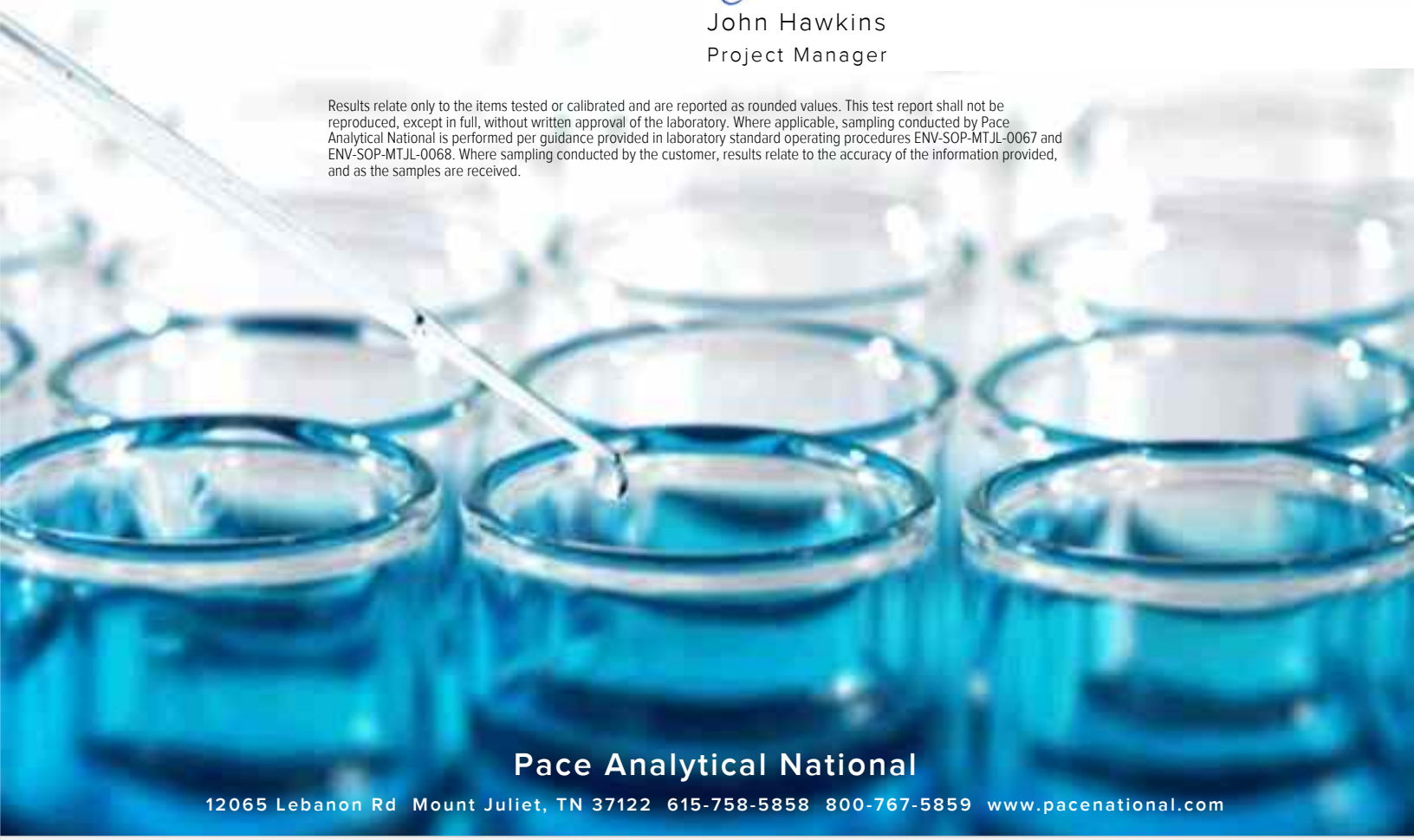
Sample Delivery Group:	L1666531
Samples Received:	10/13/2023
Project Number:	111360
Description:	Mt Taylor

Report To: Eric Roads
219 S 2nd St
Raton, NM 87740

Entire Report Reviewed By:

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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MT-GW-TS781-DW10-100923-K3 L1666531-01 GW

Collected by: Tyler Davis | Collected date/time: 10/09/23 09:28 | Received date/time: 10/13/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2154045	1	10/19/23 15:40	10/19/23 15:40	NCD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2151529	1	10/15/23 08:33	10/15/23 08:33	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2153934	1	10/19/23 20:45	10/21/23 04:44	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2151585	1	10/16/23 09:05	10/16/23 18:35	DSH	Mt. Juliet, TN

MT-GW-TS781-DW10-100923-K2 L1666531-02 GW

Collected by: Tyler Davis | Collected date/time: 10/09/23 10:03 | Received date/time: 10/13/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2154045	1	10/19/23 15:59	10/19/23 15:59	NCD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2151529	1	10/15/23 08:54	10/15/23 08:54	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2153934	1	10/19/23 20:45	10/21/23 05:05	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2151585	1	10/16/23 09:05	10/16/23 18:53	DSH	Mt. Juliet, TN

MT-GW-TS781-DW10-100923- L1666531-03 GW

Collected by: Tyler Davis | Collected date/time: 10/09/23 10:22 | Received date/time: 10/13/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2154045	1	10/19/23 16:19	10/19/23 16:19	NCD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2151529	1	10/15/23 09:15	10/15/23 09:15	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2153934	1	10/19/23 20:45	10/21/23 05:25	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2151585	1	10/16/23 09:05	10/16/23 19:10	DSH	Mt. Juliet, TN

MT-GW-TS463-DW10-100923-K3 L1666531-04 GW

Collected by: Tyler Davis | Collected date/time: 10/09/23 10:53 | Received date/time: 10/13/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2154045	1	10/19/23 16:39	10/19/23 16:39	NCD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2151529	1	10/15/23 09:36	10/15/23 09:36	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2153934	1	10/19/23 20:45	10/21/23 05:45	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2151585	1	10/16/23 09:05	10/16/23 19:27	DSH	Mt. Juliet, TN

MT-GW-TS463-DW10-100923- L1666531-05 GW

Collected by: Tyler Davis | Collected date/time: 10/09/23 12:23 | Received date/time: 10/13/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2154045	1	10/19/23 16:58	10/19/23 16:58	NCD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2151529	1	10/15/23 09:57	10/15/23 09:57	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2153934	1	10/19/23 20:45	10/21/23 06:05	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2151585	1	10/16/23 09:05	10/16/23 19:45	DSH	Mt. Juliet, TN

MT-GW-TS961-DW8-100923-K3 L1666531-06 GW

Collected by: Tyler Davis | Collected date/time: 10/09/23 14:50 | Received date/time: 10/13/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2154045	1	10/19/23 17:17	10/19/23 17:17	NCD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2151529	1	10/15/23 10:18	10/15/23 10:18	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2153934	1	10/19/23 20:45	10/21/23 06:25	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2151585	1	10/16/23 09:05	10/16/23 20:02	DSH	Mt. Juliet, TN

MT-GW-TS961-DW8-100923-K1 L1666531-07 GW

Collected by: Tyler Davis | Collected date/time: 10/09/23 15:58 | Received date/time: 10/13/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2154045	1	10/19/23 17:36	10/19/23 17:36	NCD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2151529	1	10/15/23 10:39	10/15/23 10:39	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2153934	1	10/19/23 20:45	10/21/23 06:46	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2151585	1	10/16/23 09:05	10/16/23 20:19	DSH	Mt. Juliet, TN

MT-GW-TS961-DW8-100923- L1666531-08 GW

Collected by: Tyler Davis | Collected date/time: 10/09/23 15:58 | Received date/time: 10/13/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2154045	1	10/19/23 17:55	10/19/23 17:55	NCD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2151529	1	10/15/23 11:00	10/15/23 11:00	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2153934	1	10/19/23 20:45	10/21/23 07:06	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2151585	1	10/16/23 09:05	10/16/23 20:37	DSH	Mt. Juliet, TN

MT-GW-TS840-DW8-100923-K3 L1666531-09 GW

Collected by: Tyler Davis | Collected date/time: 10/09/23 16:33 | Received date/time: 10/13/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2154045	1	10/19/23 18:14	10/19/23 18:14	NCD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2151529	1	10/15/23 11:23	10/15/23 11:23	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2153934	1	10/19/23 20:45	10/21/23 07:26	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2151585	1	10/16/23 09:05	10/16/23 20:54	DSH	Mt. Juliet, TN

MT-GW-TS840-DW8-100923- L1666531-10 GW

Collected by: Tyler Davis | Collected date/time: 10/09/23 17:24 | Received date/time: 10/13/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2154045	1	10/19/23 18:33	10/19/23 18:33	NCD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2151529	1	10/15/23 11:43	10/15/23 11:43	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG2153934	1	10/19/23 20:45	10/21/23 07:46	MAA	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2151585	1	10/16/23 09:05	10/16/23 21:11	DSH	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Project Manager

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/19/2023 15:40	WG2154045
(S) a,a,a-Trifluorotoluene(FID)	*96.9*		*78.0-120*		*10/19/2023 15:40*	WG2154045

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/15/2023 08:33	WG2151529
Toluene	ND		0.00100	1	10/15/2023 08:33	WG2151529
Ethylbenzene	ND		0.00100	1	10/15/2023 08:33	WG2151529
Total Xylenes	ND		0.00300	1	10/15/2023 08:33	WG2151529
(S) Toluene-d8	*111*		*80.0-120*		*10/15/2023 08:33*	WG2151529
(S) 4-Bromofluorobenzene	*117*		*77.0-126*		*10/15/2023 08:33*	WG2151529
(S) 1,2-Dichloroethane-d4	*103*		*70.0-130*		*10/15/2023 08:33*	WG2151529

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND	J3	0.100	1	10/21/2023 04:44	WG2153934
C28-C40 Oil Range	ND		0.100	1	10/21/2023 04:44	WG2153934
(S) o-Terphenyl	*87.4*		*52.0-156*		*10/21/2023 04:44*	WG2153934

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/16/2023 18:35	WG2151585
Acenaphthene	ND		0.0000500	1	10/16/2023 18:35	WG2151585
Acenaphthylene	ND		0.0000500	1	10/16/2023 18:35	WG2151585
Benzo(a)anthracene	ND		0.0000500	1	10/16/2023 18:35	WG2151585
Benzo(a)pyrene	ND		0.0000500	1	10/16/2023 18:35	WG2151585
Benzo(b)fluoranthene	ND		0.0000500	1	10/16/2023 18:35	WG2151585
Benzo(g,h,i)perylene	ND		0.0000500	1	10/16/2023 18:35	WG2151585
Benzo(k)fluoranthene	ND		0.0000500	1	10/16/2023 18:35	WG2151585
Chrysene	ND		0.0000500	1	10/16/2023 18:35	WG2151585
Dibenz(a,h)anthracene	ND		0.0000500	1	10/16/2023 18:35	WG2151585
Fluoranthene	ND		0.000100	1	10/16/2023 18:35	WG2151585
Fluorene	ND		0.0000500	1	10/16/2023 18:35	WG2151585
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/16/2023 18:35	WG2151585
Naphthalene	ND		0.000250	1	10/16/2023 18:35	WG2151585
Phenanthrene	ND		0.0000500	1	10/16/2023 18:35	WG2151585
Pyrene	ND		0.0000500	1	10/16/2023 18:35	WG2151585
1-Methylnaphthalene	ND		0.000250	1	10/16/2023 18:35	WG2151585
2-Methylnaphthalene	ND		0.000250	1	10/16/2023 18:35	WG2151585
2-Chloronaphthalene	ND		0.000250	1	10/16/2023 18:35	WG2151585
(S) Nitrobenzene-d5	*109*		*31.0-160*		*10/16/2023 18:35*	WG2151585
(S) 2-Fluorobiphenyl	*89.5*		*48.0-148*		*10/16/2023 18:35*	WG2151585
(S) p-Terphenyl-d14	*103*		*37.0-146*		*10/16/2023 18:35*	WG2151585

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/19/2023 15:59	WG2154045
(S) a,a,a-Trifluorotoluene(FID)	*96.6*		*78.0-120*		*10/19/2023 15:59*	WG2154045

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/15/2023 08:54	WG2151529
Toluene	ND		0.00100	1	10/15/2023 08:54	WG2151529
Ethylbenzene	ND		0.00100	1	10/15/2023 08:54	WG2151529
Total Xylenes	ND		0.00300	1	10/15/2023 08:54	WG2151529
(S) Toluene-d8	*113*		*80.0-120*		*10/15/2023 08:54*	WG2151529
(S) 4-Bromofluorobenzene	*117*		*77.0-126*		*10/15/2023 08:54*	WG2151529
(S) 1,2-Dichloroethane-d4	*103*		*70.0-130*		*10/15/2023 08:54*	WG2151529

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND	J3	0.100	1	10/21/2023 05:05	WG2153934
C28-C40 Oil Range	ND		0.100	1	10/21/2023 05:05	WG2153934
(S) o-Terphenyl	*102*		*52.0-156*		*10/21/2023 05:05*	WG2153934

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/16/2023 18:53	WG2151585
Acenaphthene	ND		0.0000500	1	10/16/2023 18:53	WG2151585
Acenaphthylene	ND		0.0000500	1	10/16/2023 18:53	WG2151585
Benzo(a)anthracene	ND		0.0000500	1	10/16/2023 18:53	WG2151585
Benzo(a)pyrene	ND		0.0000500	1	10/16/2023 18:53	WG2151585
Benzo(b)fluoranthene	ND		0.0000500	1	10/16/2023 18:53	WG2151585
Benzo(g,h,i)perylene	ND		0.0000500	1	10/16/2023 18:53	WG2151585
Benzo(k)fluoranthene	ND		0.0000500	1	10/16/2023 18:53	WG2151585
Chrysene	ND		0.0000500	1	10/16/2023 18:53	WG2151585
Dibenz(a,h)anthracene	ND		0.0000500	1	10/16/2023 18:53	WG2151585
Fluoranthene	ND		0.000100	1	10/16/2023 18:53	WG2151585
Fluorene	ND		0.0000500	1	10/16/2023 18:53	WG2151585
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/16/2023 18:53	WG2151585
Naphthalene	ND		0.000250	1	10/16/2023 18:53	WG2151585
Phenanthrene	ND		0.0000500	1	10/16/2023 18:53	WG2151585
Pyrene	ND		0.0000500	1	10/16/2023 18:53	WG2151585
1-Methylnaphthalene	ND		0.000250	1	10/16/2023 18:53	WG2151585
2-Methylnaphthalene	ND		0.000250	1	10/16/2023 18:53	WG2151585
2-Chloronaphthalene	ND		0.000250	1	10/16/2023 18:53	WG2151585
(S) Nitrobenzene-d5	*110*		*31.0-160*		*10/16/2023 18:53*	WG2151585
(S) 2-Fluorobiphenyl	*92.1*		*48.0-148*		*10/16/2023 18:53*	WG2151585
(S) p-Terphenyl-d14	*103*		*37.0-146*		*10/16/2023 18:53*	WG2151585

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/19/2023 16:19	WG2154045
(S) a,a,a-Trifluorotoluene(FID)	*96.9*		*78.0-120*		*10/19/2023 16:19*	WG2154045

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/15/2023 09:15	WG2151529
Toluene	ND		0.00100	1	10/15/2023 09:15	WG2151529
Ethylbenzene	ND		0.00100	1	10/15/2023 09:15	WG2151529
Total Xylenes	ND		0.00300	1	10/15/2023 09:15	WG2151529
(S) Toluene-d8	*113*		*80.0-120*		*10/15/2023 09:15*	WG2151529
(S) 4-Bromofluorobenzene	*118*		*77.0-126*		*10/15/2023 09:15*	WG2151529
(S) 1,2-Dichloroethane-d4	*104*		*70.0-130*		*10/15/2023 09:15*	WG2151529

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	0.112	J3	0.100	1	10/21/2023 05:25	WG2153934
C28-C40 Oil Range	0.236		0.100	1	10/21/2023 05:25	WG2153934
(S) o-Terphenyl	*86.8*		*52.0-156*		*10/21/2023 05:25*	WG2153934

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/16/2023 19:10	WG2151585
Acenaphthene	ND		0.0000500	1	10/16/2023 19:10	WG2151585
Acenaphthylene	ND		0.0000500	1	10/16/2023 19:10	WG2151585
Benzo(a)anthracene	ND		0.0000500	1	10/16/2023 19:10	WG2151585
Benzo(a)pyrene	ND		0.0000500	1	10/16/2023 19:10	WG2151585
Benzo(b)fluoranthene	ND		0.0000500	1	10/16/2023 19:10	WG2151585
Benzo(g,h,i)perylene	ND		0.0000500	1	10/16/2023 19:10	WG2151585
Benzo(k)fluoranthene	ND		0.0000500	1	10/16/2023 19:10	WG2151585
Chrysene	ND		0.0000500	1	10/16/2023 19:10	WG2151585
Dibenz(a,h)anthracene	ND		0.0000500	1	10/16/2023 19:10	WG2151585
Fluoranthene	ND		0.000100	1	10/16/2023 19:10	WG2151585
Fluorene	ND		0.0000500	1	10/16/2023 19:10	WG2151585
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/16/2023 19:10	WG2151585
Naphthalene	ND		0.000250	1	10/16/2023 19:10	WG2151585
Phenanthrene	ND		0.0000500	1	10/16/2023 19:10	WG2151585
Pyrene	ND		0.0000500	1	10/16/2023 19:10	WG2151585
1-Methylnaphthalene	ND		0.000250	1	10/16/2023 19:10	WG2151585
2-Methylnaphthalene	ND		0.000250	1	10/16/2023 19:10	WG2151585
2-Chloronaphthalene	ND		0.000250	1	10/16/2023 19:10	WG2151585
(S) Nitrobenzene-d5	*106*		*31.0-160*		*10/16/2023 19:10*	WG2151585
(S) 2-Fluorobiphenyl	*87.9*		*48.0-148*		*10/16/2023 19:10*	WG2151585
(S) p-Terphenyl-d14	*97.9*		*37.0-146*		*10/16/2023 19:10*	WG2151585

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/19/2023 16:39	WG2154045
(S) a,a,a-Trifluorotoluene(FID)	*97.1*		*78.0-120*		*10/19/2023 16:39*	WG2154045

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/15/2023 09:36	WG2151529
Toluene	ND		0.00100	1	10/15/2023 09:36	WG2151529
Ethylbenzene	ND		0.00100	1	10/15/2023 09:36	WG2151529
Total Xylenes	ND		0.00300	1	10/15/2023 09:36	WG2151529
(S) Toluene-d8	*112*		*80.0-120*		*10/15/2023 09:36*	WG2151529
(S) 4-Bromofluorobenzene	*119*		*77.0-126*		*10/15/2023 09:36*	WG2151529
(S) 1,2-Dichloroethane-d4	*105*		*70.0-130*		*10/15/2023 09:36*	WG2151529

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND	J3	0.100	1	10/21/2023 05:45	WG2153934
C28-C40 Oil Range	ND		0.100	1	10/21/2023 05:45	WG2153934
(S) o-Terphenyl	*115*		*52.0-156*		*10/21/2023 05:45*	WG2153934

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/16/2023 19:27	WG2151585
Acenaphthene	ND		0.0000500	1	10/16/2023 19:27	WG2151585
Acenaphthylene	ND		0.0000500	1	10/16/2023 19:27	WG2151585
Benzo(a)anthracene	ND		0.0000500	1	10/16/2023 19:27	WG2151585
Benzo(a)pyrene	ND		0.0000500	1	10/16/2023 19:27	WG2151585
Benzo(b)fluoranthene	ND		0.0000500	1	10/16/2023 19:27	WG2151585
Benzo(g,h,i)perylene	ND		0.0000500	1	10/16/2023 19:27	WG2151585
Benzo(k)fluoranthene	ND		0.0000500	1	10/16/2023 19:27	WG2151585
Chrysene	ND		0.0000500	1	10/16/2023 19:27	WG2151585
Dibenz(a,h)anthracene	ND		0.0000500	1	10/16/2023 19:27	WG2151585
Fluoranthene	ND		0.000100	1	10/16/2023 19:27	WG2151585
Fluorene	ND		0.0000500	1	10/16/2023 19:27	WG2151585
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/16/2023 19:27	WG2151585
Naphthalene	ND		0.000250	1	10/16/2023 19:27	WG2151585
Phenanthrene	ND		0.0000500	1	10/16/2023 19:27	WG2151585
Pyrene	ND		0.0000500	1	10/16/2023 19:27	WG2151585
1-Methylnaphthalene	ND		0.000250	1	10/16/2023 19:27	WG2151585
2-Methylnaphthalene	ND		0.000250	1	10/16/2023 19:27	WG2151585
2-Chloronaphthalene	ND		0.000250	1	10/16/2023 19:27	WG2151585
(S) Nitrobenzene-d5	*113*		*31.0-160*		*10/16/2023 19:27*	WG2151585
(S) 2-Fluorobiphenyl	*95.3*		*48.0-148*		*10/16/2023 19:27*	WG2151585
(S) p-Terphenyl-d14	*108*		*37.0-146*		*10/16/2023 19:27*	WG2151585

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/19/2023 16:58	WG2154045
(S) a,a,a-Trifluorotoluene(FID)	*97.6*		*78.0-120*		*10/19/2023 16:58*	WG2154045

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/15/2023 09:57	WG2151529
Toluene	ND		0.00100	1	10/15/2023 09:57	WG2151529
Ethylbenzene	ND		0.00100	1	10/15/2023 09:57	WG2151529
Total Xylenes	ND		0.00300	1	10/15/2023 09:57	WG2151529
(S) Toluene-d8	*112*		*80.0-120*		*10/15/2023 09:57*	WG2151529
(S) 4-Bromofluorobenzene	*118*		*77.0-126*		*10/15/2023 09:57*	WG2151529
(S) 1,2-Dichloroethane-d4	*103*		*70.0-130*		*10/15/2023 09:57*	WG2151529

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	0.518	J3	0.100	1	10/21/2023 06:05	WG2153934
C28-C40 Oil Range	0.871		0.100	1	10/21/2023 06:05	WG2153934
(S) o-Terphenyl	*73.7*		*52.0-156*		*10/21/2023 06:05*	WG2153934

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/16/2023 19:45	WG2151585
Acenaphthene	ND		0.0000500	1	10/16/2023 19:45	WG2151585
Acenaphthylene	ND		0.0000500	1	10/16/2023 19:45	WG2151585
Benzo(a)anthracene	ND		0.0000500	1	10/16/2023 19:45	WG2151585
Benzo(a)pyrene	ND		0.0000500	1	10/16/2023 19:45	WG2151585
Benzo(b)fluoranthene	ND		0.0000500	1	10/16/2023 19:45	WG2151585
Benzo(g,h,i)perylene	ND		0.0000500	1	10/16/2023 19:45	WG2151585
Benzo(k)fluoranthene	ND		0.0000500	1	10/16/2023 19:45	WG2151585
Chrysene	ND		0.0000500	1	10/16/2023 19:45	WG2151585
Dibenz(a,h)anthracene	ND		0.0000500	1	10/16/2023 19:45	WG2151585
Fluoranthene	ND		0.000100	1	10/16/2023 19:45	WG2151585
Fluorene	ND		0.0000500	1	10/16/2023 19:45	WG2151585
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/16/2023 19:45	WG2151585
Naphthalene	ND		0.000250	1	10/16/2023 19:45	WG2151585
Phenanthrene	ND		0.0000500	1	10/16/2023 19:45	WG2151585
Pyrene	ND		0.0000500	1	10/16/2023 19:45	WG2151585
1-Methylnaphthalene	ND		0.000250	1	10/16/2023 19:45	WG2151585
2-Methylnaphthalene	ND		0.000250	1	10/16/2023 19:45	WG2151585
2-Chloronaphthalene	ND		0.000250	1	10/16/2023 19:45	WG2151585
(S) Nitrobenzene-d5	*112*		*31.0-160*		*10/16/2023 19:45*	WG2151585
(S) 2-Fluorobiphenyl	*93.2*		*48.0-148*		*10/16/2023 19:45*	WG2151585
(S) p-Terphenyl-d14	*102*		*37.0-146*		*10/16/2023 19:45*	WG2151585

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/19/2023 17:17	WG2154045
(S) a,a,a-Trifluorotoluene(FID)	*97.5*		*78.0-120*		*10/19/2023 17:17*	WG2154045

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/15/2023 10:18	WG2151529
Toluene	ND		0.00100	1	10/15/2023 10:18	WG2151529
Ethylbenzene	ND		0.00100	1	10/15/2023 10:18	WG2151529
Total Xylenes	ND		0.00300	1	10/15/2023 10:18	WG2151529
(S) Toluene-d8	*113*		*80.0-120*		*10/15/2023 10:18*	WG2151529
(S) 4-Bromofluorobenzene	*117*		*77.0-126*		*10/15/2023 10:18*	WG2151529
(S) 1,2-Dichloroethane-d4	*103*		*70.0-130*		*10/15/2023 10:18*	WG2151529

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND	J3	0.100	1	10/21/2023 06:25	WG2153934
C28-C40 Oil Range	ND		0.100	1	10/21/2023 06:25	WG2153934
(S) o-Terphenyl	*55.3*		*52.0-156*		*10/21/2023 06:25*	WG2153934

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/16/2023 20:02	WG2151585
Acenaphthene	ND		0.0000500	1	10/16/2023 20:02	WG2151585
Acenaphthylene	ND		0.0000500	1	10/16/2023 20:02	WG2151585
Benzo(a)anthracene	ND		0.0000500	1	10/16/2023 20:02	WG2151585
Benzo(a)pyrene	ND		0.0000500	1	10/16/2023 20:02	WG2151585
Benzo(b)fluoranthene	ND		0.0000500	1	10/16/2023 20:02	WG2151585
Benzo(g,h,i)perylene	ND		0.0000500	1	10/16/2023 20:02	WG2151585
Benzo(k)fluoranthene	ND		0.0000500	1	10/16/2023 20:02	WG2151585
Chrysene	ND		0.0000500	1	10/16/2023 20:02	WG2151585
Dibenz(a,h)anthracene	ND		0.0000500	1	10/16/2023 20:02	WG2151585
Fluoranthene	ND		0.000100	1	10/16/2023 20:02	WG2151585
Fluorene	ND		0.0000500	1	10/16/2023 20:02	WG2151585
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/16/2023 20:02	WG2151585
Naphthalene	ND		0.000250	1	10/16/2023 20:02	WG2151585
Phenanthrene	ND		0.0000500	1	10/16/2023 20:02	WG2151585
Pyrene	ND		0.0000500	1	10/16/2023 20:02	WG2151585
1-Methylnaphthalene	ND		0.000250	1	10/16/2023 20:02	WG2151585
2-Methylnaphthalene	ND		0.000250	1	10/16/2023 20:02	WG2151585
2-Chloronaphthalene	ND		0.000250	1	10/16/2023 20:02	WG2151585
(S) Nitrobenzene-d5	*115*		*31.0-160*		*10/16/2023 20:02*	WG2151585
(S) 2-Fluorobiphenyl	*95.3*		*48.0-148*		*10/16/2023 20:02*	WG2151585
(S) p-Terphenyl-d14	*107*		*37.0-146*		*10/16/2023 20:02*	WG2151585

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/19/2023 17:36	WG2154045
(S) a,a,a-Trifluorotoluene(FID)	*95.2*		*78.0-120*		*10/19/2023 17:36*	WG2154045

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/15/2023 10:39	WG2151529
Toluene	ND		0.00100	1	10/15/2023 10:39	WG2151529
Ethylbenzene	ND		0.00100	1	10/15/2023 10:39	WG2151529
Total Xylenes	ND		0.00300	1	10/15/2023 10:39	WG2151529
(S) Toluene-d8	*111*		*80.0-120*		*10/15/2023 10:39*	WG2151529
(S) 4-Bromofluorobenzene	*114*		*77.0-126*		*10/15/2023 10:39*	WG2151529
(S) 1,2-Dichloroethane-d4	*105*		*70.0-130*		*10/15/2023 10:39*	WG2151529

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	0.130	J3	0.100	1	10/21/2023 06:46	WG2153934
C28-C40 Oil Range	0.138		0.100	1	10/21/2023 06:46	WG2153934
(S) o-Terphenyl	*88.4*		*52.0-156*		*10/21/2023 06:46*	WG2153934

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/16/2023 20:19	WG2151585
Acenaphthene	ND		0.0000500	1	10/16/2023 20:19	WG2151585
Acenaphthylene	ND		0.0000500	1	10/16/2023 20:19	WG2151585
Benzo(a)anthracene	ND		0.0000500	1	10/16/2023 20:19	WG2151585
Benzo(a)pyrene	ND		0.0000500	1	10/16/2023 20:19	WG2151585
Benzo(b)fluoranthene	ND		0.0000500	1	10/16/2023 20:19	WG2151585
Benzo(g,h,i)perylene	ND		0.0000500	1	10/16/2023 20:19	WG2151585
Benzo(k)fluoranthene	ND		0.0000500	1	10/16/2023 20:19	WG2151585
Chrysene	ND		0.0000500	1	10/16/2023 20:19	WG2151585
Dibenz(a,h)anthracene	ND		0.0000500	1	10/16/2023 20:19	WG2151585
Fluoranthene	ND		0.000100	1	10/16/2023 20:19	WG2151585
Fluorene	ND		0.0000500	1	10/16/2023 20:19	WG2151585
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/16/2023 20:19	WG2151585
Naphthalene	ND		0.000250	1	10/16/2023 20:19	WG2151585
Phenanthrene	ND		0.0000500	1	10/16/2023 20:19	WG2151585
Pyrene	ND		0.0000500	1	10/16/2023 20:19	WG2151585
1-Methylnaphthalene	ND		0.000250	1	10/16/2023 20:19	WG2151585
2-Methylnaphthalene	ND		0.000250	1	10/16/2023 20:19	WG2151585
2-Chloronaphthalene	ND		0.000250	1	10/16/2023 20:19	WG2151585
(S) Nitrobenzene-d5	*111*		*31.0-160*		*10/16/2023 20:19*	WG2151585
(S) 2-Fluorobiphenyl	*92.6*		*48.0-148*		*10/16/2023 20:19*	WG2151585
(S) p-Terphenyl-d14	*103*		*37.0-146*		*10/16/2023 20:19*	WG2151585

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/19/2023 17:55	WG2154045
(S) a,a,a-Trifluorotoluene(FID)	*97.2*		*78.0-120*		*10/19/2023 17:55*	WG2154045

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/15/2023 11:00	WG2151529
Toluene	ND		0.00100	1	10/15/2023 11:00	WG2151529
Ethylbenzene	ND		0.00100	1	10/15/2023 11:00	WG2151529
Total Xylenes	ND		0.00300	1	10/15/2023 11:00	WG2151529
(S) Toluene-d8	*112*		*80.0-120*		*10/15/2023 11:00*	WG2151529
(S) 4-Bromofluorobenzene	*115*		*77.0-126*		*10/15/2023 11:00*	WG2151529
(S) 1,2-Dichloroethane-d4	*105*		*70.0-130*		*10/15/2023 11:00*	WG2151529

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	0.122	J3	0.100	1	10/21/2023 07:06	WG2153934
C28-C40 Oil Range	0.146		0.100	1	10/21/2023 07:06	WG2153934
(S) o-Terphenyl	*87.4*		*52.0-156*		*10/21/2023 07:06*	WG2153934

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/16/2023 20:37	WG2151585
Acenaphthene	ND		0.0000500	1	10/16/2023 20:37	WG2151585
Acenaphthylene	ND		0.0000500	1	10/16/2023 20:37	WG2151585
Benzo(a)anthracene	ND		0.0000500	1	10/16/2023 20:37	WG2151585
Benzo(a)pyrene	ND		0.0000500	1	10/16/2023 20:37	WG2151585
Benzo(b)fluoranthene	ND		0.0000500	1	10/16/2023 20:37	WG2151585
Benzo(g,h,i)perylene	ND		0.0000500	1	10/16/2023 20:37	WG2151585
Benzo(k)fluoranthene	ND		0.0000500	1	10/16/2023 20:37	WG2151585
Chrysene	ND		0.0000500	1	10/16/2023 20:37	WG2151585
Dibenz(a,h)anthracene	ND		0.0000500	1	10/16/2023 20:37	WG2151585
Fluoranthene	ND		0.000100	1	10/16/2023 20:37	WG2151585
Fluorene	ND		0.0000500	1	10/16/2023 20:37	WG2151585
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/16/2023 20:37	WG2151585
Naphthalene	ND		0.000250	1	10/16/2023 20:37	WG2151585
Phenanthrene	ND		0.0000500	1	10/16/2023 20:37	WG2151585
Pyrene	ND		0.0000500	1	10/16/2023 20:37	WG2151585
1-Methylnaphthalene	ND		0.000250	1	10/16/2023 20:37	WG2151585
2-Methylnaphthalene	ND		0.000250	1	10/16/2023 20:37	WG2151585
2-Chloronaphthalene	ND		0.000250	1	10/16/2023 20:37	WG2151585
(S) Nitrobenzene-d5	*108*		*31.0-160*		*10/16/2023 20:37*	WG2151585
(S) 2-Fluorobiphenyl	*88.4*		*48.0-148*		*10/16/2023 20:37*	WG2151585
(S) p-Terphenyl-d14	*99.5*		*37.0-146*		*10/16/2023 20:37*	WG2151585

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/19/2023 18:14	WG2154045
(S) a,a,a-Trifluorotoluene(FID)	*97.7*		*78.0-120*		*10/19/2023 18:14*	WG2154045

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/15/2023 11:23	WG2151529
Toluene	ND		0.00100	1	10/15/2023 11:23	WG2151529
Ethylbenzene	ND		0.00100	1	10/15/2023 11:23	WG2151529
Total Xylenes	ND		0.00300	1	10/15/2023 11:23	WG2151529
(S) Toluene-d8	*98.9*		*80.0-120*		*10/15/2023 11:23*	WG2151529
(S) 4-Bromofluorobenzene	*102*		*77.0-126*		*10/15/2023 11:23*	WG2151529
(S) 1,2-Dichloroethane-d4	*106*		*70.0-130*		*10/15/2023 11:23*	WG2151529

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND	J3	0.100	1	10/21/2023 07:26	WG2153934
C28-C40 Oil Range	ND		0.100	1	10/21/2023 07:26	WG2153934
(S) o-Terphenyl	*78.9*		*52.0-156*		*10/21/2023 07:26*	WG2153934

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/16/2023 20:54	WG2151585
Acenaphthene	ND		0.0000500	1	10/16/2023 20:54	WG2151585
Acenaphthylene	ND		0.0000500	1	10/16/2023 20:54	WG2151585
Benzo(a)anthracene	ND		0.0000500	1	10/16/2023 20:54	WG2151585
Benzo(a)pyrene	ND		0.0000500	1	10/16/2023 20:54	WG2151585
Benzo(b)fluoranthene	ND		0.0000500	1	10/16/2023 20:54	WG2151585
Benzo(g,h,i)perylene	ND		0.0000500	1	10/16/2023 20:54	WG2151585
Benzo(k)fluoranthene	ND		0.0000500	1	10/16/2023 20:54	WG2151585
Chrysene	ND		0.0000500	1	10/16/2023 20:54	WG2151585
Dibenz(a,h)anthracene	ND		0.0000500	1	10/16/2023 20:54	WG2151585
Fluoranthene	ND		0.000100	1	10/16/2023 20:54	WG2151585
Fluorene	ND		0.0000500	1	10/16/2023 20:54	WG2151585
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/16/2023 20:54	WG2151585
Naphthalene	ND		0.000250	1	10/16/2023 20:54	WG2151585
Phenanthrene	ND		0.0000500	1	10/16/2023 20:54	WG2151585
Pyrene	ND		0.0000500	1	10/16/2023 20:54	WG2151585
1-Methylnaphthalene	ND		0.000250	1	10/16/2023 20:54	WG2151585
2-Methylnaphthalene	ND		0.000250	1	10/16/2023 20:54	WG2151585
2-Chloronaphthalene	ND		0.000250	1	10/16/2023 20:54	WG2151585
(S) Nitrobenzene-d5	*108*		*31.0-160*		*10/16/2023 20:54*	WG2151585
(S) 2-Fluorobiphenyl	*90.0*		*48.0-148*		*10/16/2023 20:54*	WG2151585
(S) p-Terphenyl-d14	*103*		*37.0-146*		*10/16/2023 20:54*	WG2151585

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/19/2023 18:33	WG2154045
(S) a,a,a-Trifluorotoluene(FID)	*97.4*		*78.0-120*		*10/19/2023 18:33*	WG2154045

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/15/2023 11:43	WG2151529
Toluene	ND		0.00100	1	10/15/2023 11:43	WG2151529
Ethylbenzene	ND		0.00100	1	10/15/2023 11:43	WG2151529
Total Xylenes	ND		0.00300	1	10/15/2023 11:43	WG2151529
(S) Toluene-d8	*126*	J1	*80.0-120*		*10/15/2023 11:43*	WG2151529
(S) 4-Bromofluorobenzene	*115*		*77.0-126*		*10/15/2023 11:43*	WG2151529
(S) 1,2-Dichloroethane-d4	*92.4*		*70.0-130*		*10/15/2023 11:43*	WG2151529

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND	J3	0.100	1	10/21/2023 07:46	WG2153934
C28-C40 Oil Range	ND		0.100	1	10/21/2023 07:46	WG2153934
(S) o-Terphenyl	*94.7*		*52.0-156*		*10/21/2023 07:46*	WG2153934

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/16/2023 21:11	WG2151585
Acenaphthene	ND		0.0000500	1	10/16/2023 21:11	WG2151585
Acenaphthylene	ND		0.0000500	1	10/16/2023 21:11	WG2151585
Benzo(a)anthracene	ND		0.0000500	1	10/16/2023 21:11	WG2151585
Benzo(a)pyrene	ND		0.0000500	1	10/16/2023 21:11	WG2151585
Benzo(b)fluoranthene	ND		0.0000500	1	10/16/2023 21:11	WG2151585
Benzo(g,h,i)perylene	ND		0.0000500	1	10/16/2023 21:11	WG2151585
Benzo(k)fluoranthene	ND		0.0000500	1	10/16/2023 21:11	WG2151585
Chrysene	ND		0.0000500	1	10/16/2023 21:11	WG2151585
Dibenz(a,h)anthracene	ND		0.0000500	1	10/16/2023 21:11	WG2151585
Fluoranthene	ND		0.000100	1	10/16/2023 21:11	WG2151585
Fluorene	ND		0.0000500	1	10/16/2023 21:11	WG2151585
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/16/2023 21:11	WG2151585
Naphthalene	ND		0.000250	1	10/16/2023 21:11	WG2151585
Phenanthrene	ND		0.0000500	1	10/16/2023 21:11	WG2151585
Pyrene	ND		0.0000500	1	10/16/2023 21:11	WG2151585
1-Methylnaphthalene	ND		0.000250	1	10/16/2023 21:11	WG2151585
2-Methylnaphthalene	ND		0.000250	1	10/16/2023 21:11	WG2151585
2-Chloronaphthalene	ND		0.000250	1	10/16/2023 21:11	WG2151585
(S) Nitrobenzene-d5	*106*		*31.0-160*		*10/16/2023 21:11*	WG2151585
(S) 2-Fluorobiphenyl	*89.5*		*48.0-148*		*10/16/2023 21:11*	WG2151585
(S) p-Terphenyl-d14	*97.9*		*37.0-146*		*10/16/2023 21:11*	WG2151585

Method Blank (MB)

(MB) R3988703-2 10/19/23 11:38

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPH (GC/FID) Low Fraction	U		0.0314	0.100
(S) a,a,a-Trifluorotoluene(FID)	*96.3*			*78.0-120*

Laboratory Control Sample (LCS)

(LCS) R3988703-1 10/19/23 10:52

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.78	105	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*102*	*78.0-120*	

Method Blank (MB)

(MB) R3987957-3 10/15/23 04:42

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	0.000316	J	0.0000941	0.00100
Toluene	U		0.000278	0.00100
Ethylbenzene	U		0.000137	0.00100
Total Xylenes	U		0.000174	0.00300
(S) Toluene-d8	*114*			*80.0-120*
(S) 4-Bromofluorobenzene	*117*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*103*			*70.0-130*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3987957-1 10/15/23 03:18 • (LCSD) R3987957-2 10/15/23 03:39

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.00500	0.00523	0.00493	105	98.6	70.0-123			5.91	20
Toluene	0.00500	0.00488	0.00468	97.6	93.6	79.0-120			4.18	20
Ethylbenzene	0.00500	0.00457	0.00447	91.4	89.4	79.0-123			2.21	20
Total Xylenes	0.0150	0.0141	0.0136	94.0	90.7	79.0-123			3.61	20
(S) Toluene-d8				*109*	*110*	*80.0-120*				
(S) 4-Bromofluorobenzene				*115*	*114*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*106*	*102*	*70.0-130*				

Method Blank (MB)

(MB) R3989366-1 10/20/23 22:02

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
C10-C28 Diesel Range	U		0.0222	0.100
C28-C40 Oil Range	U		0.0118	0.100
(S) o-Terphenyl	*93.5*			*52.0-156*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3989366-2 10/20/23 22:30 • (LCSD) R3989366-3 10/20/23 22:56

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	1.50	1.87	1.44	125	96.0	50.0-150		J3	26.0	20
(S) o-Terphenyl				*121*	*90.0*	*52.0-156*				

Method Blank (MB)

(MB) R3988181-2 10/16/23 14:16

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Anthracene	U		0.0000190	0.0000500
Acenaphthene	U		0.0000190	0.0000500
Acenaphthylene	U		0.0000171	0.0000500
Benzo(a)anthracene	U		0.0000203	0.0000500
Benzo(a)pyrene	U		0.0000184	0.0000500
Benzo(b)fluoranthene	U		0.0000168	0.0000500
Benzo(g,h,i)perylene	U		0.0000184	0.0000500
Benzo(k)fluoranthene	U		0.0000202	0.0000500
Chrysene	U		0.0000179	0.0000500
Dibenz(a,h)anthracene	U		0.0000160	0.0000500
Fluoranthene	U		0.0000270	0.000100
Fluorene	U		0.0000169	0.0000500
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500
Naphthalene	U		0.0000917	0.000250
Phenanthrene	U		0.0000180	0.0000500
Pyrene	U		0.0000169	0.0000500
1-Methylnaphthalene	U		0.0000687	0.000250
2-Methylnaphthalene	U		0.0000674	0.000250
2-Chloronaphthalene	U		0.0000682	0.000250
(S) Nitrobenzene-d5	*111*			*31.0-160*
(S) 2-Fluorobiphenyl	*89.0*			*48.0-148*
(S) p-Terphenyl-d14	*100*			*37.0-146*

Laboratory Control Sample (LCS)

(LCS) R3988181-1 10/16/23 13:58

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0100	0.00985	98.5	67.0-150	
Acenaphthene	0.0100	0.00920	92.0	65.0-138	
Acenaphthylene	0.0100	0.0106	106	66.0-140	
Benzo(a)anthracene	0.0100	0.0107	107	61.0-140	
Benzo(a)pyrene	0.0100	0.0113	113	60.0-143	
Benzo(b)fluoranthene	0.0100	0.00974	97.4	58.0-141	
Benzo(g,h,i)perylene	0.0100	0.00925	92.5	52.0-153	
Benzo(k)fluoranthene	0.0100	0.00987	98.7	58.0-148	
Chrysene	0.0100	0.0103	103	64.0-144	
Dibenz(a,h)anthracene	0.0100	0.0103	103	52.0-155	
Fluoranthene	0.0100	0.0107	107	69.0-153	

Laboratory Control Sample (LCS)

(LCS) R3988181-1 10/16/23 13:58

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0100	0.0103	103	64.0-136	
Indeno(1,2,3-cd)pyrene	0.0100	0.0116	116	54.0-153	
Naphthalene	0.0100	0.00908	90.8	61.0-137	
Phenanthrene	0.0100	0.00959	95.9	62.0-137	
Pyrene	0.0100	0.0105	105	60.0-142	
1-Methylnaphthalene	0.0100	0.00994	99.4	66.0-142	
2-Methylnaphthalene	0.0100	0.00944	94.4	62.0-136	
2-Chloronaphthalene	0.0100	0.00942	94.2	64.0-140	
(S) Nitrobenzene-d5			*114*	*31.0-160*	
(S) 2-Fluorobiphenyl			*94.5*	*48.0-148*	
(S) p-Terphenyl-d14			*95.0*	*37.0-146*	

L1665985-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1665985-01 10/16/23 14:33 • (MS) R3988181-3 10/16/23 14:50 • (MSD) R3988181-4 10/16/23 15:08

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.00952	ND	0.00941	0.00899	98.8	94.4	1	56.0-156			4.57	20
Acenaphthene	0.00952	ND	0.00900	0.00843	94.5	88.6	1	44.0-153			6.54	20
Acenaphthylene	0.00952	ND	0.0105	0.00979	110	103	1	53.0-150			7.00	20
Benzo(a)anthracene	0.00952	ND	0.0107	0.0101	112	106	1	47.0-151			5.77	20
Benzo(a)pyrene	0.00952	ND	0.0112	0.0108	118	113	1	45.0-146			3.64	20
Benzo(b)fluoranthene	0.00952	ND	0.00978	0.00937	103	98.4	1	43.0-142			4.28	20
Benzo(g,h,i)perylene	0.00952	ND	0.00918	0.00884	96.4	92.9	1	40.0-147			3.77	20
Benzo(k)fluoranthene	0.00952	ND	0.00991	0.00954	104	100	1	43.0-148			3.80	21
Chrysene	0.00952	ND	0.0105	0.00995	110	105	1	50.0-148			5.38	20
Dibenz(a,h)anthracene	0.00952	ND	0.0102	0.00971	107	102	1	37.0-151			4.92	20
Fluoranthene	0.00952	ND	0.0104	0.0100	109	105	1	56.0-157			3.92	20
Fluorene	0.00952	ND	0.0101	0.00956	106	100	1	48.0-148			5.49	20
Indeno(1,2,3-cd)pyrene	0.00952	ND	0.0118	0.0112	124	118	1	41.0-148			5.22	20
Naphthalene	0.00952	ND	0.00889	0.00836	93.4	87.8	1	10.0-160			6.14	20
Phenanthrene	0.00952	ND	0.00942	0.00914	98.9	96.0	1	47.0-147			3.02	20
Pyrene	0.00952	ND	0.0105	0.00983	110	103	1	51.0-148			6.59	20
1-Methylnaphthalene	0.00952	ND	0.00972	0.00918	102	96.4	1	21.0-160			5.71	20
2-Methylnaphthalene	0.00952	ND	0.00923	0.00873	97.0	91.7	1	31.0-160			5.57	20
2-Chloronaphthalene	0.00952	ND	0.00912	0.00861	95.8	90.4	1	52.0-148			5.75	20
(S) Nitrobenzene-d5					*115*	*116*		*31.0-160*				
(S) 2-Fluorobiphenyl					*97.4*	*96.8*		*48.0-148*				
(S) p-Terphenyl-d14					*99.5*	*101*		*37.0-146*				

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J3	The associated batch QC was outside the established quality control range for precision.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Company Name/Address:
Rio Grande Resources Corp
219 S 2nd St
Raton, NM 87740

Billing Information:
Bruce Norquist
PO Box 1150
Grants , NM 87020

Pres Chk

Report to: Eric Roads

Email To: eroads@enganalytics.com;tdavis@enganalytics.

Project Description: Mt Taylor

City/State Collected: Grants, New Mexico

Please Circle: PT MT CT ET

Phone: 970-488-3111

Client Project # 111360

Lab Project # RIOGRAGNM-MTTAYLOR

Collected by (print): Tyler Davis

Site/Facility ID # –

P.O. # –

Collected by (signature): Tyler Davis

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote # –

Date Results Needed

Immediately Packed on Ice N ___ Y ✓

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

Pace PEOPLE ADVANCING SCIENCE

MT JULIET, TN

12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L1666531

Ta H088

Acctnum: RIOGRAGNM
Template: T238214
Prelogin: P1026344
PM: 732 - Donna Eidson
PB: NG 9/22/23
Shipped Via: FedEX Ground

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	DROOROLVI 40mlAmb-HCl-BT	GRO 40mlAmb HCl	PAHSIMLVI 40mlAmb-NoPres-WT	SV8270PAH 4ozClr-NoPres	V8260BTEX 40mlAmb-HCl	V8260BTEX 40mlAmb/MeOH10ml/Syr	Remarks	Sample # (lab only)
MT-GW-TS781-DW10-100923-K3	Grab	GW	781	10-9-23	0928	9	X	X	X		X			-01
MT-GW-TS781-DW10-100923-K2	Grab	GW	781	10-9-23	1003	9	X	X	X		X			-02
MT-GW-TS781-DW10-100923-	Grab	GW	781	10-9-23	1022	9	X	X	X		X			-03
MT-GW-TS463-DW10-100923-K3	Grab	GW	463	10-9-23	1053	9	X	X	X		X			-04
MT-GW-TS463-DW10-100923	Grab	GW	463	10-9-23	1223	9	X	X	X		X			-05
MT-GW-TS961-DW8-100923-K3	Grab	GW	961	10-9-23	1450	9	X	X	X		X			-06
MT-GW-TS961-DW8-100923-K1	Grab	GW	961	10-9-23	1558	9	X	X	X		X			-07
MT-GW-TS961-DW8-100923	Grab	GW	961	10-9-23	1558	9	X	X	X		X			-08
MT-GW-TS840-DW8-100923-K3	Grab	GW	840	10-9-23	1633	9	X	X	X		X			-09
MT-GW-TS840-DW8-100923	Grab	GW	840	10-9-23	1724	9	X	X	X		X			-10

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks: Some samples had effervescence during sampling and developed air in bottle after filling

pH _____ Temp _____
Flow _____ Other _____

Samples returned via: __ UPS __ FedEx __ Courier _____

Tracking # 6841 8349 2618

Sample Receipt Checklist
COC Seal Present/Intact: __NP ✓Y __N
COC Signed/Accurate: ✓Y __N
Bottles arrive intact: ✓Y __N
Correct bottles used: ✓Y __N
Sufficient volume sent: ✓Y __N
If Applicable
VOA Zero Headspace: ✓Y __N
Preservation Correct/Checked: __Y __N
RAD Screen <0.5 mR/hr: ✓Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR
[signature]	10-12-2023	1709		1
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: DRAB °C 2.7+0=2.7 Bottles Received: 90
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) [signature] (18)	Date: 10/13/23 Time: 0900

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

10/14-NCF-L1666531 RIOGRAGNM

R5

Time estimate: oh **Time spent:** oh

Members

Hailey Melson (responsible) JVH John V Hawkins

Due on *18 October 2023 8:00 AM* for target *Done*

- [ ] Parameter(s) past holding time
- [ ] Temperature not in range
- [ ] Improper container type
- [ ] pH not in range
- [ ] Insufficient sample volume
- [ ] Sample is biphasic
- [x] Vials received with headspace
- [ ] Broken container
- [ ] Sufficient sample remains
- [ ] If broken container: Insufficient packing material around container
- [ ] If broken container: Insufficient packing material inside cooler
- [ ] If broken container: Improper handling by carrier:_____
- [ ] If broken container: Sample was frozen
- [ ] If broken container: Container lid not intact
- [ ] Client informed by Call
- [ ] Client informed by Email
- [ ] Client informed by Voicemail
- [x] Date/Time:_10-16-23__7:32_____
- [x] PM initials:_JVH_____
- [ ] Client Contact:_____

Comments

Hailey Melson *14 October 2023 10:09 AM*

For IDs: MT-GW-TS781-DW10-100923-, MT-GW-TS961-DW8-100923-K2, MT-GW-TS961-DW8-100923-, MT-GW-TS840-DW8-100923- all vials were received with headspace.

John V Hawkins *16 October 2023 7:33 AM*

Client noted on COC that they encountered effervesive during collection.

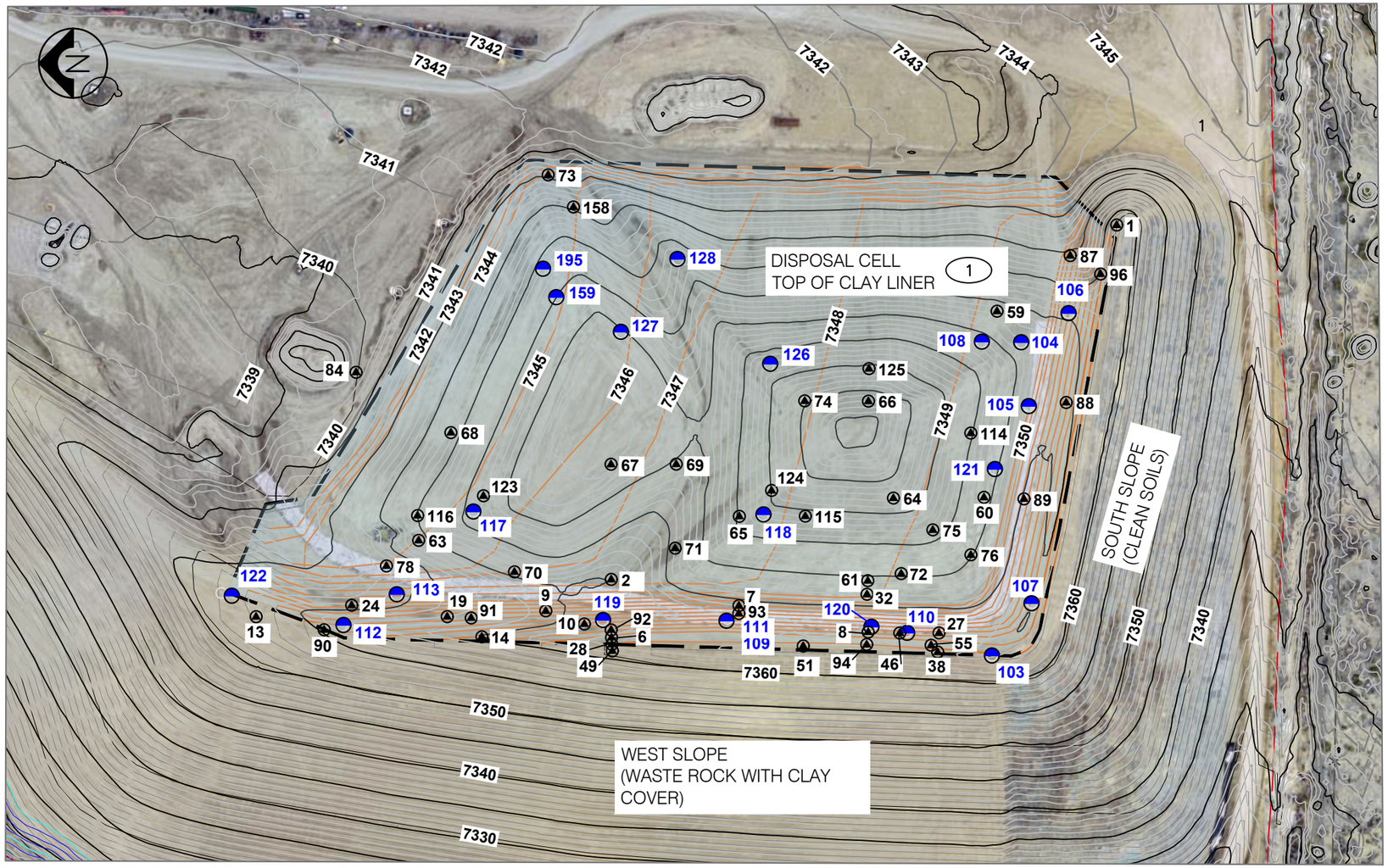
Proceed and qualify as needed.

Hailey Melson *17 October 2023 8:18 AM*

Done

APPENDIX J

Disposal Cell As-built Drawings

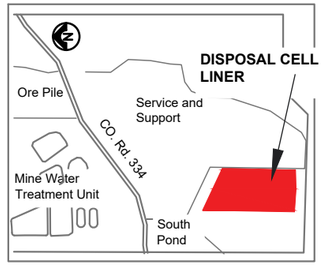


0 50 100 150 200 FT

GRAPHIC SCALE

AS-BUILT

Key Map



NOTES

(1) CLAY LINER IN DISPOSAL CELL - CONSISTING OF 1' THICK COMPACTED CLAY LINER IN SHADED AREA. ELEVATIONS PER CSTI SURVEY IN AUGUST 2018. TOTAL SURFACE AREA OF LINER = 4.7 ACRES

(2) LINER COMPACTION TESTS PERFORMED BY NV 5 FROM JULY 2018 TO NOVEMBER 2018. (SEE LEGEND BELOW.)

LEGEND

- 121 — CLAY LINER COMPACTION TEST LOCATION WITH TEST NUMBER
- 76 — SUBGRADE COMPACTION TEST LOCATION WITH TEST NUMBER
- CLAY LINER LOCATION
- CLAY LINER CONTOUR LINE (TOP OF CLAY LINER)
- EXISTING GRADES CONTOUR LINE

1. THE TOPO LINES AND ELEVATIONS SHOWN ON THIS PLAN REFLECT THE FINAL GRADES ON THE SURFACE OF THE CLAY LINER OF THE DISPOSAL CELL. TOPO SHOWN BASED ON SURVEY IN AUGUST 2018 BY CSTI, LLC AND ADJUSTED ACCORDING TO FIELD OBSERVATIONS BY EL ENGINEERING, LLC.

EDWARD O. LOESCHER
NEW MEXICO
18125
PROFESSIONAL ENGINEER

REV	DESCRIPTION	DATE	DRAWN BY	ENGINEER	APPROVED
AB	AS-BUILT DRAWING (2018)	1-26-2021	EL	EL	AK

RIO GRANDE RESOURCES CORP.
MOUNT TAYLOR MINE - *San Mateo, NM*

SHEET TITLE: DISPOSAL CELL CLAY LINER (AS-BUILT - AUGUST 2018)

Prepared By: Alan Kuhn Associates LLC

Drawn By: EL Engineering Services LLC

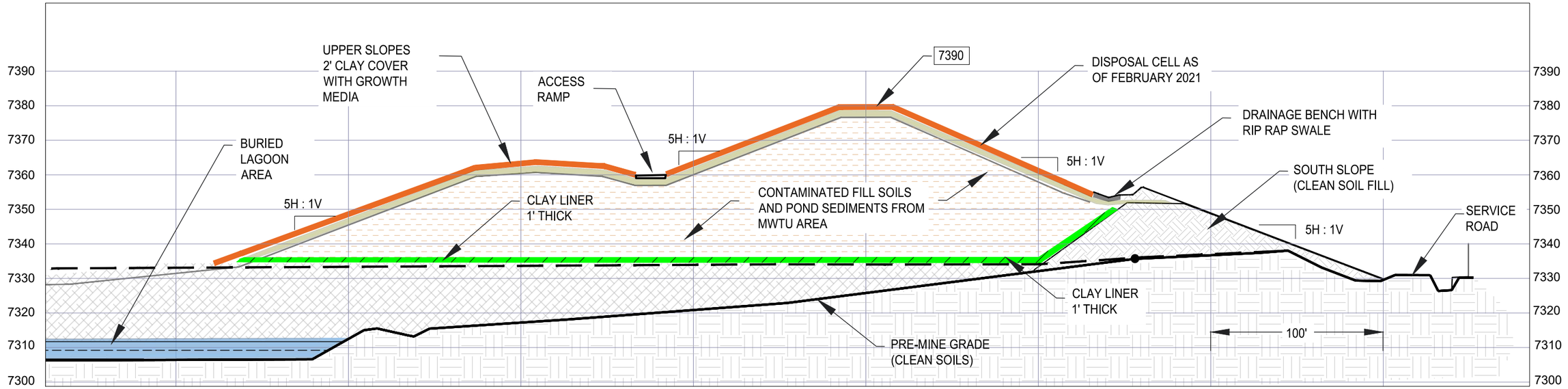
PRINT SIZE: B

SCALE: As Shown

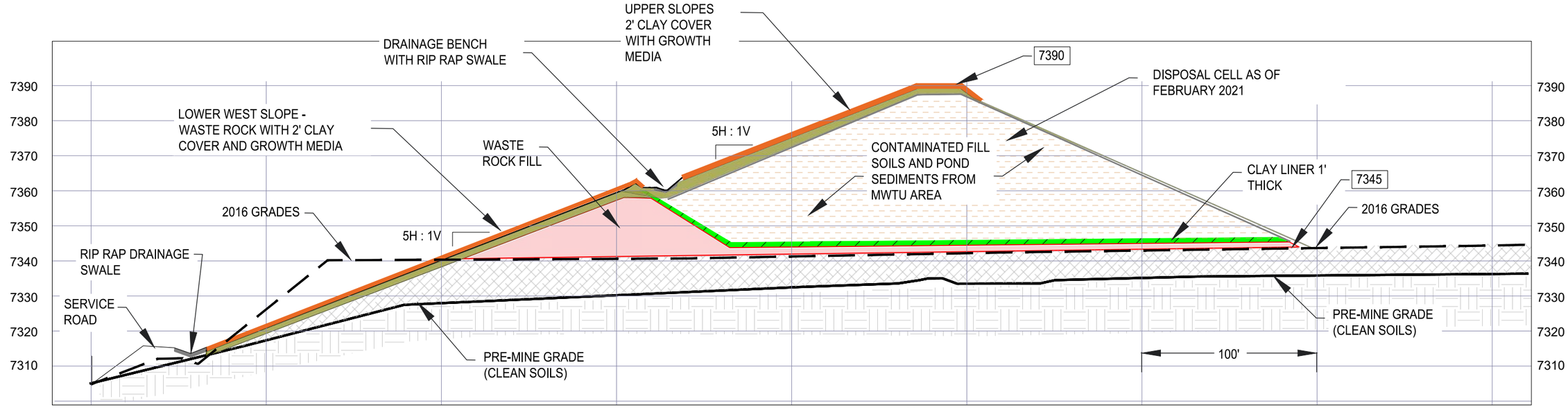
SHEET NO. SW06-AB

DWG NO. GSSW-CB106-AB

AB



AA SW01AB SECTION AA - N/S SECTION THROUGH WASTE ROCK PILE AND DISPOSAL CELL (FEBRUARY 2021)



BB SW01AB SECTION BB - E/W SECTION THROUGH EXISTING WASTE ROCK PILE AND DISPOSAL CELL (FEBRUARY 2021)

AS-BUILT

NOTE: SITE TOPOGRAPHY BASED ON SURVEY DATA BYS3
DISPOSAL CELL SURVEY PERFORMED ON FEBRUARY 2, 2021.

0 30 60 90 120 FT
GRAPHIC SCALE

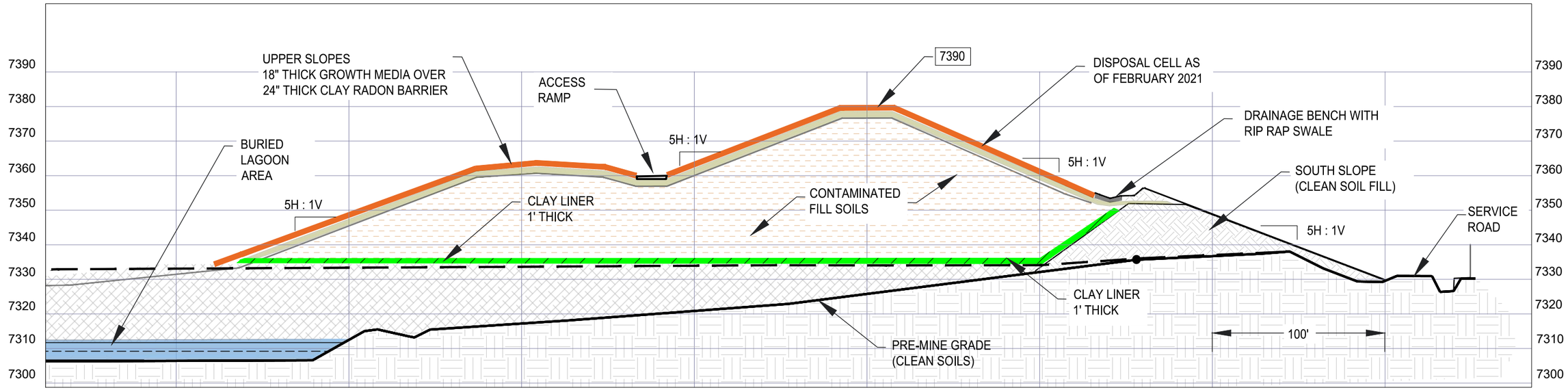
(VERTICAL SCALE = 2X HORIZONTAL)

EDWARD O. LOESCHER NEW MEXICO 18125 PROFESSIONAL ENGINEER

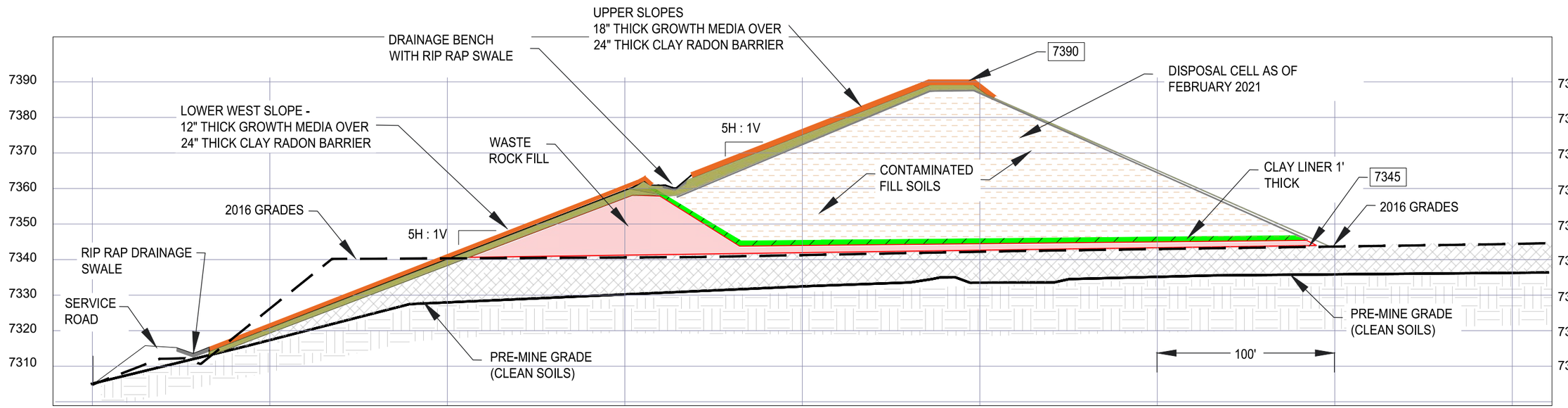
RIO GRANDE RESOURCES CORP.
MOUNT TAYLOR MINE - *San Mateo, NM*

SHEET TITLE: SECTIONS THROUGH THE DISPOSAL CELL (AS-BUILT FEBRUARY 2021)

Prepared By:	Drawn By:	PRINT SIZE:	SHEET NO.	DWG NO.	
Alan Kuhn Associates LLC	EL Engineering Services LLC	B SCALE: As Shown	SW02AB	GSSW-CB02-AB	AB



AA / SW01AB SECTION AA - N/S SECTION THROUGH WASTE ROCK PILE AND DISPOSAL CELL
(FEBRUARY 2021)



BB / SW01AB SECTION BB - E/W SECTION THROUGH EXISTING WASTE ROCK PILE AND DISPOSAL CELL
(FEBRUARY 2021)

AS-BUILT

NOTE: SITE TOPOGRAPHY BASED ON SURVEY DATA BYS3
DISPOSAL CELL SURVEY PERFORMED ON FEBRUARY 2, 2021.

0 30 60 90 120 FT
GRAPHIC SCALE

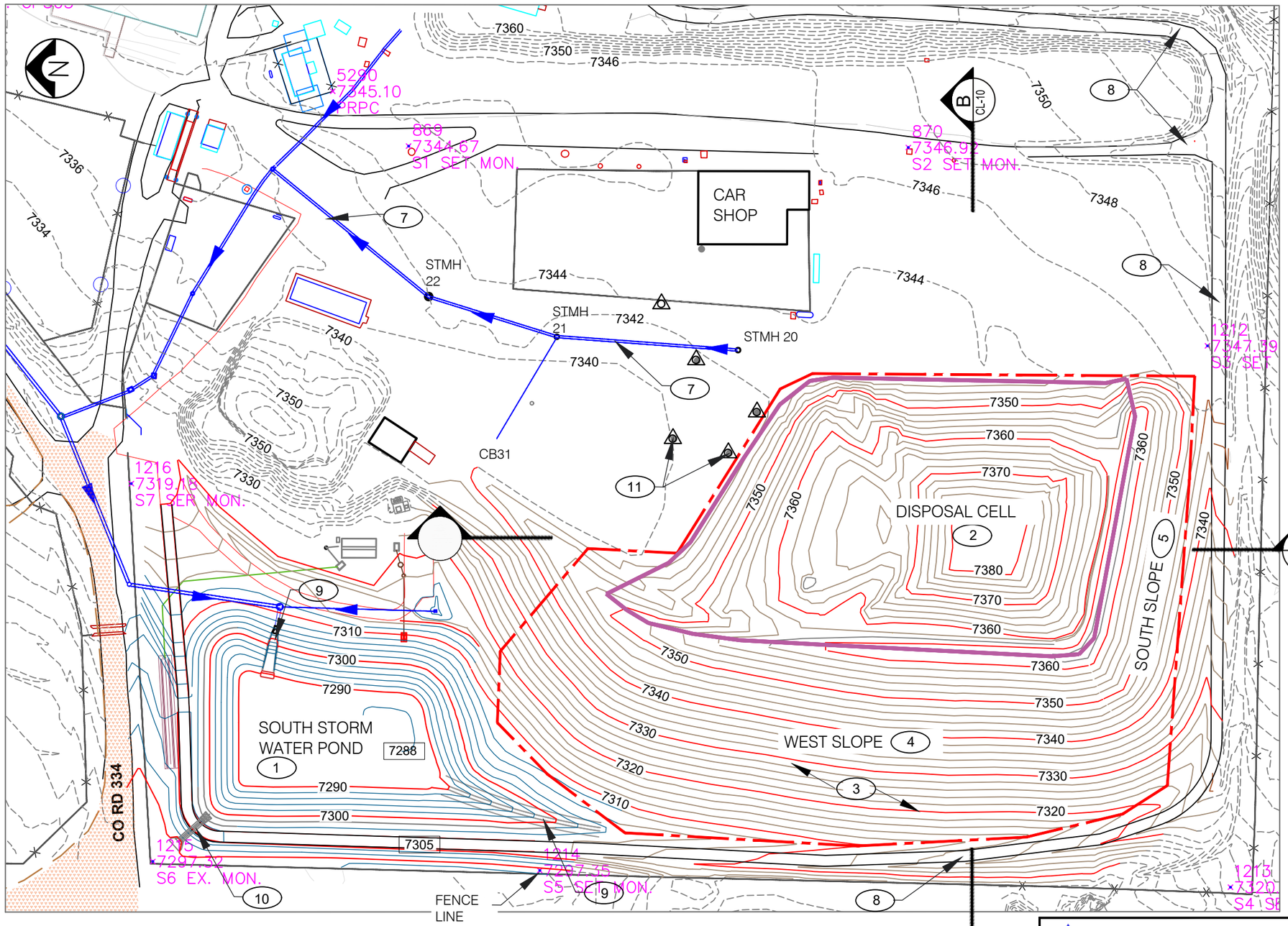
(VERTICAL SCALE = 2X HORIZONTAL)

EDWARD O. LOESCHER
NEW MEXICO
18125
PROFESSIONAL ENGINEER

RIO GRANDE RESOURCES CORP.
MOUNT TAYLOR MINE - *San Mateo, NM*

SHEET TITLE: SECTIONS THROUGH THE DISPOSAL CELL (AS-BUILT FEBRUARY 2021)

Prepared By:	Drawn By:	PRINT SIZE:	SHEET NO.	DWG NO.	
Alan Kuhn Associates LLC	EL Engineering Services LLC	B SCALE: As Shown	SW02AB	GSSW-CB02-AB	AB



NOTES:

1. SOUTH STORM WATER POND WITH 2' THICK CLAY LINER
2. WASTE ROCK PILE AS OF DECEMBER 2019
3. WASTE ROCK PILE SLOPES = 5H TO 1V
4. WEST SLOPE = WASTE ROCK WITH 2' RADON BARRIER COVER SOILS.
5. SOUTH SLOPE = CONSTRUCTED WITH CLEAN SOILS
6. THE DISPOSAL CELL CONTOURS REFLECT THE TOP OF THE CONTAMINATED FILL AT THE END OF 2019. ADDITIONAL FILL AND THE RADON BARRIER CLAY COVER SOILS ARE PLACED IN 2020.
7. STORM DRAINAGE PIPES, MANHOLES
8. SERVICE ROADS
9. CONCRETE CHUTE
10. OVERFLOW PIPES = 2 -24" DIA.CMP PIPES
11. LAGOON DEWATERING WELLS.

LEGEND

- 0000 SPOT ELEVATIONS
- EXISTING CONTOURS
- SOUTH POND CONTOURS
- 2' INTERVAL CONTOURS
- 10' INTERVAL CONTOURS
- DRAINAGE PIPES
- EXTENTS OF 1' THICK CLAY LINER
- WASTE ROCK PILE LIMITS = 11.5 ACRES

NOTE: SITE TOPOGRAPHY BASED ON SURVEY DATA BY CSTI.
DISPOSAL CELL SURVEY PERFORMED ON DECEMBER 06, 2019.
CONTOUR INTERVALS = 2' VERTICAL.

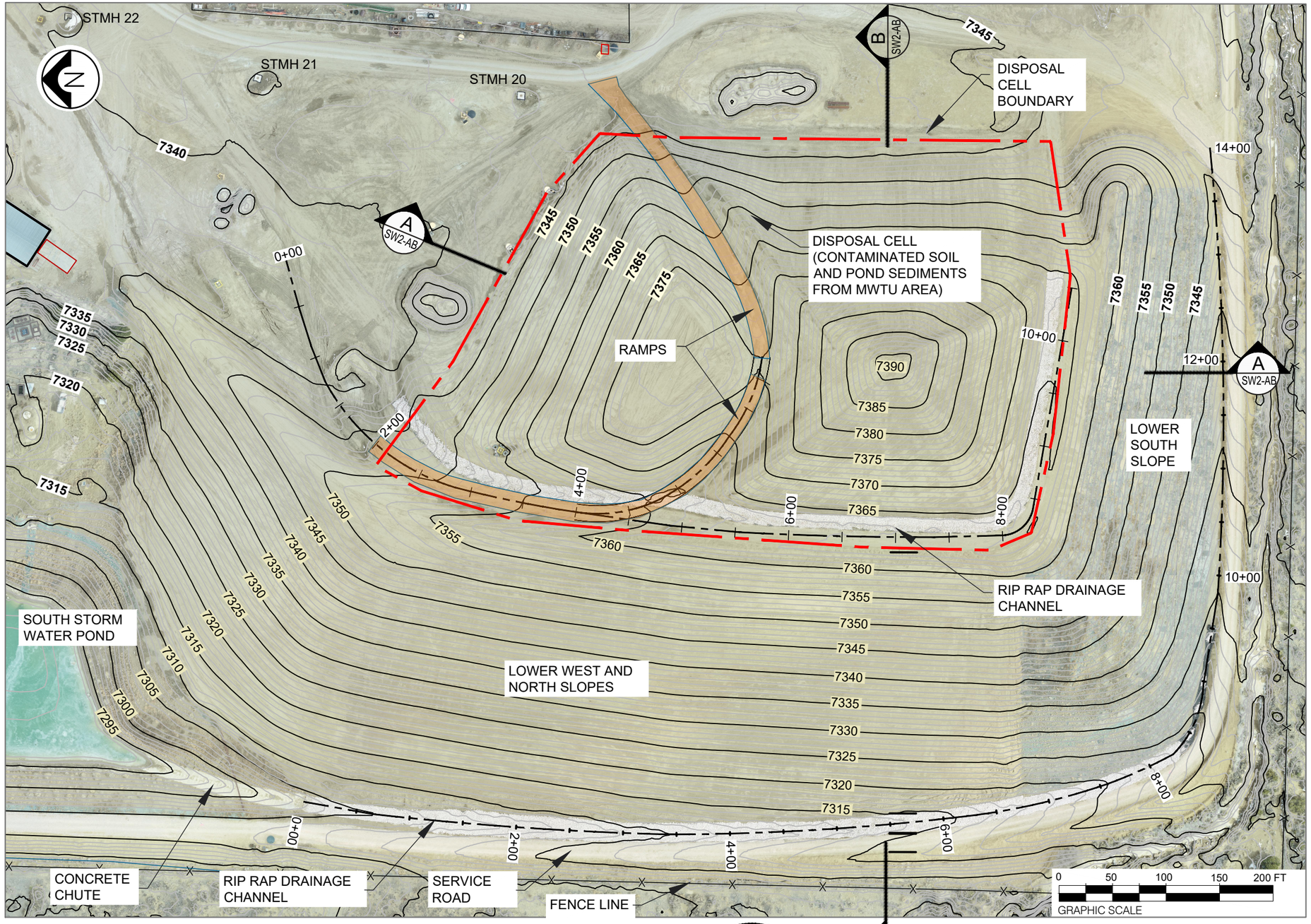
0 75 150 225 300 FT
GRAPHIC SCALE

AS-BUILT

RIO GRANDE RESOURCES CORP.
MOUNT TAYLOR MINE - *San Mateo, NM*

SHEET TITLE: WASTE ROCK PILE / DISPOSAL CELL (AS-BUILT DECEMBER 2019)

Prepared By:	Drawn By:	PRINT SIZE:	SHEET NO.	DWG NO.	
Alan Kuhn Associates LLC	EL Engineering Services LLC	B SCALE: As Shown	SW01-AB	GSSW-CB101-AB	AB



1. THE TOPO LINES (1' CONTOURS) AND ELEVATIONS SHOWN ON THIS PLAN REFLECT THE GRADES OF THE WASTE ROCK PILE / DISPOSAL CELL ON FEBRUARY 2, 2021. THE BACKGROUND PHOTO AND TOPOGRAPHIC INFORMATION IS BASED ON THE DRONE SURVEY BY S3 SURVEYORS DATED 2-2-2021.

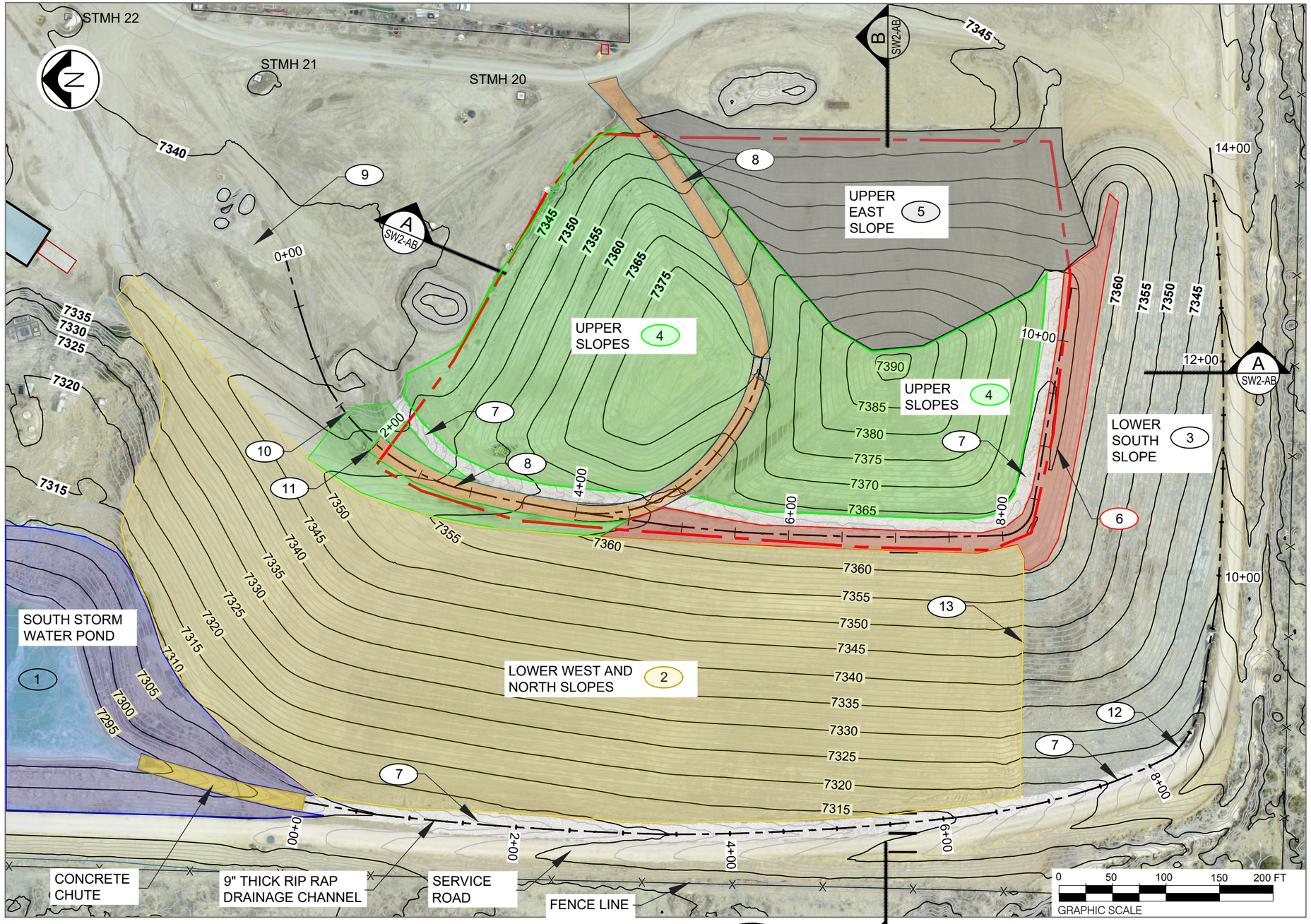
EDWARD O. LOESCHER NEW MEXICO 18125 PROFESSIONAL ENGINEER

AS-BUILT

RIO GRANDE RESOURCES CORP.
MOUNT TAYLOR MINE - *San Mateo, NM*

SHEET TITLE: WASTE ROCK PILE / DISPOSAL CELL AS-BUILT - FEBRUARY 2021

Prepared By:	Drawn By:	PRINT SIZE:	SHEET NO.	DWG NO.	
Alan Kuhn Associates LLC	EL Engineering Services LLC	B SCALE: As Shown	SW01-AB	GSSW-CB101-AB	AB



NOTES AND LEGEND:

1. SOUTH STORM WATER POND - CLEAN SOIL COVERED WITH 2' THICK CLAY LINER AND 6" SOIL PROTECTIVE COVER.
2. LOWER WEST AND NORTH SLOPES - WASTE ROCK COVERED WITH 2' THICK CLAY RADON BARRIER AND 12" LOAM GROWTH MEDIA.
3. LOWER SOUTH SLOPE - CONSTRUCTED WITH CLEAN SOILS.
4. UPPER SLOPES - CONTAMINATED SOILS COVERED WITH 2' THICK CLAY RADON BARRIER AND 18" LOAM GROWTH MEDIA.
5. UPPER EAST SLOPE - CONTAMINATED SOILS COVERED WITH 6" THICK CLAY.
6. DRAINAGE BENCH - 2' THICK CLAY RADON BARRIER AND LOAM GROWTH MEDIA OF VARYING THICKNESS.
7. RIP RAP - 9" TO 12" THICK - WIDTH VARIES - ARMOR FOR DRAINAGE SWALE
8. ACCESS RAMPS - 2' THICK CLAY RADON BARRIER AND 6" ROAD GRAVEL COVER.
9. FUTURE TOE OF RAMP OUTLINE.
10. CLAY RADON BARRIER ENDS AT STATION 1+60.
11. RAMP GRADING ENDS AT STATION 2+00.
12. LOWER RIP RAP CHANNEL ENDS AT STATION 8+20
13. LOAM GROWTH MEDIA ON LOWER WEST SLOPE ENDS AT STATION 6+60

1. THE TOPO LINES (1' CONTOURS) AND ELEVATIONS SHOWN ON THIS PLAN REFLECT THE GRADES OF THE WASTE ROCK PILE / DISPOSAL CELL ON FEBRUARY 2, 2021. THE BACKGROUND PHOTO AND TOPOGRAPHIC INFORMATION IS BASED ON THE DRONE SURVEY BY S3 SURVEYORS DATED 2-2-2021.

AS-BUILT

EDWARD O. LOESCHER NEW MEXICO 18125 PROFESSIONAL ENGINEER

RIO GRANDE RESOURCES CORP.
MOUNT TAYLOR MINE - *San Mateo, NM*

SHEET TITLE: WASTE ROCK PILE / DISPOSAL CELL AS-BUILT - FEBRUARY 2021

Prepared By:	Drawn By:	PRINT SIZE:	SHEET NO.	DWG NO.	
Alan Kuhn Associates LLC	EL Engineering Services LLC	B SCALE: As Shown	SW01-AB	GSSW-CB101-AB	AB

APPENDIX K

Expanded Disposal Cell Design Report

Expanded Disposal Cell Design

Mt. Taylor Mine

Existing Mine Permit No. CI002RE

Prepared for:

Rio Grande Resources Corporation

P.O. Box 1150

Grants, NM 87020

Prepared by:

Engineering Analytics, Inc.
Now Part of MacKay

1600 Specht Point Road, Suite 209
Fort Collins, Colorado 80525
(970) 488-3111
Fax (970) 488-3112

Project No. 111360

November 27, 2025
Rev 1 – September 8, 2026

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ABBREVIATIONS

ASTM	American Society for Testing and Materials
bgs	Below Ground Surface
CCD	Counter-current Decantation
cy	Cubic Yards
DBS&A	Daniel B. Stephens & Associates, Inc.
DQO	Data Quality Objectives
EA	Engineering Analytics, Inc.
EPA	Environmental Protection Agency
g	The unit for peak ground acceleration, the acceleration due to Earth's gravity
IPCC	Intergovernmental Panel on Climate Change
HDPE	High Density Polyethylene
K	Hydraulic Conductivity
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MSL	Mean Sea Level
NOAA	National Oceanic and Atmospheric Administration
NRC	Nuclear Regulatory Commission
pcf	Pounds per Cubic Foot
pCi	picoCuries
PI	Plasticity Index
QAPP	Quality Assurance Project Plan
SWCC	Soil Water Characteristic Curves
SOPs	Standard Operating Procedures
TEDE	Total Effective Dose Equivalent
UMTRCA	Uranium Mill Tailings Radiation Control Act
USCS	Unified Soil Classification System
USGS	United States Geological Survey
UDEQ/DWMRC	Utah Department of Environmental Quality, Division of Waste Management and Radiation Control
DRC	Division of Radiation Control

1.0 INTRODUCTION

This report presents a comprehensive, regulator-ready engineering plan for the expansion of the permanent disposal cell at the Mt. Taylor Uranium Mine facility, located in Cibola County, New Mexico. The primary objective of this reclamation undertaking is to ensure the safe, efficient, and centralized containment of waste streams generated during historic mining operations, extended standby periods, and recent closure activities. These waste streams include legacy radioactive materials, radiologically contaminated soils, and localized volumes of non-hazardous diesel-impacted soils that require permanent engineered isolation. The proposed expansion is designed to comply with applicable state and federal regulations and to provide long-term protection of human health and the surrounding environment. The key regulatory frameworks governing this design include standards issued by the U.S. Nuclear Regulatory Commission (NRC), the U.S. Environmental Protection Agency (EPA), and the New Mexico Environment Department (NMED).

The technical foundation for this disposal cell expansion centers on an optimized, multi-layered engineered cover system designed to perform effectively in a semi-arid climate. The cover system relies on locally sourced clay borrow materials, as characterized during the January 2025 field investigation, to form a low-permeability radon barrier, overlain by protective soil and erosion-resistant rock mulch layers. This revision (Rev 1) incorporates three supplemental technical analyses completed subsequent to the original report: (1) a cover optimization memorandum evaluating reduction of overall cover thickness through revised frost depth estimation, elimination of the capillary layer, and radon sensitivity analysis; (2) a regulatory evaluation of co-placement of diesel-impacted and radiologically elevated soils within the expanded cell; and (3) a statistical comparison of 2018–2025 on-site climate data to historical and regional design-support datasets confirming the continued validity of design-basis climate inputs. These analyses are fully integrated into the relevant sections of this report.

Earthwork and grading activities will reshape the site to optimize drainage, limit water infiltration, and establish a stable base for the expanded disposal cell. Erosion control strategies embedded within the expansion plan include rock mulch facing, stormwater diversion channels, and controlled surface grades to reduce runoff concentration. The design considers the site's stratigraphy and draws on recent geotechnical data to confirm the appropriateness of selected construction materials, containment approaches, and long-term performance assumptions.

Engineering Analytics, Inc. (EA) prepared this report for Rio Grande Resources (RGR) to integrate site characterization, regulatory requirements, recent field and laboratory findings, and supplemental technical evaluations into a cohesive engineering basis for the proposed disposal cell expansion. The following sections present supporting analyses, modeling results, design criteria, and implementation recommendations needed to guide agency review, permitting, construction planning, quality assurance, sequencing decisions, construction documentation, and execution of the reclamation work.

2.0 CURRENT SITE CONDITIONS

2.1 Location and Land Use

The Mt. Taylor uranium mine is located approximately 25 miles northeast of Grants, New Mexico, in Cibola County. The mine was initially developed by Gulf Mineral Resources (Gulf) in 1971. Figure 2-1 shows the site location plan. Following surface drilling, several ore bodies were identified across a span of over seven miles, with estimated reserves totaling 120 million pounds of uranium oxide (Alief and Kern, 1989). Two shafts, measuring 24 feet and 14 feet in diameter, were constructed to access ore deposits located 3,100 to 3,200 feet beneath the surface within the Westwater Canyon Member of the Morrison Formation. Figure 2-2 shows the detailed site plan. In the 1970s, wells were installed to extract groundwater for mining operations.

Mining activities commenced in 1980 but ceased in September 1982 due to unfavorable market conditions. Ownership transferred to Chevron Resources Company following a merger with Gulf in 1985, leading to the resumption of mining from 1986 to 1990 using standard underground room-and-pillar techniques. During this period, approximately 675,000 tons of uranium ore and about 698,000 tons of waste rock were extracted.

In 1991, Rio Grande Resources Corporation (RGR) acquired the site but did not resume mining operations owing to unfavorable market conditions. Beginning in 2019, RGR initiated mine closure and land reclamation efforts under the oversight of NMED and the Energy, Minerals, and Natural Resources Department. Prior to closure, surface infrastructure at the site included two shafts, an ore stockpile, a waste rock pile, stormwater retention ponds, a sewage treatment plant, an ion exchange facility, eight clay-lined treatment ponds, and various ancillary support structures.

2.2 Geology

The geologic setting of the mine has been described in detail in the Baseline Study prepared by New Mexico Environmental Institute (NMEI) in 1974 (NMEI, 1974) and the Site Assessment submitted in 1994 (RGR, 1994a). Deposits of Quaternary age rock and soil exposed in the area consist of unconsolidated talus, alluvial, and eolian sediments. Extensive areas on the slopes adjacent to the high basalt-covered mesas to the south, southwest, and east of the mine are covered by talus, landslides, and black lava blocks. Beneath the valleys and lower topographic slopes, clay, silt, sand, and gravel alluvial lenses are present (NMEI, 1974).

The deepest geologic formation encountered in the Mount Taylor mine shaft is the Jurassic-age Morrison Formation. This formation consists, in ascending order, of the Recapture Creek, Westwater Canyon, and Brushy Basin members. The Recapture Creek member occurs at a depth between 3,240 and 3,300 feet below ground surface (ft bgs) in the mine shaft pilot well. This member grades vertically into the overlying Westwater Canyon member. The transition to the Westwater Canyon member marks a change in lithology, and its thickness varies due to lensing and vertical gradations into both the Brushy Basin and Recapture Creek members. At the mine site, the Westwater Canyon member is divided into Upper and Lower units by a persistent shale layer. The lower sandstone unit is 60 to 70 feet thick, while the upper sandstone unit measures about 100 feet thick in the mine shaft area. These sandstone units contain most of the uranium ore

reserves of mine. Above the Westwater Canyon member, the Brushy Basin member conformably overlies and interfingers with it. The Brushy Basin is approximately 80 feet thick and consists of shales and claystones at the mine shaft.

Above the ore-bearing Morrison Formation is a sequence of sedimentary units approximately 2,950 feet thick. The first of these is the Dakota Sandstone, which unconformably overlies the Brushy Basin member. The Dakota Sandstone is 50 to 60 feet thick and is only slightly mineralized, thus not mined at Mt. Taylor Mine. The Dakota Sandstone conformably intertongues with the overlying Mancos Shale.

Next in the stratigraphic sequence is the Mancos Shale, which is 900 feet thick and composed chiefly of dark-gray, calcareous, marine clay shale. This unit also contains interspersed sandstone beds. The lowermost portion of the Mancos Shale includes three sandstone units known as the Upper, Middle, and Lower Tres Hermanos Sandstones, which are 72 feet, 45 feet, and 118 feet thick, respectively, at the mine shaft pilot well (McGlothin, 1972).

Continuing upward, the Mancos Shale extends to the base of the Gallup Sandstone at approximately 2,050 feet bgs. The Gallup Sandstone consists of two separate sandstone units divided by 130 feet of dark gray shale. Overlying the Gallup Sandstone is the Crevasse Canyon Formation, which includes, in ascending order, the Dilco Coal, the Stray Sand, the Mulatto Tongue of the Mancos Shale, the Dalton Sandstone, and the Gibson Coal. The Point Lookout Formation conformably overlies the Crevasse Canyon Formation.

Above the Crevasse Canyon Formation lies the Point Lookout Formation, which is the basal unit of the Mesa Verde Group. This formation is typically encountered between 700 and 850 feet bgs at the mine site. Near the mine, it is separated into two units by the Satan Tongue of the Mancos Shale. The upper unit, referred to as the Point Lookout Sandstone, is the main body and is typically 110 to 130 feet thick. The lower unit is the Lower Hosta Tongue, a transgressive marine beach sandstone that is between 80 and 100 feet thick. Along the southern margin of the basin, both units merge into a combined unit approximately 250 feet thick. The Lower Hosta Tongue is of limited areal extent, pinching out 30 miles northeast of its outcrop. The Point Lookout Sandstone comprises thick- to very thick-bedded, very fine- to medium-grained, locally cross-bedded sandstones. Notably, the Point Lookout aquifer provides the domestic water supply for both the mine and the Village of San Mateo.

The uppermost geological unit present at the mine is the Menefee Formation. It forms uneven slopes around the mine and near the Village of San Mateo. The Menefee Formation is composed of interbedded pale yellowish-brown siltstone, fine to medium-grained sandstone, gray shale, carbonaceous shale, and thin coal beds. Its thickness in the mine shaft is approximately 767 feet (NMEI, 1974). Mine water treatment pond basins were excavated into the Menefee Formation, and both the manway/vent and production shafts are collared in this unit.

The stratigraphic complexity at the site affects groundwater flow, material properties, and mine closure planning. Aquifers like the Point Lookout Sandstone supply water to the area and are separated from deeper systems by low-permeability units such as Crevasse Canyon and Mancos

Shale, which function as natural barriers against contamination. The Menefee Formation, containing various sediments and coal beds, impacts surface facility stability and provides material for disposal cell expansion, with its clay-rich layers important for cover design to limit infiltration and erosion.

Accurate geological profiling is vital for selecting construction materials, designing effective waste containment strategies, and ensuring regulatory compliance. Upcoming sections will detail recent field studies and lab tests that further inform expansion plans.

2.3 Results of January 2025 Field Investigation

Engineering Analytics excavated 24 test pits and collected samples from three proposed borrow sites to assess clay material for disposal cell cover. In January 2025, EA used a CAT backhoe to excavate the pits (A-1 to A-6, B-1 to B-5, and C-1 to C-13), each to a depth of approximately 6 feet. Figure 2-3 shows the test pit locations. The test pit logs are provided in Appendix A. Subsurface conditions included:

Topsoil:
The topsoil thicknesses at the site range from 2 inches to 6 inches. The topsoil consists of organics, loose sand, and is very dry.

Sand:
The topsoil is underlain by a sand layer at all the test pit locations except at locations A-6, B-1, B-2, C-2, and C-8. Silty sand underlies the topsoil at location A-6, sand and gravel at location B-1, and clay at location B-2. Sandy clay lies beneath the topsoil at C-2 and C-8 test-pit locations. The sand layer is loose to very loose, frozen at some locations, dry to moist, and fine in texture. The termination depths of the sand layer range from 3 feet to the excavation depth of 6 feet.

Sand and Gravel:
Sand and gravel layer underlies the topsoil at test pit location B-1. This layer is loose, dry, and non-plastic. This layer extends to a depth of three feet at the test pit location. This layer is only encountered in test-pit location B-1.

Silty Sand:
At test pit location A-6, a silty sand layer underlies the topsoil and extends to a depth of 4 feet. This layer is moist, loose, and very fine in texture.

Clay:
A thin layer of clay underlies the topsoil at test pit location B-2. The clay is stiff, low plastic, and moist. The clay layer extends to a depth of one foot and is found frozen during the investigation.

Sandy Clay:
Sandy clay is present at most test pit sites, except A-3, A-6, B-2, B-3, B-5, and C-12. This material is stiff to very stiff, dry, and lies below the sand layer at depths of 3 to 4 feet, extending to 6 feet. At C-13, there is no sand layer, and at C-4, sandy clay ends at 5 feet underlain by sand. The absence of sandy clay at A-3, A-6, B-2, B-3, B-5, and C-12 may be due to limited excavation depth.

Siltstone:
Siltstone is present beneath the silty sand layer at test pit location A-6. The siltstone is dry, fine, and contains silt fragments. The siltstone extends from a depth of 4 feet to the termination depth of the excavation at 6 feet.

2.4 Results of Laboratory Testing for the Site

2.4.1 *Historical Laboratory Testing*

Engineering Analytics personnel conducted a review of previous laboratory testing associated with the site and supplemented these efforts with additional laboratory analyses to support the disposal cell expansion design. Both the historical data and the tests performed by EA in 2025 formed the basis for the analysis undertaken for the disposal cell expansion design.

2.4.2 *Laboratory Testing Completed in 2025*

Selected material samples from Borrow Sources A, B, and C (see Figure 2.3) underwent laboratory testing to determine their physical and geotechnical properties for the disposal cell expansion design. Tests included water content, Atterberg limits, standard Proctor compaction, soil water characteristics, and consolidated undrained triaxial tests. EA performed and summarized these tests below. Test-pit logs and laboratory reports are provided in Appendices A and Appendix B, respectively.

Water Content: Measurements of water content and dry density were conducted on selected samples in accordance with ASTM test methods D2216 and D2937, respectively. The water content of the tested samples ranged from 4.6% to 24.1%. For the clay, silty clay, and sandy clay samples, the moisture content ranged from 6.8% to 24.1%, with an average of 11.7%, and a mode of 9.7%.

Atterberg Limits: Atterberg limits were determined for selected samples in accordance with ASTM test method D4318. These measurements facilitate the classification of soil. Based on the Unified Soil Classification System (USCS), a total of 48 samples were analyzed: nine were identified as non-plastic (NP), 29 as low plasticity clay (CL), two as high plasticity clay (CH), three as low plasticity silt (ML), and five as low plasticity clay or silt (CL-ML).

Standard Proctor Compaction Tests: Eight Standard Proctor Compaction Tests were conducted following ASTM test method D698. For the clay, silty clay, and sandy clay samples, maximum dry density ranged from 89.8 to 110.4 pcf, with optimum moisture content (OMC) varying between 16.1% and 26.6%. Sand soil specimens exhibited maximum dry densities from 111.1 to 117.6 pcf, with corresponding OMC values ranging from 12.2% to 15%.

Consolidated Undrained (CU) Triaxial Tests: EA performed two CU triaxial tests with pore pressure measurements per ASTM D4767 at its certified lab. This method assesses strength and stress-strain properties of saturated cohesive soil specimens by isotropic consolidation followed by undrained axial compression at a constant strain rate, allowing calculation of total and effective stresses from measured axial load, deformation, and pore-water pressure. The tests results on

remolded clay samples showed an average effective friction angle of 31° with zero effective cohesion.

2.5 Seismicity

EA conducted a seismic hazard analysis for RGR pertaining to the Mt. Taylor Uranium Mine. The objective was to determine peak horizontal ground acceleration (PGA) for stability assessments, specifically focusing on a 10,000-year return period. The site is located within the Colorado Plateau, which exhibits structural stability, though it is proximate to tectonically active regions including the Rio Grande Rift and the Jemez Lineament. The historical record, spanning 1568 to 2025, indicates low seismic activity, with only a few moderate events occurring near the site. The largest recorded earthquake had a magnitude of 5.9 and was situated approximately 160 km away, while the nearest significant event (Mw 4.08) occurred 13 km from the facility.

Both deterministic and probabilistic analyses were performed. The deterministic approach identified a maximum PGA of 0.09g from a hypothetical Maximum Credible Earthquake (MCE 6.3) located 15.1 km from the site. The probabilistic analysis calculated a mean PGA of 0.21g for the 10,000-year return period. Based on this value, a pseudostatic seismic coefficient equal to two-thirds of the PGA (0.14g) was applied in seismic evaluations of the disposal cell. The seismic hazard at Mt. Taylor Mine is assessed as relatively low, with background seismicity representing the primary risk. Appendix C presents the results of the seismic hazard analysis.

2.6 Climate

The Mt. Taylor Mine is located on the southwestern slope of Mount Taylor in the San Mateo area of west-central New Mexico at an elevation of approximately 7,400 feet above mean sea level. The site lies within the Colorado Plateau and experiences a cold semi-arid climate characterized by low humidity, high solar radiation, large daily temperature swings, and a pronounced July to September monsoon. These conditions support an evapotranspiration-based cover design because annual atmospheric moisture demand substantially exceeds precipitation.

Continuous meteorological data have been collected at the San Mateo on-site station (elevation ~7,400 ft) since October 2017. EA compared the 2018 to 2025 on-site record to two long-term regional datasets: (1) the Gallup Municipal Airport climate normal (elevation ~6,500 ft, ~45 miles northwest of the mine), which represents the long-term semi-arid regional rainfall regime, and (2) the Rice Park SNOTEL station (elevation ~8,900 ft, ~20 miles northeast of the mine), which represents high-elevation winter hydrology including snow water equivalent (SWE), snowmelt timing, and freeze-thaw behavior. The stations differ in elevation, climate regime, and hydrologic processes, which explains the differing mean annual precipitation (MAP) values: 11.65 inches at Gallup, 10.02 inches at San Mateo, and approximately 6.5 inches at Rice Park, where snowpack sublimation and wind redistribution reduce measured precipitation. Despite these differences, statistical testing (Appendix F) showed no significant departures ($p > 0.05$) in precipitation, temperature, or air freezing index (AFI) between the San Mateo record and the broader historical population, confirming that the site data fall within normal regional variability.

Because the on-site San Mateo meteorological data is both site-specific and statistically consistent with long-term regional conditions, it is used as the primary dataset for the water balance, infiltration, and Copper Rule analyses. Its daily resolution record captures the monsoon-driven wetting season, recent warming trends, and the actual hydrologic inputs influencing the cover today, while remaining conservative relative to Gallup's higher long-term MAP. Gallup provides the stable 30-year precipitation benchmark needed to anchor the short site record and prevent anomalous wet or dry bias in design assumptions. Rice Park, although drier, supplies long-term winter hydrology, particularly SWE, snowmelt infiltration pulses, and freeze-thaw behavior that on-site San Mateo has not measured. For this reason, the AFI used in design is based on Rice Park projections and historical distributions, ensuring a conservative frost penetration estimate. The design-basis AFI of 927.5 degree-days (200-year return period) exceeds the historical maximum by approximately 18 percent, confirming that frost-related cover thickness and radon-barrier protection remain conservatively defined.

Mean annual precipitation at the site is approximately 10 inches, while estimated potential evapotranspiration is 26.45 inches, producing an annual moisture deficit of 16.44 inches and an aridity index of 0.38. Monthly (potential evapotranspiration) PET peaks in July at 5.26 inches, coinciding with peak monsoon precipitation of 2.05 inches.

3.0 DESIGN CRITERIA

The design criteria for the expanded disposal cell are limited to the regulatory requirements, standards, and performance objectives that govern long-term containment of uranium mine-related waste materials. The criteria establish what the disposal cell must achieve and the technical requirements that must be satisfied; they do not describe the selected cover configuration or evaluate the adequacy of the design. The applicable objectives include protection of human health and the environment, long-term stabilization of waste materials, control of radiological and non-radiological releases, protection of groundwater and surface water, resistance to erosion and intrusion, and maintenance of physical stability throughout the required performance period.

The principal federal requirements are established by the Uranium Mill Tailings Radiation Control Act (UMTRCA), EPA standards in 40 CFR Part 192, and NRC requirements in 10 CFR Part 40, Appendix A. These regulations require disposal systems for uranium byproduct materials to provide effective stabilization and control for 1,000 years to the extent reasonably achievable, and in any case for at least 200 years. They also require reclamation plans to demonstrate compliance with applicable technical criteria for siting, decommissioning, reclamation, groundwater protection, radon control, long-term surveillance, and protection of public health, safety, and the environment.

Radiological performance criteria require control of residual radioactive materials and limitation of radon-222 emissions from the disposal cell surface. The applicable radon-222 flux performance objective is 20 $pCi/m^2/s$, consistent with the uranium mill tailings standards and NRC implementation requirements. The disposal cell must also prevent releases that would result in unacceptable radiation exposure to the public or workers and must support compliance with applicable radiation protection standards during closure, post-closure, and long-term surveillance.

Groundwater and surface-water performance criteria require the disposal cell to limit contaminant migration and avoid degradation of water resources beyond applicable regulatory standards. The criteria include minimizing net infiltration through the cover, preventing sustained ponding on the reclaimed surface, controlling contact between precipitation and waste materials, and managing runoff so that erosion, sediment transport, and contaminant release are limited. Applicable groundwater protection standards include the requirements of 40 CFR Part 192 and the groundwater-related criteria incorporated into 10 CFR Part 40, Appendix A.

Geotechnical and physical-stability criteria require the disposal cell to remain stable under static, seismic, settlement, and long-term degradation conditions. The relevant performance objectives include maintaining stable slopes, limiting differential settlement and cracking, avoiding conditions that could compromise containment, and accounting for site-specific geology, topography, hydrology, and meteorology. Stability evaluations must use appropriate design loads, material properties, and factors of safety consistent with applicable NRC guidance, accepted geotechnical practice, and site-specific hazard information.

Erosion-control, biointrusion, and cover-integrity criteria require the disposal cell to resist wind and water erosion, discourage plant-root and animal intrusion into containment layers, and maintain protective functions for the required performance period. Technical guidance for uranium tailings reclamation, including NRC standard review guidance and erosion-protection guidance, establishes expectations for long-term geomorphic stability, surface protection, drainage performance, material durability, and maintenance needs. Where rock armor is used for erosion protection, the rock layer thickness should be no less than the spherical diameter of the upper-limit D_{100} rock or at least 1.5 times the diameter of the upper-limit D_{50} rock, whichever is larger.

DOE (1988) expanded Sherard's criteria with these additions:

- Filter material should pass a 3-in. (76.2-mm) sieve to avoid particle segregation and bridging during installation; smaller maximum sizes may be used if needed. Filters should not have over 5% passing the No. 200 mesh sieve to prevent excess fine movement within the filter.
- Filter material needs to be well graded throughout.
- Filters for gap-graded bases may need finer grading than Sherard's basic criteria suggest.
- The minimum filter thickness should be 6 inches (152.4 mm) to aid placement.

Cover water-balance criteria should be evaluated against the overall performance objective of minimizing net percolation and protecting groundwater. For uranium-related disposal, the governing criteria remain the federal uranium tailings requirements and approved permit conditions. The New Mexico Copper Rule, 20.6.7.33 NMAC, is not directly applicable to a uranium mine disposal cell; however, it provides a relevant state benchmark for store-and-release cover performance at mine facilities with potential leachate generation. The rule requires, for covered copper mine units, an earthen store-and-release cover suitable for vegetation, erosion-resistant performance, and percolation control, generally including 36 inches of earthen material unless a reduced or alternative cover is justified.

The New Mexico Copper Rule (N.M. Code R. § 20.6.7.33) outlines specific cover thickness requirements for the closure of copper mine facilities, summarized as follows:

- Upon closure, waste rock piles, leach stockpiles, tailing impoundments, and other units with potential for leachate generation must be covered using a store-and-release earthen cover system.
- The required cover must consist of 36 inches (3 feet) of earthen material suitable for sustaining vegetation without ongoing supplementation and featuring erosion-resistant properties.
- The system should minimize net percolation by retaining at least 95% of long-term average winter precipitation or 35% of long-term average summer precipitation, whichever is higher.
- Erosion rates should be comparable to those found on stable slopes in the surrounding landscape.

Cover thickness may be reduced when placed over lined units, or if an alternative design offers equivalent or improved groundwater protection. Such alternatives necessitate a robust modeling study, an appropriate performance monitoring plan, and independent third-party review.

Proper compaction of waste and cover materials is necessary to avoid settlement and maintain structure. Quality control procedures (like moisture-density tests) are performed during construction. CQC and CQA plans will be submitted to NMED for approval a minimum of 30 days prior to beginning of construction of the clay liner. Within 60 days following completion of construction of the clay liner, a CQA report and as-built plans shall be submitted to NMED. Designs must allow for monitoring and addressing subsidence or deformation over time, and all elements should be chosen for long-term chemical and physical stability suitable for local conditions. Finally, the cell must remain accessible for periodic inspection, maintenance, and environmental monitoring.

4.0 EXPANDED DISPOSAL CELL DESIGN

4.1 General

Reclamation of the waste rock and associated cleanup material is organized into two distinct phases, each designed to promote structural stability, effective drainage, and long-term environmental protection.

This report presents an optimized cover system based on updated analyses completed in July 2026. The optimized cover system consists of a three-layer configuration totaling 52 inches: 12 inches of rock mulch, 28 inches of on-site soil cover, and a 12-inch compacted clay radon barrier. The revised design meets or exceeds applicable regulatory performance requirements, as demonstrated in Sections 4.3 through 4.9 and detailed in Appendices E through I.

The integrated disposal cell cover is engineered to address frost penetration, radon attenuation, biointrusion, infiltration, surface water control, slope stability, and erosion protection, as detailed in Sections 4.3 through 4.9. The revised three-layer system consists of: (1) a 12-inch rock mulch

layer for erosion control; (2) a 28-inch on-site soil cover layer for biointrusion protection, frost buffering, and store-and-release moisture storage; and (3) a 12-inch compacted clay radon barrier for radon attenuation and infiltration control. Cover performance has been validated against applicable regulatory and design criteria, including radon flux below the 20 pCi/m²/s limit, frost-depth protection of the clay barrier, design-basis percolation of 0.40 in/yr, and PMP-based erosion resistance for unsupported slope runs up to 250 feet.

The reclamation and cover system addresses the applicable federal uranium tailings performance requirements in 40 CFR Part 192 and 10 CFR Part 40, Appendix A, Criterion 6, and uses the New Mexico Copper Rule (20.6.7.33 NMAC) as a relevant state performance benchmark for store-and-release cover behavior.

4.2 Description of Cover

After filling and grading, the expanded disposal cell cover will be placed over the waste material. The final cover system will consist of the following layers, from top to bottom:

- 12 inches of rock mulch cover for erosion protection
- 28 inches of on-site soil cover for biointrusion and frost protection
- 12 inches of compacted clay to minimize infiltration and radon gas emanation

A schematic of the revised cover is illustrated in Figure 4-1.

4.3 Frost Penetration Analysis

EA evaluated frost penetration depth into the expanded disposal cell cover, as explained in Appendix D. Using a method developed by the U.S. Department of Energy (DOE, 1989) and endorsed by the Nuclear Regulatory Commission, the analysis considered local climate, soil type, and moisture levels over the lifetime of the cover. The approach, based on Berggren's work (1943), uses site-specific calculations to estimate frost depth. Smith and Rager (2002) advanced these ideas to determine the required thickness of protective soil above compacted layers to shield against frost. All derivations and thermal parameter values are provided in Appendix D.

The analysis used a 200-year recurrence interval Air Freezing Index (AFI) of 927.5°F·days, corresponding to the design-basis value at the 200-year return period. The statistical comparison of 2018–2025 site climate data presented in Appendix F confirms that the design-basis AFI exceeds the highest observed site AFI (524 degree-days in 2022) by a substantial margin, providing confidence that the design freeze event is appropriately conservative.

The optimized cover system provides 28 inches of on-site soil cover above the clay radon barrier, matching the design frost depth. The on-site soil cover layer serves as the primary thermal buffer, ensuring the clay radon barrier remains below the active frost zone under the design freeze event. The rock mulch surface layer provides additional thermal damping. Engineering implications are as follows: the clay radon barrier remains below the 28-inch frost depth and is protected from freeze-thaw cycling; the small μ value indicates frost penetration is relatively insensitive to

moderate variations in soil thermal properties; and the revised frost depth supports the reduced cover thickness without compromising radon attenuation or long-term barrier performance.

4.4 Radon Attenuation

4.4.1 *Regulatory Standard*

The engineered cover system over the expanded disposal cell is required to limit the surface flux of radon-222 to no more than 20 pCi/m²/s averaged over the disposal cell surface, as established under 40 CFR Part 192 and 10 CFR Part 40, Appendix A, Criterion 6. Radon attenuation modeling was performed to confirm that the proposed three-layer cover system satisfies this standard.

4.4.2 *Cover System Configuration*

The three-layer cover system evaluated in the radon attenuation analysis consists of the following layers, from top to bottom:

- 12 inches (30.5 cm) of rock mulch for erosion protection (uppermost layer)
- 28 inches (71.1 cm) of on-site soil for biointrusion and frost protection
- 12 inches (30.5 cm) of compacted clay as the primary radon barrier

The contaminated materials below the cover are assumed to be 5 meters (16.4 feet, or approximately 197 inches) thick for modeling purposes. The cover system configuration is shown in Figure E-1 (Appendix E).

4.4.3 *Model Description*

Radon emanation calculations were performed using the Wise Uranium Project Uranium Mill Tailings Cover Calculator, which implements the one-dimensional steady-state radon diffusion model described in NRC Regulatory Guide 3.64 (NRC, 1989). The model evaluates radon-222 diffusion from a radium-226 source through layered cover materials and computes the exit radon flux at the top of each layer. The calculator was executed in metric units with four model layers: contaminated materials, clay radon barrier, on-site soil, and rock mulch.

The key input parameters for the model are layer thickness, radium-226 activity concentration for the contaminated materials layer, radon emanation coefficient, porosity, long-term moisture content, and radon diffusion coefficient calculated by the model from material properties.

4.4.4 *Input Parameters*

4.4.4.1 *Radium-226 Activity Concentration*

Radium-226 activity concentrations were derived from static gamma radiation surveys conducted by AVM Environmental Services, Inc. (AVM) across five distinct source area zones within the mine site. The representative mean activity values for each source area are summarized in Table 4-1.

Table 4-1 Representative Ra-226 Activity Concentrations by Source Area

Source Area	Survey Date(s)	No. of Survey Locations	Mean Ra-226 Activity (pCi/g)	Reference
Windblown Area (WA)	May 17 and May 31, 2023	12	9.8	AVM (2023)
Ore Pad Area (OPA)	May 31, 2023	5	431.6	AVM (2023)
Mine Compound Area (MCA)	May 18–May 31, 2023	20	13.1	AVM (2023)
Pond Area (PA)	October 18, 2023	40	4.8	AVM (2024)
North Controlled Area (NCA)	September 19–December 12, 2024	47	47.1	AVM (2025)
Arithmetic Mean (all areas)	—	124 (total)	101.3	Calculated

The arithmetic mean Ra-226 activity across all five source areas is approximately 101 pCi/g. For modeling purposes, a conservative design value of 115 pCi/g was used for the contaminated materials layer, which exceeds the five-area mean by 14 percent. This conservative assumption bounds the potential variability in source material composition across the disposal cell footprint. It is recommended that materials from the Ore Pad Area, which exhibit the highest mean Ra-226 activity (431.6 pCi/g), be placed at the base of the disposal cell during construction to minimize the thickness of high-activity materials near the cover interface.

4.4.4.2 *Radon Emanation Coefficient*

A radon emanation coefficient of 0.35 was applied to all modeled layers, including the contaminated materials and cover materials. This is the conservative default value specified in the Uranium Mill Tailings Cover Calculator, consistent with NRC Regulatory Guide 3.64 (NRC, 1989).

4.4.4.3 *Density and Porosity*

Material densities were assigned as follows: contaminated materials, 100 pcf (1.60 g/cm³), representative of a mixed sand, silt, and clay waste mass; clay radon barrier, 99 pcf (1.59 g/cm³), corresponding to 90 percent of the standard Proctor maximum dry density of sample EA-BSC09 (silty clay) collected from Borrow Area A-B in January 2025; on-site soil, 94 pcf (1.51 g/cm³), corresponding to 85 percent of the mean standard Proctor maximum dry density of samples EA-BSB04 (sand), EA-BSC12 (sandy clay), and EA-BSC09 (silty clay) from Borrow Area A-B; and rock mulch, 94 pcf (1.51 g/cm³), consistent with the on-site soil layer because the soil matrix of the rock mulch admixture is anticipated to be of similar composition.

Porosity values were assigned as follows: contaminated materials, 0.35, assumed for mixed sand, silt, and clay; clay radon barrier, 0.38, derived from the compaction test report for sample EA-BSC09 (void ratio = 0.62; porosity = e/(1+e) = 0.38); in-situ soil, 0.35, assumed for mixed sand, silt, and clay; and rock mulch, 0.35, consistent with the in-situ soil layer.

4.4.4.4 *Long-Term Moisture Content*

Long-term moisture contents were assigned as follows: On -site soil and rock mulch, 6 percent, consistent with NRC guidance for long-term dry cover conditions (NRC, 1989). Clay radon barrier, 15.1 percent, determined from the soil water characteristic curve 15-bar permanent wilting point moisture content for sample EA-BSC09 (silty clay) remolded to 90 percent of standard Proctor density. Contaminated materials, 15.1 percent, equal to the clay barrier long-term moisture because the waste materials are below the depth of influence of surface evapotranspiration.

The long-term moisture content of the clay radon barrier is a sensitive model parameter. Use of the 15-bar SWCC moisture content is conservative and represents the equilibrium moisture condition under sustained drying; it produces a higher diffusion coefficient and therefore a higher, more conservative, radon flux estimate relative to higher moisture content assumptions.

4.4.4.5 *Radon Diffusion Coefficient*

Radon diffusion coefficients for each layer were calculated internally by the Uranium Mill Tailings Cover Calculator based on the assigned porosity and long-term moisture content, consistent with the methodology of NRC Regulatory Guide 3.64 (NRC, 1989). The resulting diffusion coefficients are 1.69×10^{-7} m²/s for contaminated materials, 4.62×10^{-7} m²/s for the clay radon barrier, 2.01×10^{-6} m²/s for the on-site soil layer, and 2.01×10^{-6} m²/s for the rock mulch.

The clay radon barrier has a diffusion coefficient approximately 4.3 times lower than the on-site soil layer, reflecting the combined effect of higher density, higher moisture content, and finer texture. Lower diffusion coefficients correspond to lower radon transport rates through the layer.

4.4.5 *Model Results*

The input parameters and model results are summarized in Table 4-2. Full model output is provided in Appendix E. The radon attenuation model results indicate that the three-layer cover system reduces the radon-222 surface flux from a bare-source flux of 42.10 pCi/m²/s to a design surface flux of 13.99 pCi/m²/s at the top of the rock mulch layer. The total cover retention efficiency is 66.77 percent. The calculated surface flux of 13.99 pCi/m²/s is 30 percent below the NRC regulatory limit of 20 pCi/m²/s, confirming that the proposed cover system satisfies the radon attenuation performance standard.

The clay radon barrier provides the dominant attenuation effect, reducing flux from 31.17 pCi/m²/s at the top of the contaminated materials to 22.22 pCi/m²/s at the top of the clay layer. The on-site soil layer provides additional attenuation from 22.22 pCi/m²/s to 14.67 pCi/m²/s. The rock mulch layer provides the final attenuation step from 14.67 pCi/m²/s to 13.99 pCi/m²/s at the exposed surface. The progressive reduction in flux through each layer is consistent with the physics of one-dimensional steady-state diffusion and confirms the layered design is functioning as intended.

Table 4-2 Radon Attenuation Model Input and Results

Layer No.	Layer Description	Thickness (in)	Porosity	Ra-226 Activity (pCi/g)	Emanation Coefficient	Diffusion Coeff. (m^2/s)	Exit Radon Flux ($pCi/m^2/s$)
4	Rock mulch	12	0.35	0	0.35	2.01×10^{-6}	13.99
3	On-site soil (frost protection and biointrusion)	28	0.35	0	0.35	2.01×10^{-6}	14.67
2	Clay layer (radon barrier)	12	0.38	0	0.35	4.62×10^{-7}	22.22
1	Contaminated materials	197	0.35	115	0.35	1.69×10^{-7}	31.17 (bare source: 42.10)

4.4.6 *Sensitivity Simulation*

Table 4-3 contains the results of the sensitivity analyses cases based on the Appendix E cover configuration and base radon flux of 13.99 $pCi/m^2/s$ for the 12-inch compacted clay barrier overlain by 28 inches of on-site soil cover. Consistent with the approach described in the Radon Attenuation Handbook for Uranium Mill Tailings Cover Design, the sensitivity cases evaluate how variations in on-site soil cover thickness, clay barrier thickness, and effective radon diffusion coefficients influence flux through the layered earthen cover system.

The revised sensitivity results summarized in Table 4-3 indicate that the base design flux of 13.99 $pCi/m^2/s$ provided in Appendix E remains below the 20 $pCi/m^2/s$ regulatory criterion. The on-site soil cover thickness cases show that reducing the overlying soil thickness increases calculated flux by shortening the diffusion path length, while increasing the thickness provides additional attenuation. The clay barrier thickness cases show that the compacted clay layer remains the controlling attenuation element because reduced clay thickness produces a larger loss of margin than a comparable change in the overlying on-site soil cover. The diffusion coefficient cases show that less favorable effective diffusion behavior increases calculated flux, while lower effective diffusion coefficients improve performance. All evaluated cases remain below the regulatory criterion, but the reduced clay and higher diffusion coefficient cases have the smallest margins and therefore define the most important construction quality control checks.

Table 4-3 Results of Radon Sensitivity Analysis

Case	On-Site Soil Cover Thickness (in)	Clay Barrier Thickness (in)	Radon Diffusion Coefficient Assumption	Surface Flux (pCi/m²/s)
Appendix E base design	28	12	Appendix E design value	13.99
Reduced on-site soil cover	20	12	Appendix E design value	16.21
Increased on-site soil cover	36	12	Appendix E design value	12.08
Reduced clay barrier	28	9	Appendix E design value	17.62
Higher diffusion coefficient	28	12	1.5 × Appendix E value	18.74
Lower diffusion coefficient	28	12	0.75 × Appendix E value	11.34

Model sensitivity testing indicates that radon flux is not strongly sensitive to the porosity of the waste materials, on-site soil, or rock mulch layers. However, the clay radon barrier porosity is a sensitive parameter: a 20 percent reduction in clay porosity reduces calculated flux to near zero, while a 20 percent increase can approximately double the calculated flux. The design clay porosity of 0.38 is based on laboratory data and is considered representative of the as-compacted condition.

4.5 Biointrusion

4.5.1 *Regulatory Framework*

The disposal cell cover system is designed to satisfy the biointrusion-relevant requirements of the U.S. Nuclear Regulatory Commission (NRC) under 10 CFR Part 40, Appendix A, Criterion 6, and the U.S. Environmental Protection Agency (EPA) under 40 CFR Part 192. Under Criterion 6 of 10 CFR Part 40, Appendix A, the cover system must provide reasonable assurance of control of radiological hazards for 1,000 years to an extent reasonably achievable, and in any case for at least 200 years. The New Mexico Environment Department (NMED) implementing regulations are consistent with these federal standards.

10 CFR Part 40, Appendix A, Criterion 6 further requires that either a full self-sustaining vegetative cover or rock cover be established to reduce wind and water erosion to negligible levels. In semi-arid and arid regions where a self-sustaining vegetative cover is not reliably achievable, rock cover must be employed on impoundment slopes. The Mt. Taylor disposal cell uses rock mulch on all exposed slopes consistent with this requirement, as described in Section 4.2.

4.5.2 *Role of Vegetation in Store-and-Release Cover Performance*

While not necessary, proposed, nor modeled in EA's infiltration analyses the current NRC and DOE guidance on evapotranspiration (ET) and store-and-release (SAR) cover systems recognizes that shallow-rooted native vegetation is a functionally integral component of cover performance. Native grasses and forbs with shallow root systems actively remove stored soil moisture through transpiration, thereby enhancing the cover's water-balance performance and reducing the fraction of precipitation available for deep percolation. This is consistent with the passive SAR design philosophy adopted for the Mt. Taylor disposal cell.

The primary biointrusion concern is the potential for deep-rooted woody plants, including shrubs and trees, and burrowing mammals to penetrate and compromise the clay radon barrier. The cover design addresses these threats through the physical deterrents described in Section 4.5.3, and the revegetation plan in Section 4.13 restricts planting to shallow-rooted native grass species consistent with the semi-arid climate.

4.5.3 *Cover System Design Measures Against Biointrusion*

The three-layer, 52-inch cover system provides redundant physical deterrents against biointrusion while maintaining the erosion-control, water-balance, and radon-attenuation functions of the final cover. Biointrusion protection is achieved through a combination of a coarse rock mulch surface that discourages animal burrowing, a compacted on-site soil cover layer that separates routine biological activity from the radon barrier, and a compacted clay layer that provides the low-permeability and low-diffusivity containment function at the base of the cover.

Rock Mulch Layer (12 inches, uppermost). The rock mulch layer is the first line of defense against biological disturbance. In addition to resisting wind and water erosion, the coarse, discontinuous surface reduces the suitability of the cover as burrowing habitat and makes excavation by small to medium burrowing animals more difficult. The rock mulch admixture consists of 30 percent AASHTO No. 1 gravel and 70 percent on-site soil, provides a durable surface layer while retaining sufficient fines to support the intended revegetation strategy.

On-Site Soil Cover Layer (28 inches). The compacted on-site soil cover layer provides the primary separation distance between surface biological activity and the compacted clay radon barrier. This layer can support shallow-rooted native grass community, provides frost buffering above the clay layer, and limits the likelihood that routine root growth, insect activity, or shallow animal disturbance will reach the radon barrier. The 28-inch thickness is therefore a key design feature because it maintains physical separation while preserving the store-and-release function of the cover.

Compacted Clay Radon Barrier (12 inches). The compacted clay layer is the principal radon-attenuation and infiltration-control layer and is protected from direct biological contact by the overlying 40 inches of rock mulch and on-site soil cover. Its cohesive texture, compacted condition, and low saturated hydraulic conductivity of 7.6×10^{-6} cm/s reduce the likelihood of root penetration, insect excavation, and preferential pathway formation. Maintaining the continuity,

thickness, moisture condition, and compaction of this layer during construction is essential to preserving the biointrusion, radon-control, and infiltration-control functions of the cover system.

4.5.4 *Post-Closure Monitoring and Adaptive Management*

Post-closure stewardship will include periodic inspection of the cover surface for evidence of biointrusion, including the establishment of deep-rooted woody vegetation, active burrowing activity, and visible cracking or surface disturbance. Inspection frequency and corrective action thresholds will be established in the Post-Closure Stewardship Plan consistent with NRC and NMED requirements. Corrective actions may include manual removal of encroaching woody vegetation, backfilling of burrow openings, and localized cover repair as needed to maintain the integrity of the radon barrier and overall cover system.

The adaptive management framework is designed to detect and address biointrusion before cumulative damage to the cover system can occur, consistent with the long-term performance objectives of 10 CFR Part 40, Appendix A, Criterion 6.

4.6 Infiltration Analysis

4.6.1 *General*

The infiltration analysis evaluates long-term percolation through the engineered cover system and compliance with the New Mexico Copper Rule (20.6.7.33 NMAC) store-and-release performance standard. The cover system is designed as a passive store-and-release (SAR) barrier that relies on the soil moisture storage capacity of the on-site soil cover layer and the prevailing semi-arid climate to limit deep percolation into the underlying waste. The analysis integrates site-specific climate data, analytical water balance methods, and numerical seepage modeling.

4.6.2 *Method of Analysis*

The infiltration assessment employs a two-tiered approach:

1. Analytical Water Balance — The Budyko (1948) exponential equation is applied to estimate annual actual evapotranspiration (AET). Surface runoff is estimated using the Soil Conservation Service (SCS) Curve Number method applied on a monthly time step. Annual percolation is derived as the residual of precipitation minus AET and surface runoff.
2. Numerical Seepage Model (SEEP/W) — A two-dimensional transient finite-element model was developed using GeoStudio SEEP/W to simulate unsaturated and saturated flow through the proposed cover profile. Model results provide the adopted design-basis percolation rate. Model inputs, boundary conditions, and results are summarized in Appendix G.

The analytical water balance provides an independent upper-bound estimate of percolation to bracket SEEP/W results and confirm that the numerical model is reasonable.

4.6.3 *Parameters Used for Analysis*

Table 4-4 contains a summary of the monthly distribution of precipitation and PET for the 2018–2025 San Mateo station record. The data show a strong seasonal water-balance pattern: precipitation is greatest during the summer monsoon period, particularly July through September, but PET also reaches its maximum during the same interval. As a result, every month from March through October exhibits a moisture deficit, with the largest monthly deficits occurring in June, July, and August. Positive monthly balances occur only during the low-PET winter months and are small in magnitude. On an annual basis, precipitation totals 10.01 inches compared with 26.45 inches of PET, producing a net annual moisture deficit of 16.44 inches. This monthly pattern indicates that stored soil water is expected to be depleted during the growing season, limiting the amount of water available for sustained downward percolation through the cover profile.

Soil hydraulic parameters, climate inputs, and SCS runoff parameters used in the analytical water balance and numerical seepage model are summarized in Table 4-5. Laboratory test methods and data reduction procedures are documented in Appendix B; climate data derivation is documented in Appendix F.

Table 4-4 Monthly Climate Water Balance

Month	Precipitation, P (in)	PET (in)	Surplus / Deficit (in)
January	0.38	0.00	+0.38
February	0.26	0.16	+0.10
March	0.48	0.69	−0.21
April	0.28	1.76	−1.48
May	0.71	3.15	−2.44
June	0.94	4.74	−3.80
July	2.05	5.26	−3.21
August	1.71	4.70	−2.99
September	1.45	3.46	−2.01
October	0.86	1.83	−0.97
November	0.59	0.57	+0.02
December	0.30	0.13	+0.17
Annual Total	**10.01**	**26.45**	**−16.44**

Table 4-5 Soil and Climate Parameters Used for the Infiltration Analysis

Parameter	Layer / Station	Value	Source
Saturated hydraulic conductivity, ksat	On-site soil cover	1.2×10−4 cm/s	Lab testing, Appendix B
Saturated hydraulic conductivity, ksat	Compacted clay barrier	7.6×10−6 cm/s	Design specification
Volumetric water content at field capacity, θfc	On-site soil cover (CL-ML)	0.20	SWCC, Appendix B
Volumetric water content at wilting point, θwp	On-site soil cover (CL-ML)	0.10	SWCC, Appendix B
Available water holding capacity, AWHC	On-site soil cover	0.10 in/in	θfc − θwp
SCS Curve Number, CN	Cover surface (rock mulch, rangeland HSG B)	55	TR-55 (USDA, 1986)
Mean annual precipitation, P	San Mateo on-site station	10.01 in/yr	Appendix F (2018–2025)
Potential evapotranspiration, PET	Thornthwaite (1948)	26.45 in/yr	Appendix F

4.6.4 *Water Balance Components and Percolation Estimation*

4.6.4.1 *Aridity Index*

The ratio of potential evapotranspiration to mean annual precipitation characterizes the degree of water limitation at the site. The dimensionless aridity index φ is defined as:

$$\varphi = \text{PET} / P = 26.45 / 10.01 = 2.64$$

An aridity index greater than 2.0 indicates a strongly water-limited environment. Under these conditions, the dominant fate of infiltrated precipitation is evapotranspiration rather than deep percolation or runoff. The site value of 2.64 is consistent with the semi-arid character of the San Mateo area in northwestern New Mexico.

4.6.4.2 *Actual Evapotranspiration*

Actual evapotranspiration (AET) was estimated using the Budyko (1948) exponential equation, which captures the long-term partitioning of precipitation between evapotranspiration and drainage under water-limited conditions:

$$\text{AET} = P(1 - e^{-\text{PET}/P})$$

Substituting the site-specific annual precipitation and PET values from Table 4-4:

$$\text{AET} = 10.01(1 - e^{-2.64}) = 10.01(1 - 0.071) = 10.01 \times 0.929 = 9.30 \text{ in/yr}$$

This result is consistent with the expectation that AET approaches MAP in a strongly arid climate, as the available soil water is nearly completely depleted through evapotranspiration before deep

drainage can occur. The fraction of precipitation lost to AET is 92.9 percent, leaving a limited residual available for surface runoff or percolation.

4.6.4.3 *Surface Runoff*

Surface runoff was estimated using the SCS Curve Number method (USDA TR-55, 1986) applied on a monthly time step. A Curve Number of 55 was selected for rangeland conditions with rock mulch cover and Hydrologic Soil Group B soils, consistent with the cover surface description in Section 4.2. The maximum potential retention S and initial abstraction Ia are defined as:

$$S = 1000 / \mathrm{CN} - 10 = 1000 / 55 - 10 = 8.18 \text{ in}$$

$$I_a = 0.2S = 0.2 \times 8.18 = 1.64 \text{ in}$$

Runoff Q for any month with precipitation (Pm) greater than the initial abstraction threshold (Ia) is calculated as:

$$Q = (P_m - I_a)^2 / (P_m + 0.8S)$$

Applying the SCS Curve Number runoff equation to each month of the 2018–2025 mean monthly precipitation record shown in Table 4-4, only July (P = 2.05 in) and August (P = 1.71 in) exceed the threshold of 1.64 in. Monthly runoff calculations for the two generating months are as follows:

$$\text{July: } Q = (2.05 - 1.64)^2 / (2.05 + 0.8 \times 8.18) = 0.1681 / 8.594 = 0.0196 \text{ in} \approx 0.020 \text{ in}$$

$$\text{August: } Q = (1.71 - 1.64)^2 / (1.71 + 0.8 \times 8.18) = 0.0049 / 8.254 = 0.0006 \text{ in} \approx 0.001 \text{ in}$$

All remaining months produce no runoff because mean monthly precipitation does not exceed the initial abstraction threshold of 1.64 in. Annual surface runoff is the sum of monthly values:

$$R = \sum_{m=1}^{12} Q_m = 0.020 + 0.001 = 0.021 \text{ in/yr}$$

This low runoff magnitude is physically consistent with the rock mulch surface layer and semi-arid climate; the majority of precipitation events are low-intensity, sub-threshold occurrences that are fully retained within surface storage and subsequently lost to evapotranspiration.

4.6.4.4 *Annual Percolation — Analytical Upper Bound*

Under steady-state annual conditions (ΔS = 0), the water balance residual provides an upper-bound estimate of potential deep percolation:

$$\text{Percolation} = P - \mathrm{AET} - R$$

$$\text{Percolation} = 10.01 - 9.30 - 0.021 = 0.689 \text{ in/yr} \approx 0.69 \text{ in/yr}$$

This result represents approximately 6.9 percent of mean annual precipitation and constitutes an analytical upper bound. The SEEP/W transient model accounts for unsaturated storage dynamics and produces a lower design-basis percolation value, as discussed in Section 4.6.6.

Table 4-6 Annual Water Balance Summary

Component	Value (in/yr)	Percentage of MAP
Mean annual precipitation (P)	10.01	100.0%
Actual evapotranspiration (AET)	9.30	92.9%
Surface runoff (R)	0.02	0.2%
Percolation — analytical upper bound (Eq. 4-8)	0.69	6.9%

Note: MAP = mean annual precipitation based on the 2018–2025 San Mateo on-site climate record summarized in Table 4-4 and Appendix D. Components may not sum exactly to 100% due to rounding.

4.6.5 *Copper Rule Store-and-Release Compliance*

Under the New Mexico Copper Rule (20.6.7.33 NMAC), a passive store-and-release cover system must demonstrate that the available water storage capacity of the soil layer equals or exceeds 95 percent of the mean winter precipitation or 35 percent of the mean summer precipitation, whichever is greater. This standard ensures that the cover can buffer episodic precipitation events without allowing percolation into the underlying waste mass.

4.6.5.1 *Seasonal Precipitation from Site Climate Record*

Seasonal precipitation totals were derived from the 2018–2025 San Mateo on-site climate record summarized in Table 4-4 and compiled in Appendix D. Seasonal periods follow the Copper Rule convention: winter season spans October through March; summer season spans April through September. Mean monthly precipitation values from the site record are applied to each seasonal summation.

Winter precipitation, P_w:

$$P_w = P_{Oct} + P_{Nov} + P_{Dec} + P_{Jan} + P_{Feb} + P_{Mar}$$

$$P_w = 0.86 + 0.59 + 0.30 + 0.38 + 0.26 + 0.48 = 2.87 \text{ in}$$

Summer precipitation, P_s:

$$P_s = P_{Apr} + P_{May} + P_{Jun} + P_{Jul} + P_{Aug} + P_{Sep}$$

$$P_s = 0.28 + 0.71 + 0.94 + 2.05 + 1.71 + 1.45 = 7.14 \text{ in}$$

4.6.5.2 *Required Storage*

The Copper Rule storage requirement is the greater of the two seasonal threshold values:

$$S_{req} = \max(0.95P_w, 0.35P_s)$$

$$0.95P_w = 0.95 \times 2.87 = 2.73 \text{ in} \quad \text{(winter threshold)}$$

$$0.35P_s = 0.35 \times 7.14 = 2.50 \text{ in} \quad \text{(summer threshold)}$$

The winter threshold governs. The Copper Rule required storage is:

$$S_{req} = 2.73 \text{ in}$$

4.6.5.3 *Storage Provided*

The 28-inch on-site soil cover layer provides water storage capacity determined by the available water holding capacity (AWHC) of the soil profile:

$$S_{cap} = \text{AWHC} \times d = 0.10 \text{ in/in} \times 28 \text{ in} = 2.80 \text{ in}$$

The provided storage of 2.80 in exceeds the required storage of 2.73 in by 0.07 in, confirming compliance with the New Mexico Copper Rule (20.6.7.33 NMAC) store and release performance standard under nominal design conditions.

4.6.5.4 *Results of Infiltration Analysis*

The SEEP/W transient numerical model was developed using the cover profile described in Section 4.2. The model layout is shown on Figure 4-2. The model was applied using the daily precipitation records from the Gallup, NM weather station as the upper boundary condition, with atmospheric evapotranspiration prescribed using the Thornthwaite (1948) PET estimates summarized in Table 4-4. Material hydraulic properties are defined by the laboratory-derived soil-water characteristic curves (Appendix B) and the saturated hydraulic conductivity values in Table 4-5. Model inputs, boundary conditions, calibration, and output time series are documented in Appendix G.

Under the design precipitation record, the transient numerical model produces a long-term mean annual percolation rate of 0.40 in/yr at the base of the cover system, as documented in Appendix G. This design-basis rate is approximately 4.0 percent of mean annual precipitation and is below the analytical upper bound of 0.69 in/yr, or 6.9 percent of mean annual precipitation, computed using the Budyko and SCS water balance in Section 4.6.4. The lower numerical result is physically consistent because the transient model captures unsaturated soil moisture storage during low-intensity precipitation intervals, thereby reducing the fraction of precipitation that reaches the compacted clay radon barrier. Together, the numerical design basis and analytical upper bound confirm that the cover system limits deep percolation to a small fraction of mean annual precipitation under site design conditions.

The analytical and numerical results together confirm that the proposed 52-inch three-layer cover system, comprising a 12-inch rock mulch surface layer, a 28-inch on-site soil cover storage layer, and a 12-inch compacted clay radon barrier, provides the hydrologic performance required under the design climate. Percolation through the cover is effectively controlled by the combined effects of high evapotranspirative demand, negligible surface runoff generation, and the moisture storage capacity of the on-site soil cover layer.

4.7 Settlement Analysis

Settlement of the compacted disposal cell will be evaluated during material placement. Before construction, representative waste samples will be collected, remolded to 95 percent of the standard Proctor maximum dry density, and tested for consolidation and swell under wetting conditions. These data will be used to confirm that sufficient camber has been incorporated into the final grading surface to maintain positive surface drainage. Tanks or other vessels that could collapse over time will be flow-filled or otherwise stabilized to limit potential future settlement.

4.8 Slope Stability Analysis

4.8.1 *General*

The slope stability assessment evaluates the global stability of the expanded disposal cell after placement of the final cover system. Detailed slope stability calculations, model output, and supporting figures are provided in Appendix H. The cover system is designed with exterior slopes of 5H:1V, equivalent to a 20 percent grade. Stability sections were developed to represent the combined new disposal cell configuration tied into the steepest section of the existing cell without terraces. This configuration provides a conservative assessment section for evaluating potential deep-seated and shallow translational failure mechanisms through the cover, waste, and foundation materials.

4.8.2 *Method of Analysis*

EA evaluated global stability using the Morgenstern-Price limit equilibrium method (Morgenstern and Price, 1965) in SLOPE/W (GeoStudio, 2021). The Figure 4-3 section represents the combined new disposal cell and steepest existing-cell section without terraces. Static and pseudo-static seismic cases were evaluated for circular and non-circular failure surfaces using target FOS values of 1.5 and 1.1, respectively. Model setup, search criteria, geometry, and supporting output are documented in Appendix H; results are shown in Figures 4-4 and 4-5.

Section 2.5 describes the probabilistic seismic hazard analysis for the facility, which indicates a peak horizontal ground acceleration (PGA) of 0.21g for a 10,000-year return period. For the pseudo-static analyses, a horizontal seismic coefficient of 0.14 was applied, corresponding to two-thirds of the 10,000-year PGA. This coefficient was applied as a horizontal inertial load in the seismic stability cases.

4.8.3 *Material Properties*

Material properties used in the stability analyses were selected from the lower band of available laboratory test results, design specifications, and conservative engineering judgment for materials in the analyzed section. This approach is consistent with the SLOPE/W assessment presented in Appendix H and avoids using average laboratory strength values where lower band values govern design. The material set represents the final cover system, compacted disposal cell fill and waste, and foundation soil or overburden. Bedrock is not included in the analyzed section and is therefore not represented as a separate model material. The adopted parameters are summarized in Table 4-7.

Table 4-7 Material Properties Used for Stability Assessment

Material / Zone	Unit Weight, γ (pcf)	Cohesion, c′ (psf)	Friction Angle, φ′ (degrees)
Rock mulch cover	115	0	35
On-site soil cover	110	0	25
Compacted clay radon barrier	120	0	24
Compacted disposal-cell fill / waste	102	0	25
Foundation soil / overburden	122	0	25

4.8.4 *Results of Analysis*

The stability results indicate that the combined disposal cell configuration with 5H:1V final cover slopes satisfy the applicable static and pseudo-static stability criteria for the analyzed section. The static analysis produced a factor of safety greater than the NRC target value of 1.5, and the pseudo-static seismic analysis using a horizontal coefficient of 0.14 produced a factor of safety greater than the target value of 1.1. These results indicate adequate global stability for the analyzed section, including the steepest existing-cell segment without terraces, using the material zones and lower band strength parameters summarized in Table 4-7. Detailed SLOPE/W output and supporting stability figures are provided in Appendix H; the summary results are presented in Figures 4-4 and 4-5.

4.9 Surface Water Hydrology and Erosion Protection

The reclaimed disposal cell surface is protected from water and wind erosion through a combination of offsite runoff diversion and rock mulch admixture surface facing. These two elements are designed independently and are discussed in separate subsections below. Erosion protection design follows the procedures specified in NUREG-1623 (NRC, 2002) and NUREG/CR-4620 (Nelson et al., 1986), which are the NRC-recommended standards for long-term stabilization of uranium mill tailings impoundments. The design life for the erosion protection system is 1,000 years, consistent with 40 CFR 192 and 10 CFR Part 40, Appendix A, Criterion 6. Supporting hydrology, hydraulic, rock mulch sizing, gully formation, stable-slope, riprap, filter-bedding, and wind-erosion calculations are provided in Appendix I.

4.9.1 *General*

The expanded disposal cell cover will be graded at a 20 percent slope, equivalent to 5H:1V, and will include a 12-inch-thick rock mulch surface layer composed of a rock-soil admixture. The admixture will consist of 30 percent AASHTO No. 1 gravel and 70 percent onsite on-site soil material by volume. This configuration provides durable erosion resistance under the site's semi-arid climate and high-intensity precipitation regime while supporting vegetation establishment through a soil matrix suitable for root development. Gravel-soil admixture covers used in analogous uranium mill tailings closures in the Grants Mineral Belt have effectively controlled water and wind erosion while allowing native vegetation to establish without materially reducing evapotranspiration. Erosion and water-balance studies support moderate gravel fractions,

generally 25 to 35 percent by volume, to meet the dual objectives of erosion control and evapotranspiration performance. As wind and water act on the admixture surface, fines are winnowed away, forming a vegetated desert pavement that provides long-term, self-reinforcing erosion resistance.

4.9.2 *Design Storm*

The design storm for long-term erosion stability is the Probable Maximum Precipitation (PMP), consistent with NUREG-1623 and NUREG/CR-4620. The PMP produces the Probable Maximum Flood (PMF), which governs rock mulch and riprap sizing for the 1,000-year erosion-protection design life. Appendix I provides design-storm selection, rainfall-depth development, and hydrologic calculations used for the cover and diversion channel evaluations.

The Mt. Taylor Mine site is located approximately 7,400 feet above mean sea level and west of the 103rd meridian. Therefore, the Appendix I calculation applies the NUREG/CR-4620 procedures for the generalized 6-hour storm and the local 1-hour, 1-square-mile storm. PMP rainfall depths were obtained from HMR-49 (NOAA, 1984), with elevation adjustments applied for site conditions and no drainage-area scale reduction for areas less than one square mile.

For cover design, the short-duration PMP governs the rock mulch erosion checks because the cover has short times of concentration. For the diversion channel, the PMP-derived PMF governs the longer-duration watershed response and channel lining design. The 100-year, 24-hour precipitation depth of 2.56 inches is documented in Appendix F, but Appendix I confirms that the PMP condition is substantially more severe and therefore governs erosion-protection design.

4.9.3 *Rock Mulch Cover Design*

4.9.3.1 *Contributing Area and Time of Concentration*

Design flows for rock mulch sizing were computed using the Rational Method with contributing areas defined on a unit width basis to simulate sheet flow across the cover surface, consistent with NUREG-1623. The contributing area for each slope segment is therefore defined as 1 foot multiplied by the cumulative slope length from the ridgeline.

$$A = 1 \text{ ft} \times L$$

where L is the cumulative slope length from the ridgeline. Time of concentration was calculated using the Kirpich (1940) formula as recommended in NUREG/CR-4620:

$$t_c = 0.0078 \times L^{0.770} \times S^{-0.385}$$

where t_c is time of concentration in minutes, L is slope length in feet, and S is ground slope in feet per foot. At the design cover slope of 20 percent (S = 0.20 ft/ft), the Kirpich formula yields short times of concentration for disposal cell cover slope segments. Where computed values fall below the minimum PMP duration increment used in NUREG/CR-4620, the minimum duration governs the applied rainfall intensity. The detailed slope-length increments, contributing areas, times of concentration, and governing rainfall intensities are provided in Appendix I.

4.9.3.2 *Peak Discharge, Rational Method*

Peak runoff rates were computed using the Rational Method as recommended in NUREG-1623:

$$Q = C \times I \times A$$

where Q is peak discharge in cfs per foot of unit width, C is the runoff coefficient, I is rainfall intensity in inches per hour, and A is contributing area in acres per foot of width. A runoff coefficient of 0.80 was assigned to the rock mulch admixture cover surface, consistent with precedent for rock mulch cover surfaces. Appendix I provides the Rational Method worksheets used to calculate design discharges for the cover-slope erosion protection evaluation.

Velocity and flow depth on the cover surface were computed using Manning's equation for a wide rectangular flow section. A Manning's roughness coefficient of $n = 0.035$ was assigned to the rock mulch admixture cover, consistent with rocky soil cover surface guidance in NUREG/CR-4620.

4.9.3.3 *Rock Mulch Sizing, Abt Johnson Method*

The median stone diameter of the rock mulch was sized using the Abt Johnson method, as recommended in NUREG-1623 and NUREG/CR-4620:

$$D_{50} = 5.23 \times q^{0.56} \times S^{0.43}$$

where D_{50} is median rock size in inches, q is unit discharge in cfs per foot, and S is cover slope in feet per foot. A flow concentration factor of 3 is applied to the unit discharge to provide an appropriate degree of conservatism, consistent with NUREG-1623 guidance and comparable rock-mulch cover design practice. Appendix I documents the design discharges, flow depths, velocities, and computed D_{50} values at representative slope-length increments. The results indicate that the AASHTO No. 1 gravel component, with a nominal D_{50} of approximately 2.2 inches, provides adequate erosion resistance where unsupported slope runs are limited by interceptor berms or grade breaks. The adopted design standard limits maximum unsupported slope runs to 250 feet, providing a nominal factor of safety of at least approximately 1.08 for the provided gravel size based on the Appendix I Abt-Johnson calculations.

Table 4-8 Rock Mulch Sizing Results

Slope Length L (ft)	Required D50 (in)	Provided D50 (in)	Factor of Safety
50	0.83	2.20	2.65
100	1.22	2.20	1.80
150	1.54	2.20	1.43
200	1.80	2.20	1.22
250	2.04	2.20	1.08
300	2.26	2.20	0.97

As summarized in Table 4-8, the provided AASHTO No. 1 gravel D_{50} of 2.20 inches exceeds the required D_{50} for slope lengths up to 250 feet, but the factor of safety drops below unity at 300 feet. The rock mulch layer thickness is specified at 12 inches. Per NUREG-1623 guidance, the layer thickness must equal or exceed 1.5 times the D_{50} diameter to prevent layer penetration under design

flow conditions. The 12-inch layer thickness exceeds 1.5 × 2.20 = 3.3 inches, satisfying this criterion by a wide margin.

4.9.3.4 *Filter Requirement — Leps (1973)*

The need for a separate filter layer beneath the rock mulch admixture was evaluated in accordance with NUREG-1623 and NUREG/CR-4620 using the Leps (1973) relationship for interstitial flow through rockfill. The evaluation was completed to determine whether flow through the voids of the rock mulch could exceed filter-design thresholds and potentially require an additional transition layer between the rock mulch and the underlying on-site soil cover.

$$V_v = W_m^{0.5} \times i^{0.54}$$

In the Leps relationship, V_v is the average interstitial velocity in the voids of rockfill, $W_m^{0.5}$ is an empirical coefficient dependent on rock size from the NUREG/CR-4620 tabulated values, and i is the hydraulic gradient. For this evaluation, the hydraulic gradient was taken as the cover slope, S = 0.20 ft/ft. Because the cover surface is a gravel-soil admixture rather than clean rockfill, the analysis was completed in two steps, as documented in Appendix I, Section I-3.

The first step provides a conservative screening calculation using only the AASHTO No. 1 gravel component. For the gravel fraction, D_{50} = 2.20 inches and $W_m^{0.5}$ = 4.75 $in^{0.5}/s$. Substitution into the Leps equation at the design hydraulic gradient gives:

$$V_v = 4.75 \times (0.20)^{0.54} = 1.99 \text{ ft/s}$$

This screening value exceeds the NUREG-1623 threshold of 1.0 ft/s; however, it represents clean gravel behavior and is not the governing condition for the proposed cover. The constructed surface will be a blended admixture consisting of 30 percent AASHTO No. 1 gravel and 70 percent on-site soil cover material by volume. The fine-grained soil fraction fills the voids between gravel particles and controls the effective pore-throat dimension, so applying the gravel-only result directly would overstate the interstitial velocity through the constructed layer.

The second step therefore evaluates the blended admixture. On a simple volume-weighted basis, the blend of 30 percent gravel (D_{50} = 2.20 inches) and 70 percent on-site soil cover material (D_{50} = 0.0106 inches) gives:

$$D_{50,blend} = 0.30 \times 2.20 + 0.70 \times 0.0106 = 0.667 \text{ in}$$

As described in Appendix I, Section I-3.2.1, the effective blended D_{50} for interstitial-flow behavior is governed by the finer on-site soil cover fraction rather than by the volume-weighted arithmetic value. On a mass-weighted and pore-control basis, the finer fraction fills the gravel voids and determines the effective pore size; therefore, the governing blended value is $D_{50,blend}$ = 0.0106 inches. Using this governing value, the corresponding Leps coefficient is:

$$W_m^{0.5} \ (D_{50} = 0.0106 \text{ in}) \approx 0.010 \ in^{0.5}/s$$

$$V_v = 0.010 \times (0.20)^{0.54} = 0.004 \text{ ft/s} << 1.0 \text{ ft/s}$$

The refined interstitial velocity of 0.004 ft/s is well below both the 1.0 ft/s screening threshold and the 0.5 ft/s no-filter threshold. This refined result is the governing Leps result for the constructed admixture because it reflects the effective pore structure created by the combined gravel and on-

site soil cover material. Accordingly, the blended admixture functions as its own filter at the interface with the underlying on-site soil cover, and a separate filter layer beneath the rock mulch cover is not required.

A Terzaghi (1943) filter-compatibility check was also completed to confirm that the admixture is compatible with the underlying on-site soil cover layer. The check was performed in accordance with Appendix I, Section I-3.2.3:

$$D_{15,\text{blend}} / D_{85,\text{subgrade}} = 0.045 \leq 5.0 \text{ [COMPATIBLE — criterion satisfied]}$$

The Terzaghi ratio is substantially below the criterion of 5.0, confirming compatibility between the blended admixture and the underlying on-site soil cover. The Leps and Terzaghi evaluations therefore support the same design conclusion: the rock mulch admixture provides adequate internal filtering and interface compatibility without a separate filter layer.

4.9.3.5 *Gully Formation Analysis*

Gully formation within the rock mulch admixture cover was evaluated using NUREG-1623 and EPA (2012) guidance. Design flows for gully formation were computed using the Rational Method with a contributing area width equal to one quarter of the slope length, consistent with EPA (2012). Mean annual flow was estimated as 20 percent of the Probable Maximum Flood peak runoff:

$$Q_m = 0.20 \times Q_{PMF}$$

Gully channel geometry at the critical flow condition was estimated using EPA (2012) empirical equations relating mean annual flow, soil silt and clay content, and channel width-to-depth ratio. The percent silts and clays used in the calculation is the fraction passing the No. 200 sieve in the admixture gradation, approximately 17 percent for the 30 percent AASHTO No. 1 gravel and 70 percent on-site soil blend. Appendix I documents the gully-formation calculations, including mean annual flow, incipient particle size, armor-layer development, and calculated scour depth.

The incipient particle size was computed using Shield's equation:

$$D_c = \tau / [F_s \times (\gamma_s - \gamma)]$$

where τ is average bed shear stress, F_s is Shield's dimensionless shear stress, γ_s is specific weight of soil, and γ is the unit weight of water. The depth of scour required to develop an armor layer was calculated using the Pemberton and Lara (1984) equation:

$$Y_s = Y_a \times [(1 / P_c) - 1]$$

where Y_s is scour depth, Y_a is armor-layer thickness, and P_c is the decimal fraction of admixture material coarser than the incipient particle size. For the design slope length of 250 feet, the Appendix I Shield's incipient motion analysis yields a critical particle size of approximately 4.15 inches; gravel particles larger than that threshold resist movement and form the armor layer. The Pemberton-Lara equation yields a scour depth of approximately 10.3 inches, which is less than the 12-inch admixture layer thickness. Gully formation calculations therefore confirm that the armor layer develops within the depth of the rock mulch admixture before reaching the underlying on-site soil cover, protecting cover integrity under design flow conditions. This outcome also supports the adopted 250-foot maximum unsupported slope run because the calculated scour remains within

the sacrificial admixture layer before the design storm can expose the moisture-storage soil layer. Construction verification of gradation and thickness will be required to maintain this margin.

4.9.3.6 *Stable Slope Analysis*

Long-term slope stability of the rock mulch admixture cover under PMP conditions was evaluated using two complementary approaches: the Abt-Johnson critical slope run length analysis, which governs the design, and the allowable shear stress method from Temple et al. (1987) and NUREG-1623, which provides a confirmatory check. The Abt-Johnson analysis establishes that the AASHTO No. 1 gravel component provides a factor of safety of approximately 1.08 at a slope length of 250 feet, declining below unity beyond approximately 286 feet. This establishes the governing design constraint that interceptor berms or grade breaks must be provided at a maximum spacing of 250 feet along the 20 percent cover slope.

$$\tau_a = 0.4 \times D_{75}$$

$$S_s^{7/6} = [65 \times \tau_a^{5/3}] / [I \times L \times F \times n]$$

where S_s is maximum stable slope, D_{75} is the 75th-percentile rock size in the admixture, τ_a is allowable shear stress, I is PMP rainfall intensity, L is slope length, F is the flow concentration factor, and n is Manning's roughness coefficient. For the AASHTO No. 1 gravel component, D_{75} is approximately 3.5 inches, resulting in an allowable shear stress of approximately 1.40 psf. At the design cover slope and maximum berm spacing of 250 feet, computed bed shear stresses remain below the allowable shear stress, confirming the Abt-Johnson result. Stable-slope calculations are provided in Appendix I.

4.9.3.7 *Rock Mulch Admixture Gradation*

The rock mulch admixture consists of 30 percent AASHTO No. 1 gravel and 70 percent on-site soil material by volume, consistent with EPA (2012) guidance for aggregate amended covers in arid and semi-arid environments. The 30 percent gravel fraction is specified to provide enhanced erosion resistance while maintaining sufficient finer soil matrix to support vegetation establishment. The gradations of the AASHTO No. 1 gravel, on-site soil material, and blended admixture are presented in Table 4-9.

Table 4-9 Rock Mulch Admixture Gradation

Sieve Size	AASHTO No. 1 Gravel % Passing	On-Site Soil Material % Passing	Blended Admixture % Passing
4 in (101.6 mm)	100	100	100
3.5 in (88.9 mm)	95	100	99
2.5 in (63.5 mm)	50	100	85
1.5 in (38.1 mm)	8	100	72
3/4 in (19.05 mm)	3	100	71
3/8 in (9.525 mm)	0	96	67
No. 4 (4.76 mm)	0	92	64
No. 10 (2.00 mm)	0	86	60
No. 40 (0.420 mm)	0	80	56
No. 100 (0.149 mm)	0	59	42
No. 200 (0.074 mm)	0	24	17

Note: Gradations are based on representative AASHTO No. 1 gravel and site on-site soil material used in the Appendix I erosion-protection calculations. Final admixture gradation shall be verified by blending trials before construction. The percent passing the No. 200 sieve in the blended admixture, approximately 17 percent, provides the silt and clay fraction input to the gully formation analysis in Section 4.9.3.5. The median size of the AASHTO No. 1 gravel component is nominally 2.2 inches, consistent with the specified gradation.

4.9.4 *Wind Erosion Analysis*

Wind erosion from the admixture cover surface was evaluated using the Wind Erosion Prediction System (WEPS), a USDA developed procedural simulation model that generates continuous weather simulations for site specific field conditions. WEPS produces an estimated annual soil loss in tons per acre per year. Site inputs for the WEPS analysis included site latitude, longitude, and elevation consistent with the site. A sandy loam soil with 30 percent rock fragment volume was used to represent the admixture surface. The 30 percent rock fragment input reflects the design gravel fraction and simulates the naturally developing armored surface expected on the cover over time.

EPA (1991) guidance for RCRA/CERCLA final covers identifies a soil loss target of less than 2 tons per acre per year as an acceptable benchmark for cover performance. The Mt. Taylor admixture design with 30 percent gravel will produce an annual erosion of 0.13 tons/acre/year. This is substantially below the 2-ton guidance threshold. Final site-specific WEPS results are provided in Appendix I.

4.9.5 *Summary*

The surface water hydrology and erosion protection design for the Mt. Taylor Mine expanded disposal cell integrates cover-slope armoring, gully-resistance checks, and wind-erosion protection. The design is based on the PMP/PMF framework and the procedures in NUREG-1623, NUREG/CR-4620, and 40 CFR Part 192, with supporting calculations provided in Appendix I. The resulting design limits erosion of the 20 percent cover slopes controls offsite inflow around the disposal cell and provides redundant protection at the diversion channel and embankment interface.

Table 4-10 summarizes the principal design elements and shows how each component contributes to the overall erosion-protection system. The design storm rows establish the hydrologic basis for the cover, using the local PMP storm for cover erosion. The time-of-concentration and peak-discharge rows identify the routing assumptions used to convert the design rainfall into cover-slope flow conditions, including the Kirpich equation, Rational Method, unit-width sheet-flow basis, and a runoff coefficient of 0.80 for the rock mulch admixture surface.

The table also documents the key erosion-resistance checks for the rock mulch cover. The Abt-Johnson rock-sizing method, with a flow concentration factor of 3, confirms that the AASHTO No. 1 gravel fraction provides adequate resistance for unsupported slope runs up to 250 feet. Manning's roughness value of 0.035 represents the rocky soil admixture surface used in the hydraulic calculations. The filter and gully-formation rows demonstrate that the blended rock-soil admixture functions as its own filter and that the calculated armor layer develops within the 12-inch rock mulch layer before scour reaches the underlying On-site soil cover.

Table 4-100 Surface Water and Erosion Protection Design Summary

Design Element	Design Basis / Method	Key Parameter
Design storm for cover	PMP local storm from HMR-49	West of 103rd meridian; site elevation approximately 7,400 ft
Time of concentration	Kirpich (1940), per NUREG/CR-4620	Short cover times of concentration govern rainfall intensity
Peak discharge for cover	Rational Method with runoff coefficient $C = 0.80$	Unit-width sheet-flow basis for cover slopes
Rock mulch size	Abt-Johnson method with flow concentration factor = 3	$D_{50} = 5.23q^{0.56}S^{0.43}$; provided gravel D_{50} approximately 2.2 in
Cover Manning's *n*	Rocky soil admixture surface	$n = 0.035$
Cover filter requirement	Leps (1973) interstitial velocity and Terzaghi filter compatibility	Separate filter not required; admixture acts as filter
Gully formation	EPA (2012), Shields equation, and Pemberton and Lara (1984)	Armor layer develops within 12-inch rock mulch cover
Stable slope	Temple et al. (1987), NUREG-1623, and Abt-Johnson confirmation	Maximum unsupported slope run = 250 ft
Admixture design	30 percent AASHTO No. 1 gravel and 70 percent on-site soil material	Nominal gravel D_{50} approximately 2.2 in
Wind erosion	WEPS, USDA	Less than 2 tons/acre/year benchmark

The rock mulch admixture protects the disposal cell surface from rainfall impact, sheet flow, gully formation, and wind erosion. These elements provide a technically consistent erosion-protection

design for the 1,000-year performance period, subject to construction verification of material gradations and layer thicknesses. This summary also provides a cross-check that the selected design assumptions are internally consistent across hydrology, hydraulics, gradation, filter compatibility, and long-term maintenance requirements, reducing the likelihood that any single component controls performance without supporting redundancy.

4.10 Borrow Source Location and Characterization

The disposal cell cover system will consist of (from bottom to top) clay radon barrier, on-site soil cover for biointrusion and frost protection, and a rock mulch layer for erosion protection. The proposed cover system is shown in Figure 4-1. This section discusses the location and characterization of the borrow source areas for the proposed cover materials.

4.10.1 *Borrow Source Locations*

The EA site investigation showed that the clay for the radon barrier and the on-site soil cover materials are procurable from the site. Figure 2-2 includes the locations of the potential borrow sources at the site.

4.10.2 *Borrow Source Characterization*

4.10.2.1 *Clay Borrow Source*

The field investigation of the clay borrow source, conducted by EA, included excavation of 24 test pits as discussed in Section 2.3. The test pit locations are shown on Figure 2-3, and the test pit logs are included in Appendix A. EA encountered clay, silty clay, clayey silt, sandy clay, sand, and sandstone in the test pits.

4.10.2.2 *On-Site Soil Cover Borrow Source*

A borrow source for the on-site soil cover exists at the Facility as shown on Figure 4-6. As discussed in Section 2.4.2, samples of the borrow source materials were collected for laboratory testing. The laboratory test results are included in Appendix B.

4.10.2.3 *Rock Mulch Borrow Source*

The rock mulch cover layer will be locally sourced where suitable material is available. The material will comprise 30 percent AASHTO No. 1 gravel and 70 percent on-site soil cover material by volume. The source rock for the mixture may be imported if a suitable local source is not identified. NUREG-1623 provides specific criteria for the use of sandstone in reclamation applications, including fine-grained quartz cementation, low porosity, insignificant vertical and horizontal joints or fractures, and sourcing from massive bedding formations. Before final design, a borrow source for the rock will be identified and tested.

4.11 Borrow Source Quantities

The optimized 52-inch cover system requires three principal borrow material quantities: approximately 31,833 cubic yards of 12-inch rock cover, 70,620 cubic yards of 28-inch on-site soil cover, and 28,740 cubic yards of 12-inch compacted clay for the radon barrier. These quantities

are based on the revised cover configuration described in Section 4.2 and supersede the previous bulk borrow-source quantity estimate.

Borrow Source C has an approximate plan area of 522,920 square feet, or about 12.0 acres. Based on that area, each foot of recoverable material represents approximately 19,367 cubic yards of in-place soil before shrinkage, processing losses, oversize removal, or selective excavation. The required 28,740 cubic yards of compacted clay therefore corresponds to about 1.48 feet of average in-place clayey material across the Borrow Source C footprint before adjustment for construction yield. Allowing for approximately 15 percent loss or shrinkage, the required average recoverable thickness increases to about 1.70 feet.

The January 2025 test pit descriptions summarized in Section 2.3 indicate that sandy clay was encountered at most test pit locations and commonly occurs beneath the surficial sand at depths of approximately 3 to 4 feet, extending to the 6-foot exploration depth. Within Borrow Source C specifically, sandy clay was observed immediately below topsoil at C-2 and C-8, was present below sand at most other C-series test pits, and was absent at C-12 based on the limited excavation depth described in the logs. This distribution indicates that Borrow Source C contains a laterally extensive clayey soil interval, although the clayey material is not uniformly present from the ground surface and will require selective stripping of topsoil and overlying sand before excavation of the clayey borrow material.

For planning purposes, if the average recoverable clayey thickness within Borrow Source C is assumed to be 2.0 feet, the estimated available in-place clayey volume is approximately 38,735 cubic yards. If the average recoverable thickness is 2.5 feet, the estimated volume increases to approximately 48,419 cubic yards; at 3.0 feet, the estimated volume is approximately 58,102 cubic yards. These estimates indicate that Borrow Source C can reasonably supply the 28,740 cubic yards of compacted clay required for the 12-inch radon barrier if at least about 1.7 feet of suitable clayey material can be selectively recovered on average across the borrow area after allowances for shrinkage and unsuitable material.

The on-site soil cover requirement of 70,620 cubic yards is greater than the clay radon barrier requirement but may be satisfied using the overlying sand, sandy clay, and other suitable onsite on-site soil materials from Borrow Source C and other onsite borrow areas, subject to gradation, organic-content, oversize, moisture-density, and hydraulic suitability requirements. The 31,833 cubic yards of rock cover will be supplied from the approved rock mulch source or imported aggregate source and blended as specified in Section 4.9.

The borrow quantity estimate should be treated as preliminary because the uploaded test pit log file could not be read directly in this editing session. The estimate is therefore based on the test pit descriptions already summarized in Section 2.3 of this report. Before construction, Borrow Source C should be confirmed by field staking, additional shallow test pits or dozer cuts, laboratory classification and compaction testing, and construction quality assurance documentation to verify that the clayey material meets the compacted clay barrier specifications and that sufficient suitable volume remains after stripping and processing.

4.12 Revegetation of Disturbed Areas

Revegetation of the borrow areas will follow the Closeout/Closure Plan (EA, 2025) and use native, drought-adapted species suited to the Mt. Taylor Mine setting in the western plateau and high-valley region of northwestern New Mexico. The region receives approximately 10 to 14 inches of annual precipitation and supports native grassland and shrubland communities that include grama grasses, Indian ricegrass, galleta, and fourwing saltbush. The seed mix in Table 4-11 is appropriate for the Mt. Taylor Mine because it emphasizes shallow- to moderately rooted native grasses, with a limited shrub component, to support semi-arid reclamation, erosion control, and long-term cover stabilization.

The selected species are consistent with regional revegetation guidance that favors locally appropriate native seed sources for disturbed lands in New Mexico and with reclamation literature identifying Indian ricegrass as useful for erosion control and reclamation in arid and semi-arid areas receiving approximately 8 to 14 inches of annual precipitation. Blue grama is also widely used for rangeland improvement, mine-spoil reclamation, and roadside stabilization in the semi-arid Southwest. The total application rate of 9.0 pounds pure live seed per acre is within the range used for final mine reclamation seed mixes in New Mexico and should be adjusted, if necessary, based on seed availability, purity, germination, and agency-approved substitutions before construction.

Seed will be applied using standard mine reclamation equipment, including tracked or wheeled tractors, rangeland seed drills, and mulch spreaders where slopes and access allow. On areas steeper than 3H:1V or where equipment access is limited, hand broadcasting, chain seeding, hydroseeding, or comparable approved methods may be used. Seed shall be certified weed-free, applied on a pure-live-seed basis, and placed during an appropriate seasonal window for native species establishment. Mulch, tackifier, or temporary stabilization may be used where needed to protect seeded areas from wind and water erosion during establishment.

Table 4-111 Proposed Seed Mix and Application Rates

Common Name	**Scientific Name**	**Lbs PLS/Acre**
Blue grama	*Bouteloua gracilis*	1.5
Indian ricegrass	*Achnatherum hymenoides*	2.0
Galleta	*Pleuraphis jamesii*	1.5
Fourwing saltbush	*Atriplex canescens*	1.0
Black grama	*Bouteloua eriopoda*	1.0
Sideoats grama	*Bouteloua curtipendula*	1.5
Prairie junegrass	*Koeleria macrantha*	0.5
Total		**9.0**

The seed mix shown in Table 4-11 is appropriate for inclusion in this report because revegetation is a functional component of the final cover system. Establishing a stable native plant community will reduce wind erosion, increase surface roughness, support evapotranspiration from the on-site soil cover, and limit the establishment of undesirable deep-rooted woody species. Final seed procurement should prioritize locally adapted or regionally appropriate native seed lots, and any

substitutions should maintain the same functional objectives of drought tolerance, erosion resistance, shallow rooting, and compatibility with the engineered cover.

4.13 Material Placement

Materials requiring permanent containment will be transported to the expanded disposal cell and placed under controlled construction procedures consistent with applicable federal and state requirements, including 40 CFR Part 192, 10 CFR Part 40 Appendix A, and project-specific reclamation specifications. The placement program is intended to maintain waste isolation, minimize voids, control long-term settlement, and preserve the final cover system. Materials managed under this section include:

- Contaminated soils requiring permanent containment;
- Facility debris and non-salvageable structures;
- Dismantled equipment and appurtenances; and
- Other approved closure materials designated for placement in the expanded disposal cell.

Before placement, structural materials and equipment designated for disposal will be prepared to promote safe handling, dense placement, and long-term settlement control. Preparation requirements include:

- Cut, dismantle, crush, or reduce materials to manageable dimensions;
- Stage and compact compressible debris in approved areas before incorporation into disposal cell fill;
- Fill pipes, conduits, tanks, vessels, and similar hollow items with suitable clean earthen material when they cannot be adequately crushed; and
- Place irregular or oversized components so surrounding soil can be compacted against them to minimize bridging, unsupported voids, and future differential settlement.

Disposal cell fill will be placed in controlled lifts to achieve the specified density and provide a stable foundation for subsequent waste placement and final cover construction. Unless otherwise approved by the Engineer, placement requirements include:

- Loose lift thickness not exceeding 12 inches;
- Compaction with suitable construction equipment until the specified density is achieved;
- Minimum compaction of 90 percent of the maximum dry density determined in accordance with ASTM D1557, unless material-specific specifications require otherwise;
- Field density testing at a minimum frequency of one test per 2,500 square feet per lift; and
- Reworking and retesting of nonconforming areas until the compaction requirement is met.

Co-placement of diesel-impacted soils with radiologically impacted materials is addressed in the EA regulatory evaluation completed in March 2026 (and is provided in Appendix J). The evaluation concluded that co-placement within the engineered disposal cell is permissible when

diesel-impacted soils are confirmed to be non-hazardous and managed under the controls listed below. Approximately 7,400 cubic yards of diesel-impacted soil have been identified in the North Controlled Area, where total petroleum hydrocarbon diesel range organics concentrations exceed the NMED industrial soil screening level within a discrete release area.

The diesel-impacted soils are not classified as hazardous waste under RCRA because TPH-DRO is not listed hazardous waste and the soils are not expected to exhibit hazardous characteristics, including ignitability, corrosivity, reactivity, or toxicity. The diesel release area does not coincide with the primary radiological hotspots, and areas where diesel and radiological impacts co-occur contain diesel concentrations below the applicable NMED screening level. Therefore, these materials do not constitute mixed waste under RCRA and the Atomic Energy Act.

Groundwater protection is provided by the engineered containment system and the substantial vertical separation between the disposal cell base and the groundwater table, which is approximately 70 to 95 feet below ground surface near the cell. The liner system, engineered cover, and long-term monitoring program provide isolation of both radiologically impacted materials and diesel-impacted soils. Published compatibility information also indicates that the HDPE liner system is suitable for contact with weathered petroleum hydrocarbons at the concentrations expected in the identified soils.

Implementation controls for diesel-impacted soils will provide traceability, confirm non-hazardous classification, and maintain compliance with the regulatory basis for co-placement. The principal controls include:

- Segregation of diesel-impacted soils during excavation and staging.
- Staging on an impervious surface before disposal cell placement.
- Confirmation sampling to verify non-hazardous classification.
- Separate management of any free-phase product, if encountered.
- Documentation of the final location and depth of diesel-impacted soils placed within the cell.

The co-placement approach reduces long-term environmental risk by consolidating contaminated materials within a single engineered containment system rather than creating a separate disposal location. Centralized placement also improves long-term inspection, monitoring, and institutional control of the affected materials and is consistent with the regulatory framework governing uranium mine reclamation in New Mexico.

During material handling, transport, staging, and placement, dust-control best management practices will be implemented in accordance with applicable EPA, state, and project-specific uranium mine reclamation requirements to protect workers and minimize fugitive dust emissions; these measures will include water application as needed, controlled vehicle speeds, limited drop heights during loading and placement, prompt covering or stabilization of disturbed material, and work stoppage or modified operations when wind conditions could cause unacceptable dust generation.

5.0 CONCLUSIONS

5.1 General

This report presents the design basis and performance analyses for the engineered cover system proposed for the expanded disposal cell at the Mt. Taylor Uranium Mine, Cibola County, New Mexico (EA Project No. 111360). The cover system is designed as a passive store-and-release (SAR) evapotranspiration barrier consistent with the performance requirements of 40 CFR Part 192, 10 CFR Part 40 Appendix A Criterion 6, and the New Mexico Copper Rule (20.6.7.33 NMAC), as a relevant state performance benchmark for store-and-release cover behavior. The analyses address interconnected performance requirements including frost protection, radon attenuation, biointrusion resistance, infiltration control, store-and-release capacity, slope stability, surface-water management, erosion protection, borrow-source suitability, revegetation, and material placement controls. The following subsections summarize the principal findings and regulatory compliance determinations for the analysis areas presented in Section 4.

5.2 Cover System Configuration

The proposed cover system consists of three layers totaling 52 inches (4.33 feet) of engineered material placed over the consolidated waste mass. From top to bottom, the layers are a 12-inch rock mulch admixture (30 percent AASHTO No. 1 gravel and 70 percent on-site soil cover material by volume), a 28-inch compacted on-site soil cover layer, and a 12-inch compacted clay radon barrier. The compacted clay barrier is the primary radon-attenuation and infiltration-control layer. Section 4.6 reports a design saturated hydraulic conductivity of 7.6×10^{-6} cm/s for the compacted clay barrier, and Section 5.8 should therefore rely on that value unless the final design specification is revised. The on-site soil cover layer provides the design frost-depth protection above the clay barrier and the soil moisture storage capacity required for the store-and-release evaluation. The rock mulch layer controls surface water and wind erosion and provides a physical deterrent to burrowing. The layered configuration is evaluated in Section 4.2 of this report.

5.3 Frost Depth and Thermal Protection

Frost depth was computed using the Modified Berggren method, which accounts for finite soil heat capacity, differing frozen and unfrozen thermal properties, and non-zero initial soil temperature through a correction coefficient. The design-basis air freezing index is 927.5 degree-days for the 200-year return period, and the resulting design frost depth is approximately 28 inches. The 28-inch on-site soil cover layer therefore provides the required thermal buffer above the compacted clay radon barrier. The clay radon barrier remains at or below the base of the frost-active zone under design conditions, limiting freeze-thaw degradation of the low-permeability layer over the design life. The frost depth analysis is presented in Section 4.3 and Appendix D.

5.4 Radon Attenuation

Radon attenuation was evaluated using the one-dimensional steady-state diffusion model implemented in the Wise Uranium Project Uranium Mill Tailings Cover Calculator, following NRC Regulatory Guide 3.64 (NRC, 1989). The regulatory limit is 20 pCi/m²/s averaged over the disposal cell surface, per 40 CFR Part 192 and 10 CFR Part 40 Appendix A Criterion 6.

The design radium-226 (Ra-226) source term of 115 pCi/g is conservative relative to the arithmetic mean of 101.3 pCi/g derived from 124 survey locations across five source areas characterized by AVM Environmental Services, Inc. (2023). Materials from the Ore Pad Area, which exhibit the highest mean Ra-226 activity at 431.6 pCi/g, are designated for placement at the base of the disposal cell to minimize high-activity material near the cover interface. During placement, higher-activity radiological materials will be blended with lower-activity materials, where practical, to minimize elevated spot concentrations and reduce localized variability within the waste mass. The clay radon barrier was modeled with a long-term in-service moisture content of 15.1 percent (15-bar SWCC value), a dry density of 1.59 g/cm³, a porosity of 0.38, and a resulting radon diffusion coefficient of 4.62×10^{-7} m²/s.

The model yields a bare-source surface flux of 42.10 pCi/m²/s in the absence of cover and a design surface flux of 13.99 pCi/m²/s at the top of the rock mulch layer. The three-layer cover system attenuates 66.77 percent of the bare-source flux, producing a design value that is 30 percent below the regulatory limit of 20 pCi/m²/s. The radon attenuation analysis is presented in Section 4.4.

5.5 Biointrusion

The cover system is designed to satisfy the biointrusion-related requirements of 10 CFR Part 40 Appendix A Criterion 6, which requires radiological hazard control for 1,000 years to the extent reasonably achievable, and in any case for at least 200 years. Current NRC and DOE guidance recognizes that shallow-rooted native vegetation can support SAR cover performance by removing stored soil moisture through transpiration. The primary biointrusion concern is therefore associated with deep-rooted woody plants and burrowing animals that could physically disturb or penetrate the compacted clay radon barrier.

Physical deterrents are provided at multiple levels. The 12-inch rock mulch surface layer presents a coarse, discontinuous substrate that resists burrowing and reduces the likelihood of direct animal disturbance. The 28-inch compacted on-site soil cover layer separates routine biological activity from the clay radon barrier while supporting the shallow-rooted native grass community specified in the revegetation plan. The compacted clay radon barrier is protected by the overlying 40 inches of cover material. Biointrusion controls will be supplemented by post-closure inspection and adaptive management for woody vegetation, burrowing activity, cracking, erosion, or localized cover damage. The biointrusion analysis is presented in Section 4.5.

5.6 Infiltration, Water Balance, and Copper Rule Compliance

The infiltration analysis is based on the 2018–2025 San Mateo on-site meteorological record, which yields a mean annual precipitation (MAP) of 10.01 in/yr and a Thornthwaite (1948) potential evapotranspiration (PET) of 26.45 in/yr. The resulting aridity index, expressed as PET/P = 2.64 in Section 4.6, confirms that the site climate is strongly water-limited, with evapotranspirative demand substantially exceeding available precipitation throughout most of the year.

Actual evapotranspiration (AET) was estimated using the Budyko (1948) method and accounts for 9.30 in/yr, or 92.9 percent of MAP. Surface runoff, estimated using the SCS Curve Number method with CN = 55 on a monthly time step, is 0.021 in/yr and is negligible because only peak monsoon months exceed the initial abstraction threshold of 1.64 inches. The resulting analytical water-balance estimate of percolation is 0.69 in/yr, representing a conservative upper bound of 6.9 percent of MAP. Two-dimensional transient seepage modeling using GeoStudio SEEP/W, which captures inter-annual soil moisture storage dynamics not reflected in the steady-state water balance, yields a design-basis percolation rate of 0.40 in/yr, or 4.0 percent of MAP. This value is adopted as the design basis.

Copper Rule compliance was evaluated by comparing the water storage capacity of the 28-inch on-site soil cover layer against the seasonal precipitation thresholds specified in 20.6.7.33 NMAC. Using the 2018–2025 San Mateo station record, winter precipitation from October through March totals 2.87 inches and summer precipitation from April through September totals 7.14 inches. The winter threshold governs, resulting in a required storage capacity of 2.73 inches. The nominal available water holding capacity (AWHC) of the on-site soil cover (CL-ML), derived from laboratory Soil Water Characteristic Curve testing, is 0.10 in/in. The 28-inch layer provides 2.80 inches of storage, exceeding the 2.73-inch requirement by 0.07 inch. Total cover thickness of 52 inches also exceeds the Copper Rule minimum of 36 inches. The infiltration and Copper Rule analysis is presented in Section 4.6.

5.7 Surface Water Hydrology and Erosion Protection

Erosion protection design follows the procedures of NUREG-1623 (NRC, 2002) and NUREG/CR-4620 (Nelson et al., 1986). The design storm for cover rock mulch sizing is the Probable Maximum Precipitation (PMP), developed using the HMR-49 procedures documented in Appendix I for the Mt. Taylor site. For the disposal cell cover, the short-duration PMP governs rock mulch erosion checks because cover-slope times of concentration are short. For the diversion channel, the PMP-derived Probable Maximum Flood (PMF) governs watershed response and channel lining design. The 100-year, 24-hour precipitation depth documented in Appendix D is substantially less severe than the PMP condition and therefore does not govern erosion-protection design.

Peak unit discharges were computed using the Rational Method with a runoff coefficient of 0.80 and a flow concentration factor of 3.0 per NUREG-1623. Rock mulch D_{50} requirements were evaluated using the Abt-Johnson method. The AASHTO No. 1 gravel component of the admixture, with nominal D_{50} = 2.20 inches, provides a factor of safety of 2.65 at 50-foot slope segments, declining to 1.08 at 250 feet and 0.97 at 300 feet. A maximum interceptor berm or grade-break spacing of 250 feet is adopted as the design standard, maintaining a factor of safety greater than 1.0 for unsupported slope runs under the Appendix I design assumptions.

Filter compatibility of the rock mulch admixture was evaluated using the Leps (1973) interstitial velocity criterion. A conservative gravel-only analysis using D_{50} = 2.20 inches yields an interstitial velocity of 1.99 ft/s, which exceeds the 1.0 ft/s threshold for open-graded rockfill. A refined analysis using the governing blended admixture D_{50} of 0.0106 inch reflects the 70 percent on-site soil cover fines that fill and effectively reduce the inter-gravel void space, yielding an interstitial velocity of 0.004 ft/s, well below the 0.5 ft/s no-filter threshold. The Terzaghi (1943) filter-

compatibility criterion is independently confirmed, with the blended D_{15} to subgrade D_{85} ratio equal to 0.045, which is less than the allowable value of 5.0. A separate filter layer beneath the rock mulch cover is therefore not required. Shield's incipient motion and Pemberton-Lara (1984) scour-depth analyses confirm that the armor layer develops within the 12-inch admixture depth during the design storm before scour reaches the underlying on-site soil cover. The computed scour depth is approximately 10.3 inches, less than the 12-inch admixture thickness. Wind erosion is evaluated using WEPS and the EPA benchmark of less than 2 tons/acre/year, as described in Section 4.9.4. The surface water hydrology and erosion protection analysis is presented in Section 4.9 and Appendix I.

5.8 Slope Stability, Borrow Sources, Revegetation, and Material Placement

The slope stability analysis presented in Section 4.8 demonstrates that the combined expanded disposal cell configuration with 5H:1V final cover slopes satisfies the applicable static and pseudo-static stability criteria for the analyzed section. The static factor of safety exceeds the target value of 1.5, and the pseudo-static factor of safety using a horizontal seismic coefficient of 0.14 exceeds the target value of 1.1. Borrow-source evaluations in Sections 4.10 and 4.11 indicate that suitable clay and on-site soil cover materials are available onsite, subject to field verification, selective excavation, laboratory confirmation, and construction quality assurance. The revegetation plan in Section 4.12 supports erosion control, evapotranspiration, and long-term cover stabilization using native, drought-adapted species. Material placement controls in Section 4.13 address waste consolidation, compaction, settlement control, diesel-impacted soil co-placement, dust control, and traceability during construction.

5.9 Regulatory Compliance Summary

The performance analyses summarized in Sections 5.2 through 5.8 collectively demonstrate that the proposed 52-inch three-layer engineered cover system satisfies applicable regulatory performance requirements. The clay radon barrier remains below the frost-active zone, preserving its hydraulic integrity over the design life. The design surface radon flux of 13.99 pCi/m²/s is 30 percent below the 40 CFR Part 192 limit of 20 pCi/m²/s. The multi-layer physical configuration, in combination with the targeted revegetation plan and post-closure stewardship, limits biointrusion risk to manageable levels consistent with NRC guidance. The design-basis percolation rate of 0.40 in/yr, or 4.0 percent of MAP, confirms effective hydraulic isolation of the waste mass, and the Copper Rule storage benchmark of 2.73 inches is satisfied with a margin of 0.07 inch under nominal AWHC conditions. The rock mulch admixture with a 250-foot maximum berm spacing provides adequate resistance to PMP-driven surface erosion and functions as a self-filtering medium without a separate filter layer. The slope stability, borrow-source, revegetation, and material placement evaluations provide additional support for constructability and long-term cover performance. The cover system design is considered to satisfy the long-term performance requirements of 40 CFR Part 192, 10 CFR Part 40 Appendix A Criterion 6, and the applicable state review framework and is recommended for submittal to the NRC and NMED for review and approval.

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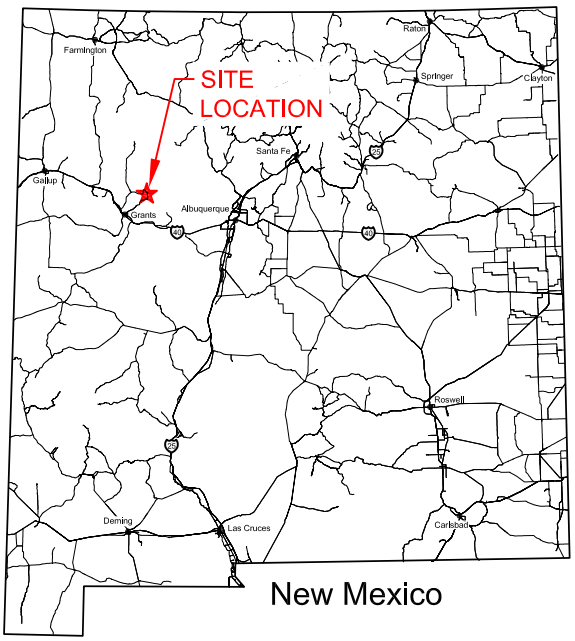
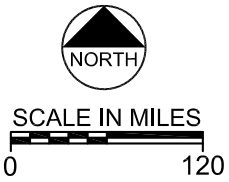
FIGURES





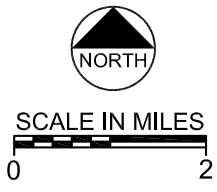


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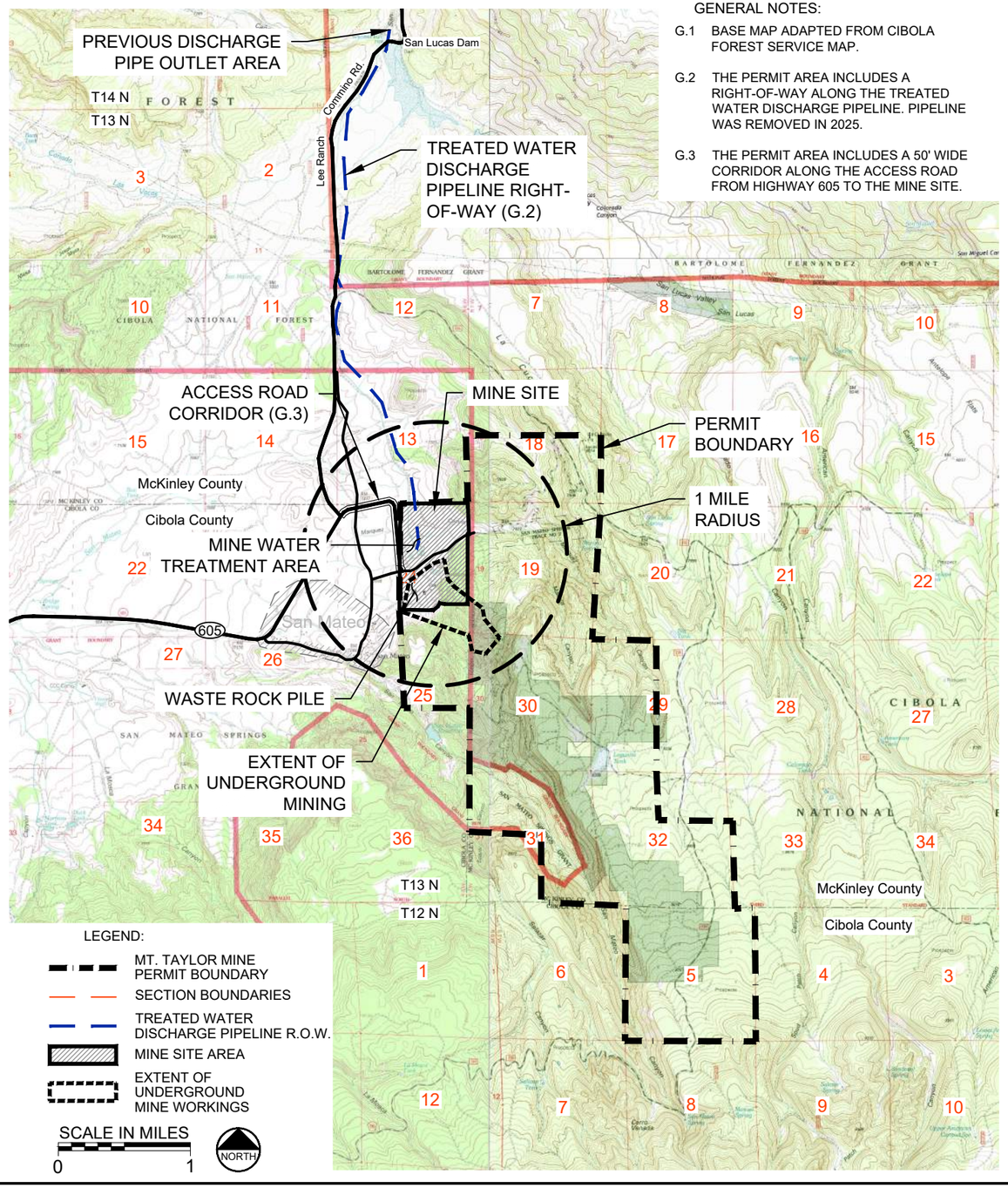
FIGURE 2-1
SITE LOCATION MAP
MT. TAYLOR MINE

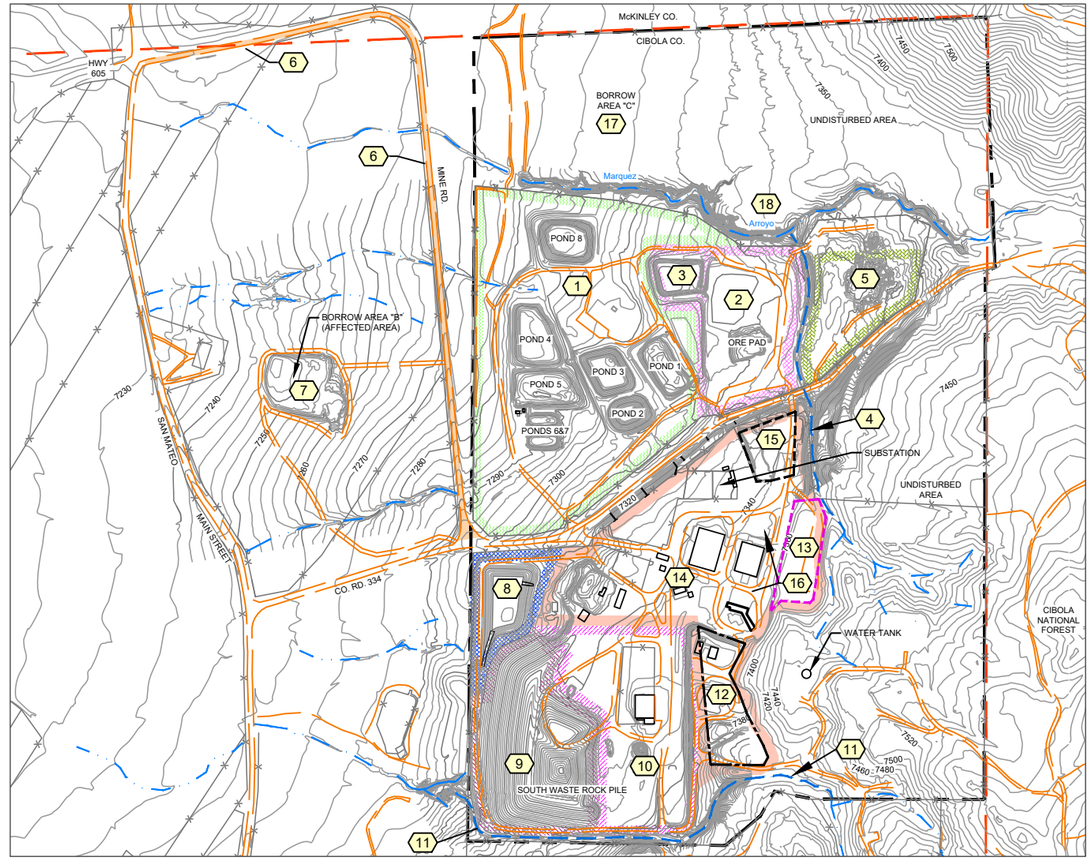


GENERAL NOTES:

G.1 BASE MAP ADAPTED FROM CIBOLA FOREST SERVICE MAP.

G.2 THE PERMIT AREA INCLUDES A RIGHT-OF-WAY ALONG THE TREATED WATER DISCHARGE PIPELINE. PIPELINE WAS REMOVED IN 2025.

G.3 THE PERMIT AREA INCLUDES A 50' WIDE CORRIDOR ALONG THE ACCESS ROAD FROM HIGHWAY 605 TO THE MINE SITE.



MINE UNITS AND OTHER AREAS:

1	MINE WATER TREATMENT AREA	7	BORROW AREA "B"	13	CHILLER BENCH AREA
2	ORE PAD	8	SOUTH STORM WATER POND	14	SERVICE AND SUPPORT AREA
3	ORE PAD RUNOFF RETENTION POND	9	EXISTING WASTE ROCK PILE/ DISPOSAL AREA	15	OLD ORE LOADING AREA
4	NORTH DIVERSION CHANNEL	10	DISPOSAL CELL EXPANSION AREA	16	MINE SHAFTS
5	BORROW AREA "A"	11	SOUTH DIVERSION CHANNEL	17	BORROW AREA "C"
6	MINE ACCESS ROAD	12	COMPRESSOR BENCH AREA	18	WINDBLOWN AREA

LEGEND:

- MINE SITE AREA
- SECTION 24 BOUNDARY
- ROADWAY
- FENCE
- EXISTING TOPOGRAPHY
- DRAINAGE PATHWAYS
- MINE BUILDINGS (PRIOR TO REMOVAL ACTIVITIES)

GENERAL NOTES:

G.1 THE MINE PERMIT AREA INCLUDES THE RIGHT OF WAY ALONG THE TREATED WATER DISCHARGE PIPELINE AND A 50' WIDE CORRIDOR FOR AN ACCESS ROAD (SEE FIGURE 1-3).

G.2 AFFECTED AREAS INCLUDE BUT ARE NOT LIMITED TO BORROW AREA "B", BORROW AREA "C", AND WINDBLOWN AREA. EVALUATION OF OTHER POSSIBLE AFFECTED AREAS IS ONGOING.

G.3 THIS DRAWING SHOWS THE SITE CONDITIONS AS OF JULY 2025. SEE FIGURE 1-2B AND TABLE 4.2 FOR DETAILED FACILITY DISPOSITION INFORMATION.

G.4 TOPOGRAPHY BASED ON A 2012 AERIAL SURVEY BY THOMAS R. MANN AND ASSOCIATES AND 2021 SURVEYS BY SOUTHWEST SURVEYING SOLUTIONS (S3).

NORTH

SCALE IN FEET

0 800'

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FIGURE 2-2
SITE LOCATION AND EXISTING CONDITIONS
MT. TAYLOR MINE

LEGEND:
- MINE SITE AREA
- ROADWAY
- FENCE
- EXISTING TOPOGRAPHY
- DRAINAGE PATHWAYS
- TEST PIT LOCATION

NORTH

SCALE IN FEET
0 300'

McKINLEY CO.

CIBOLA CO.

C-1 C-2 C-3 C-4 C-5 C-6 C-7 C-8 C-9 C-10 C-11 C-12 C-13

BORROW AREA "C"

UNDISTURBED AREA

BORROW AREA "A"

A-1 A-2 A-3 A-4 A-5 A-6

Marquez

Arroyo

MINE RD.

POND 8

POND 4

POND 5

PONDS 6&7

POND 3

POND 2

POND 1

ORE PAD

SUBSTATION

UNDISTURBED AREA

BORROW AREA "B"

B-1 B-2 B-3 B-4 B-5

SAN MATEO

MAIN STREET

7240 7250 7260 7270 7280 7290 7300 7320 7340 7350 7400 7450 7500

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FIGURE 2-3
TEST PIT LOCATION MAP
MT. TAYLOR MINE

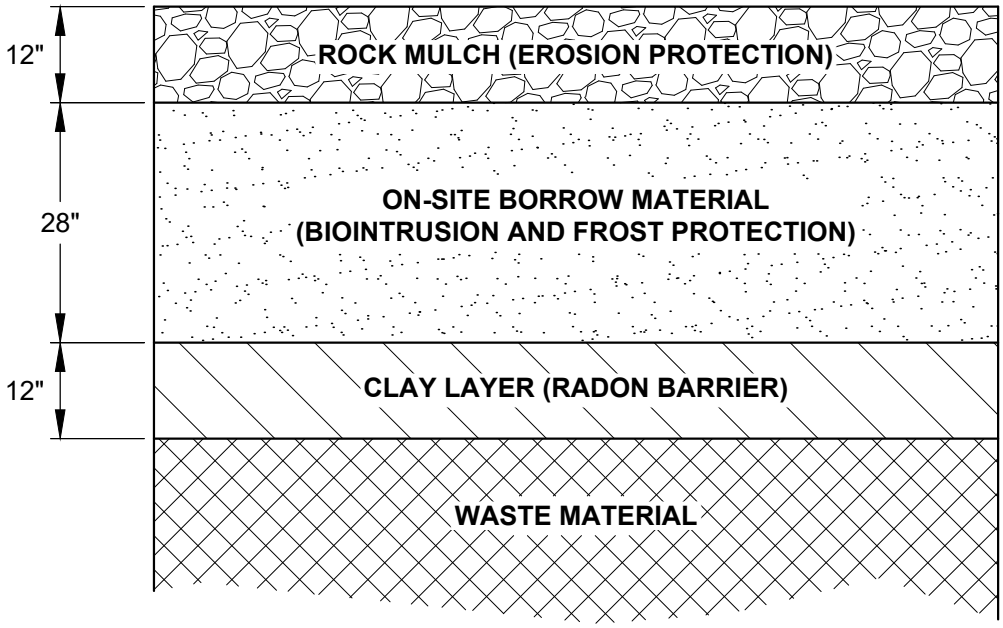

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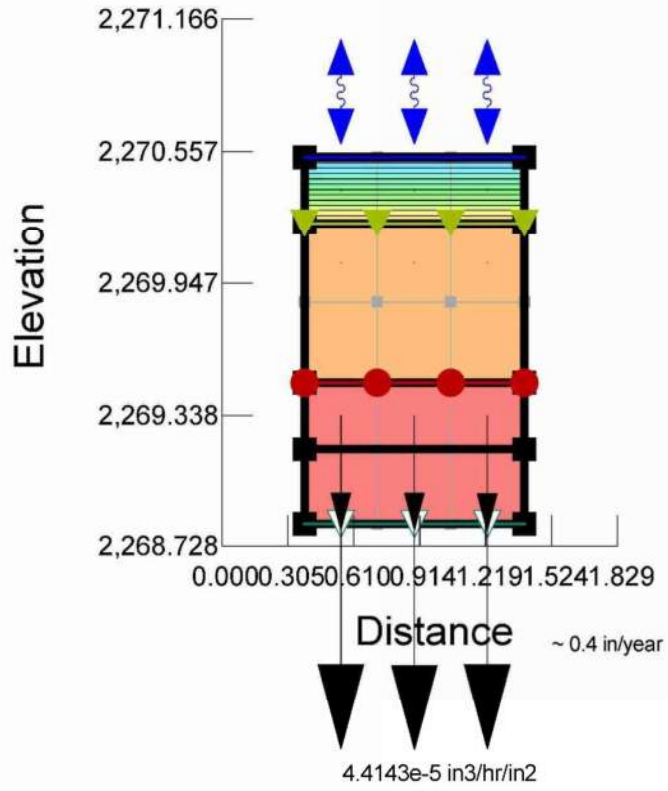
FIGURE 4-1
FINAL RECLAMATION COVER SYSTEM
MT. TAYLOR MINE

Material Properties

Color	Name	Material Model	Vol. WC. Function	K-Function
	1-Rock Mulch	Saturated / Unsaturated	(2025)Rock Mulch	(2025)Rock Mulch
	2-On-Site Soil	Saturated / Unsaturated	(2025)On-Site Soil	(2025)On-Site Soil
	3-Clay Layer	Saturated / Unsaturated	(2025)Clay Layer	(2025)Clay Layer
	4-Waste Material	Saturated / Unsaturated	(2025) Waste	(2025)Waste



Boundary Conditions

Color	Name	Category
	Climate data	Hydraulic
	Flux review Boundary	Hydraulic
	Unit Gradient BC	Hydraulic
	Zero-Pressure Head	Hydraulic

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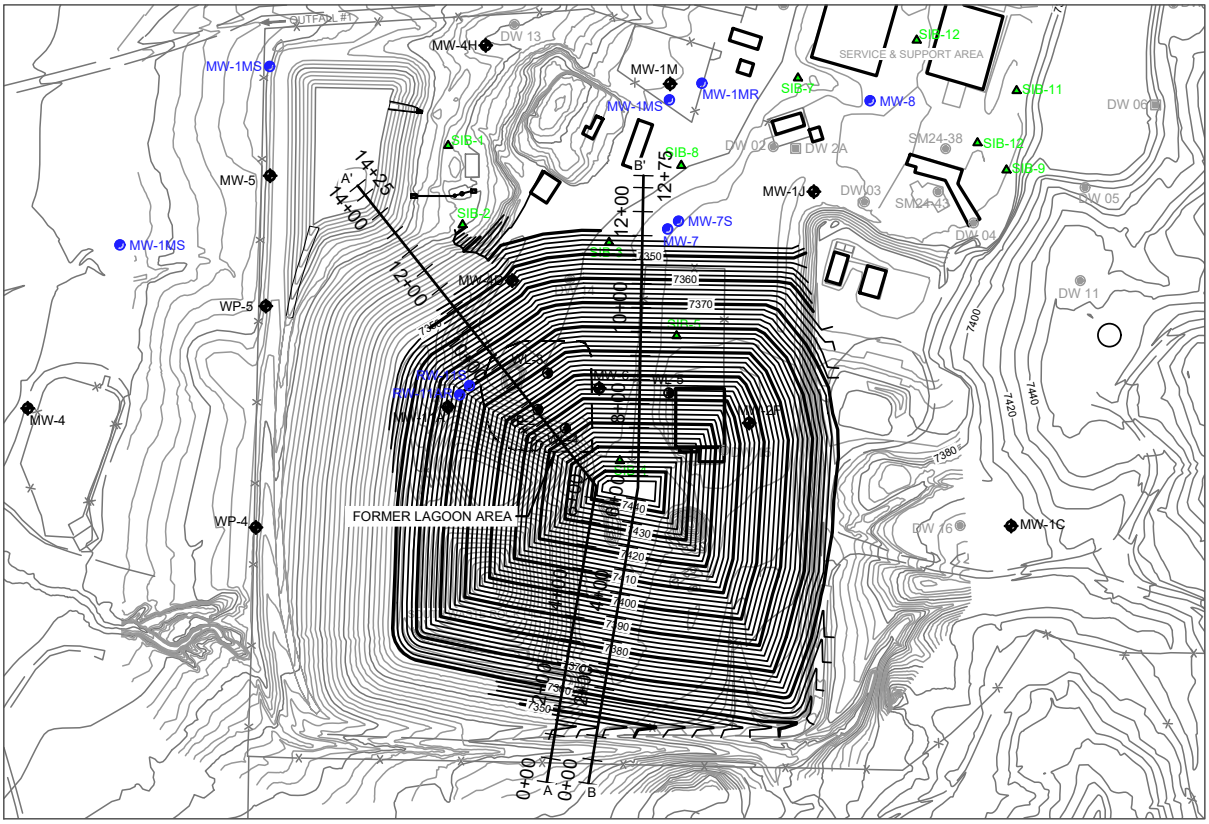
FIGURE 4-2
INFILTRATION ANALYSIS MODEL PROFILE
MT. TAYLOR MINE



- MONITOR WELL
- DRY WELL (PLUGGED AND ABANDONED)
- RECOVERY WELL
- DEWATERING WELL
- FACILITY WATER SUPPLY
- PROPOSED WELL 2025 SIP
- PROPOSED BORING 2025 SIP
- STORMWATER DRAINAGE
- FENCE
- ROADWAY
- FORMER LAGOON AREA
- EXISTING TOPOGRAPHY
- PROPOSED TOPOGRAPHY

NOTE:
MAX DEPTH AT HIGHEST POINT;

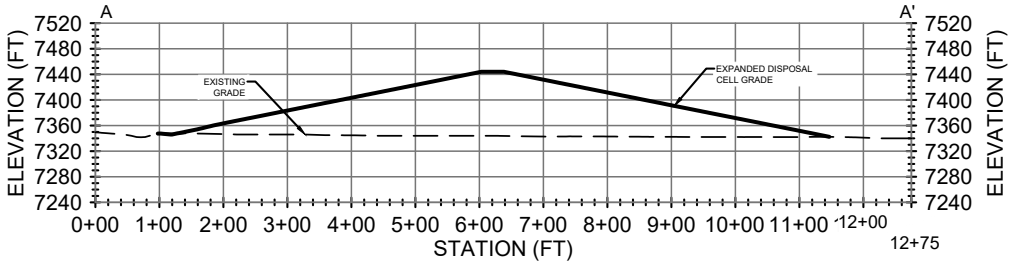
Current El	Proposed El	Height
7344'	7444'	100'

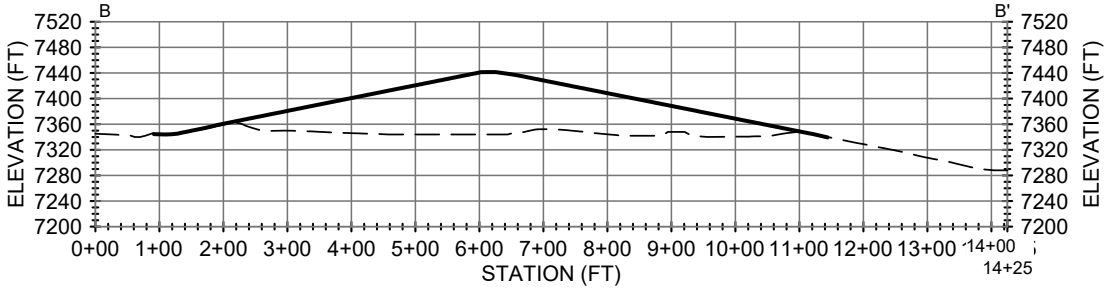
EXPANDED VOLUME
(Compared to original disposal cell volume)

CUT	FILL	NET
1,000	1,103,200	1,102,200

in cubic yards

PLAN
SCALE IN FEET
0 400'
NORTH





SECTIONS
SCALE IN FEET
0 300'

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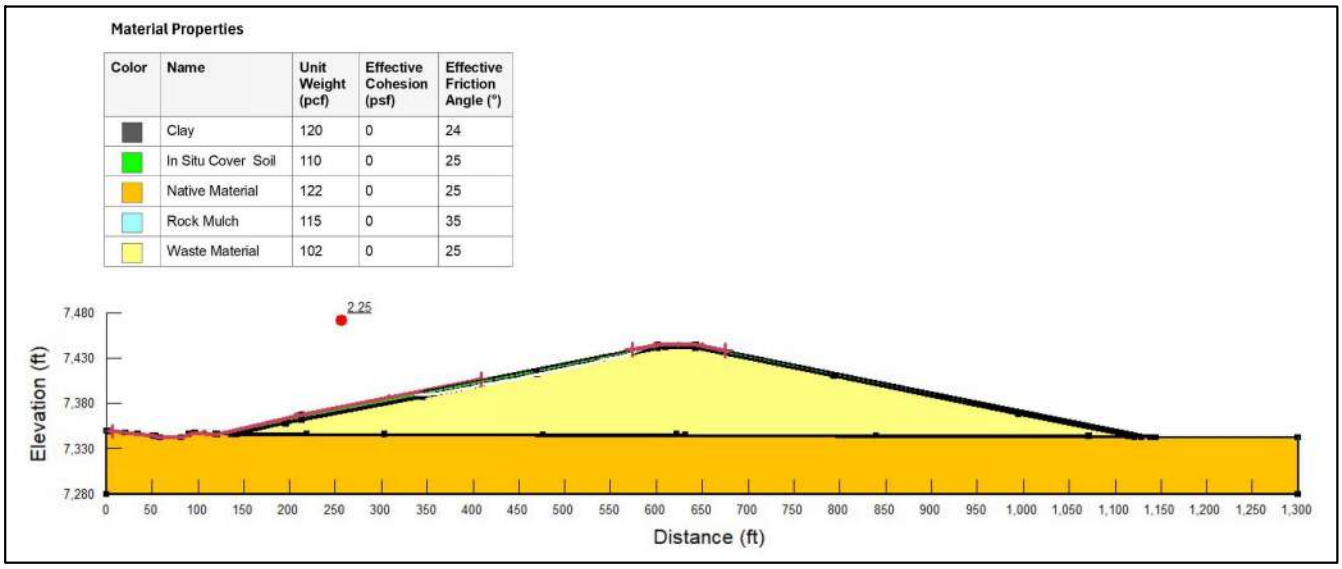
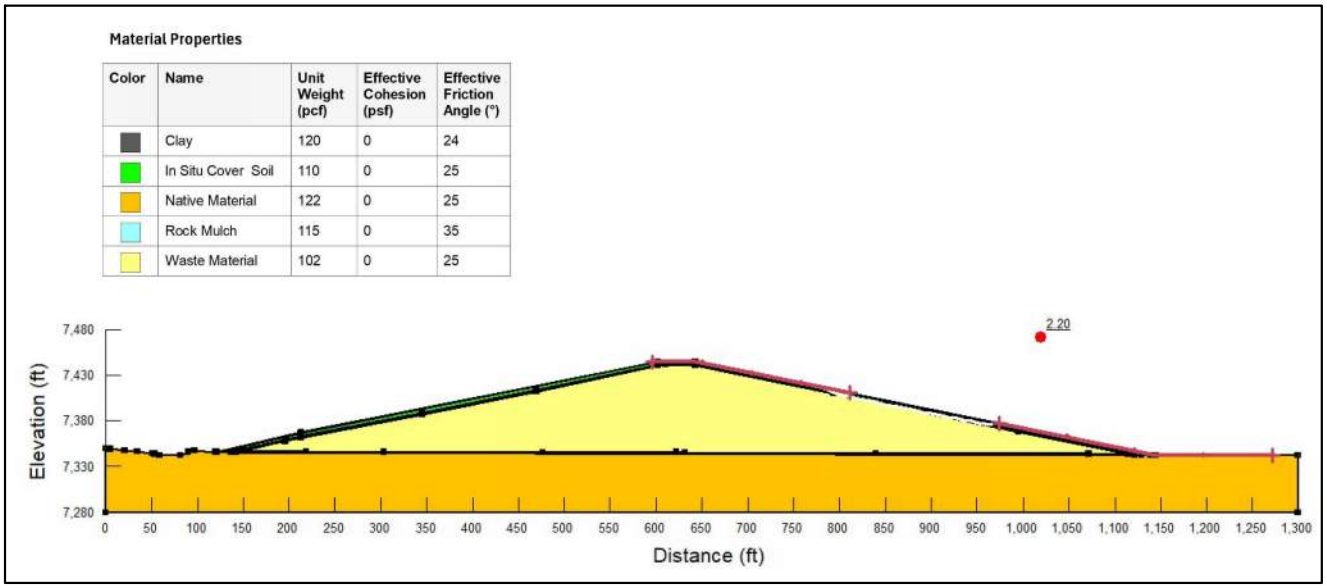
FIGURE 4-3
SECTIONS USED FOR STABILITY ASSESSMENT
MT. TAYLOR MINE



Global Stability Result at the Left Side



Global Stability Result at the Right Side

NOTE:
Factor of Safety (FS) above the regulatory requirement of 1.5.

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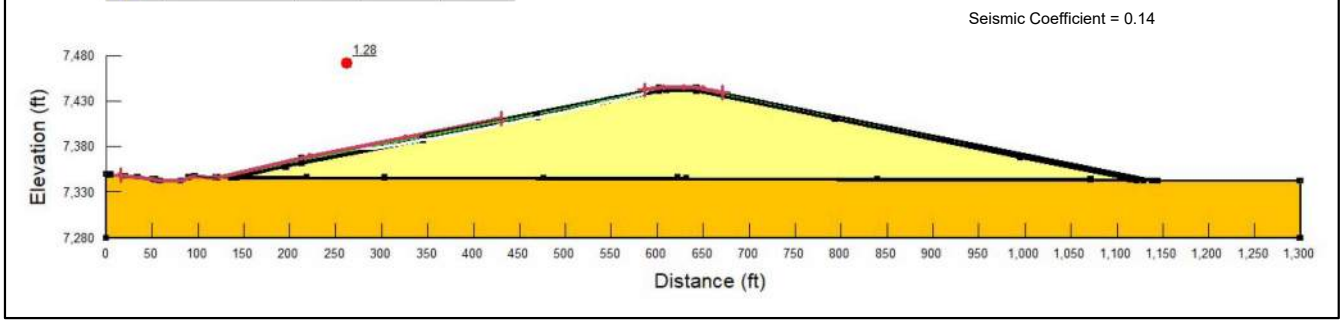
FIGURE 4-4
STABILITY CROSS SECTIONS
MT. TAYLOR MINE

Material Properties

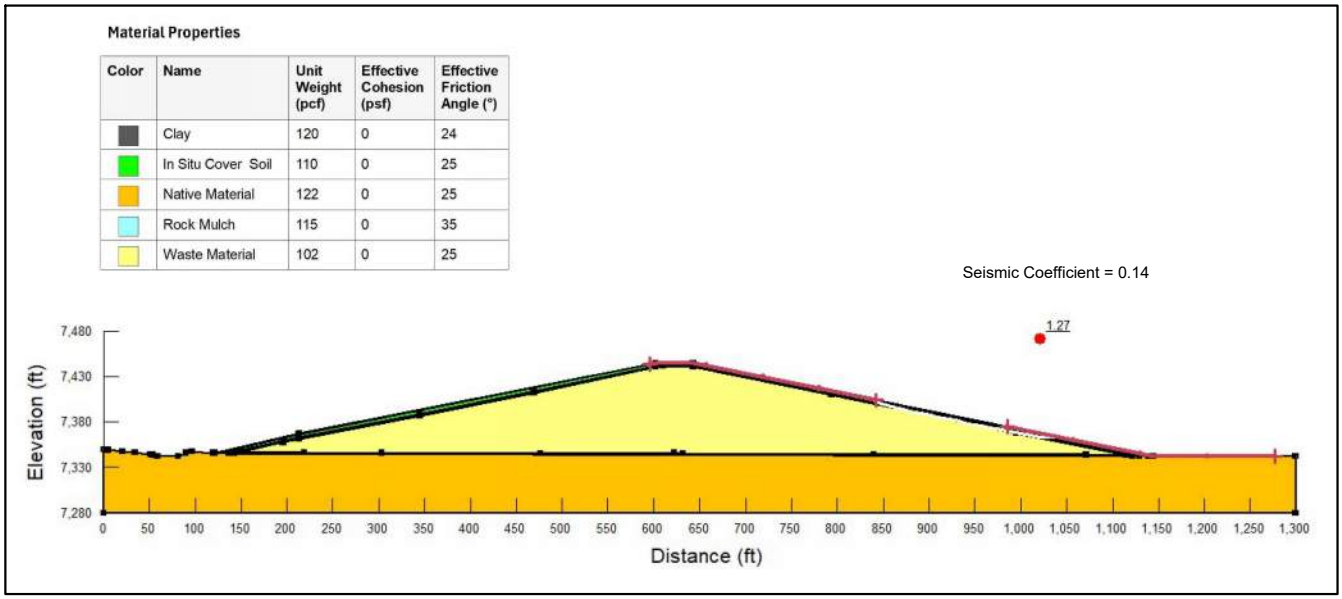
Color	Name	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)
	Clay	120	0	24
	In Situ Cover Soil	110	0	25
	Native Material	122	0	25
	Rock Mulch	115	0	35
	Waste Material	102	0	25



Pseudo-Static Stability Analyses Result to the Left

Material Properties

Color	Name	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)
	Clay	120	0	24
	In Situ Cover Soil	110	0	25
	Native Material	122	0	25
	Rock Mulch	115	0	35
	Waste Material	102	0	25



Pseudo-Static Stability Analyses Result to the Right

NOTE:
The pseudo-static analyses show that the factor of safety (FS) are above 1.1, which is the regulatory criterion.

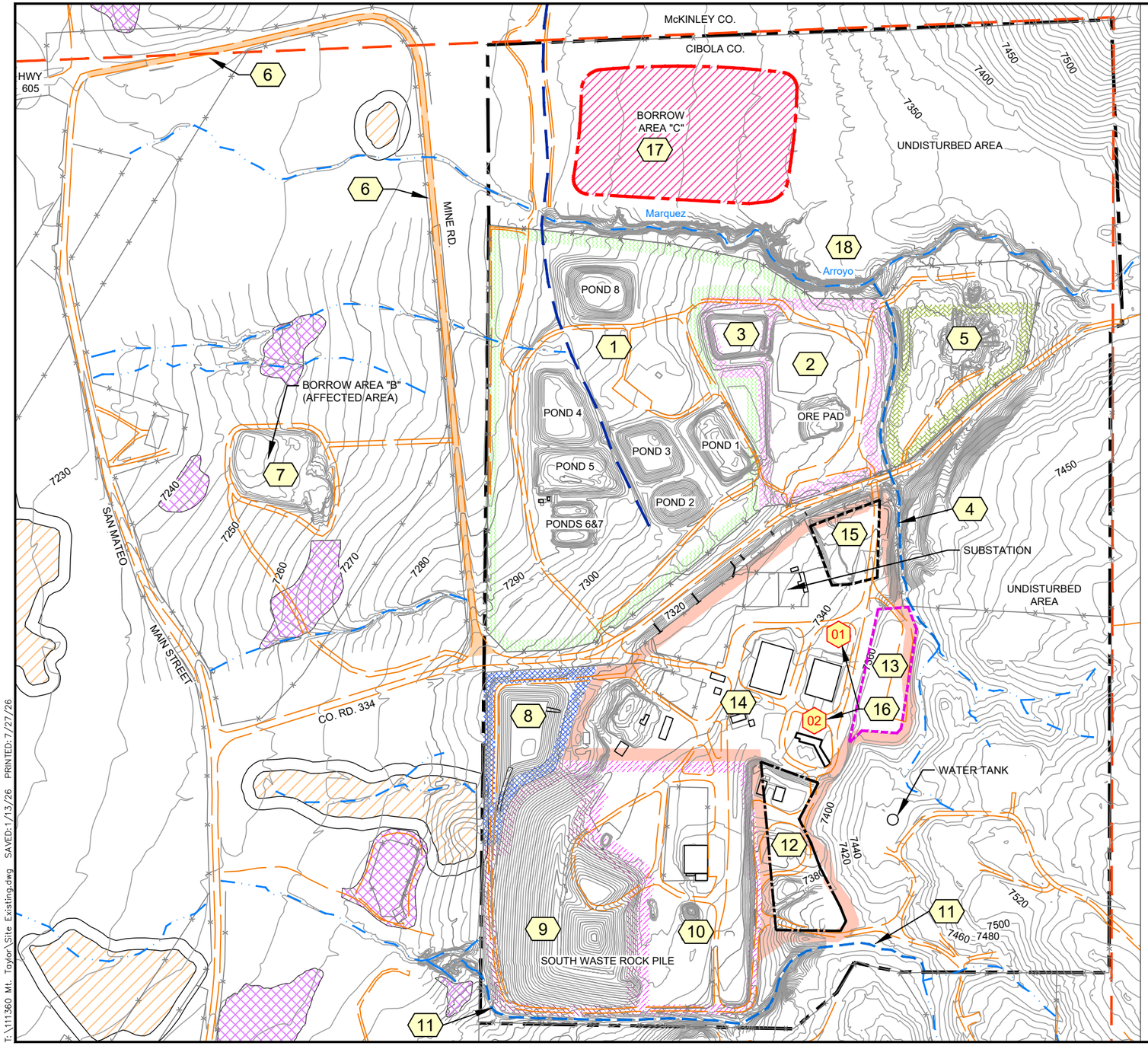
T:\111360 Mt. Taylor\Expanded Slope calcs.dwg SAVED:11/25/25 PRINTED:7/27/26

Project No. 111360

July 2026

Engineering Analytics, Inc.

FIGURE 4-5
STABILITY CROSS SECTIONS
MT. TAYLOR MINE



MINE UNITS AND OTHER AREAS:

1	MINE WATER TREATMENT AREA	10	DISPOSAL CELL EXPANSION AREA
2	ORE PAD	11	SOUTH DIVERSION CHANNEL
3	ORE PAD RUNOFF RETENTION POND	12	COMPRESSOR BENCH AREA
4	NORTH DIVERSION CHANNEL	13	CHILLER BENCH AREA
5	BORROW AREA "A"	14	SERVICE AND SUPPORT AREA
6	MINE ACCESS ROAD	15	OLD ORE LOADING AREA
7	BORROW AREA "B"	01	16 MINE SHAFTS
8	SOUTH STORM WATER POND	17	BORROW AREA "C"
9	EXISTING WASTE ROCK PILE/ DISPOSAL AREA	18	WINDBLOWN AREA

LEGEND:

- MINE SITE AREA
- SECTION 24 BOUNDARY
- ROADWAY
- FENCE
- EXISTING TOPOGRAPHY
- DRAINAGE PATHWAYS
- MINE BUILDINGS (PRIOR TO REMOVAL ACTIVITIES)

GENERAL NOTES:

G.1 THE MINE PERMIT AREA INCLUDES THE RIGHT OF WAY ALONG THE TREATED WATER DISCHARGE PIPELINE AND A 50' WIDE CORRIDOR FOR AN ACCESS ROAD (SEE FIGURE 1-3).

G.2 AFFECTED AREAS INCLUDE BUT ARE NOT LIMITED TO BORROW AREA "B", BORROW AREA "C", AND WINDBLOWN AREA. EVALUATION OF OTHER POSSIBLE AFFECTED AREAS IS ONGOING.

G.3 THIS DRAWING SHOWS THE SITE CONDITIONS AS OF JULY 2025. SEE FIGURE 1-2B AND TABLE 4.2 FOR DETAILED FACILITY DISPOSITION INFORMATION.

G.4 TOPOGRAPHY BASED ON A 2012 AERIAL SURVEY BY THOMAS R. MANN AND ASSOCIATES AND 2021 SURVEYS BY SOUTHWEST SURVEYING SOLUTIONS (S3).

NORTH

SCALE IN FEET

0 500'

T:\111360 Mt. Taylor\Site Existing.dwg SAVED:1/13/26 PRINTED:7/27/26

Project No. 111360

July 2026

Engineering Analytics, Inc.

FIGURE 4-6
LOCATION OF CLAY BORROW SOURCE
MT. TAYLOR MINE

APPENDIX A
Test Pit Logs for 2025 Field Investigation

Engineering Analytics, Inc.

TEST PIT LOG

PAGE: 1 of 2

DATE: date

TEST PIT NO.: A-1

PROJECT INFORMATION

PROJECT: MT. TAYLOR

PROJECT NO.: 111360

CLIENT: MT. TAYLOR

OWNER:

LOCATION: GRANTS, NEW MEXICO

FIELD INFORMATION

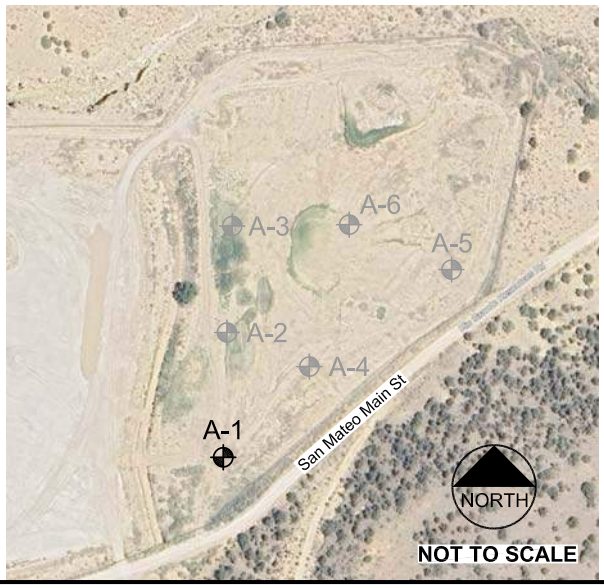
DATE & TIME ARRIVED:

TEST PIT LOGGED BY: JBB

VISITORS:

WEATHER:

TEST PIT LOCATION



EXCAVATION INFORMATION

EXCAVATION COMPANY: RGR

START TIME:

TEST PIT DEPTH: 6 FT TEST PIT DIA.: 2 FT

EXCAVATION METHOD:

SAMPLING METHOD:

TIME EXCAVATION COMPLETE:

TEST PIT COMPLETION / ABANDONMENT INFORMATION

START TIME: COMPLETE TIME:

INSTRUMENTATION: BACKFILL:

GROUNDWATER CONDITIONS

FOLLOWING FIELD WORK

TIME OF CLEAN-UP COMPLETE: TIME LEFT SITE:

NOTES:

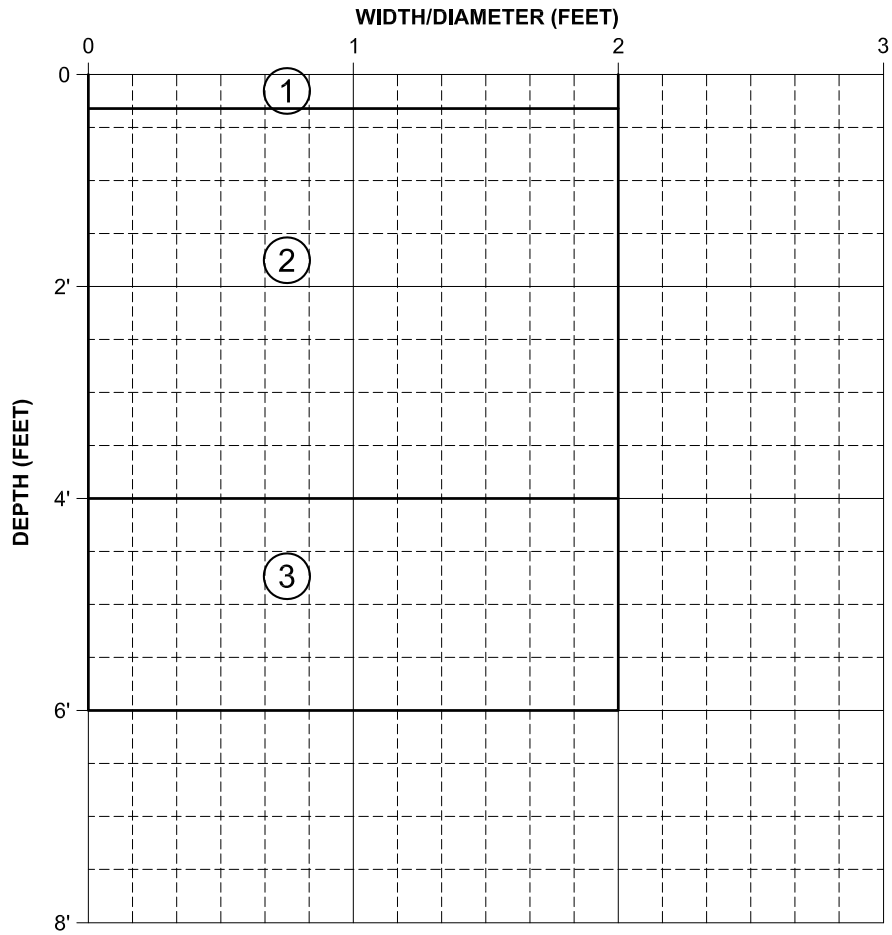
Engineering Analytics, Inc.

TEST PIT LOG

PROJECT: MT. TAYLOR **PAGE:** 2 OF 2

PROJECT NO.: 111360 **DATE:**

TEST PIT NO.: A-1



DEPTH	SAMPLE I.D.	SAMPLE TYPE
3'	A1	BKT
4'	A1C	CA
6'	A1	BKT

SOIL TYPE	SOIL DEPTH	SOIL DESCRIPTION AND EXCAVATION NOTES
1	0 - 2"	VEGETATION, SAND, DRY, (2.5Y, 5/3), LOOSE
2	2" - 4'	SAND, DRY (2.5Y, 5/3), LOOSE, NON-FROZEN BITS, FROZEN
3	4'-E.O.B.	VERY SANDY CLAY, DRY, TAN/ BROWN (2.5Y, 4/3), CHUNKY, BRITTLE, FROZEN

NOTES: HARD TO TELL, GROUND IS FROZEN, MAY BE CLAYEY SAND SILT

Engineering Analytics, Inc.

TEST PIT LOG

PAGE: 1 of 2

DATE:

TEST PIT NO.: A-2

PROJECT INFORMATION

PROJECT: MT. TAYLOR

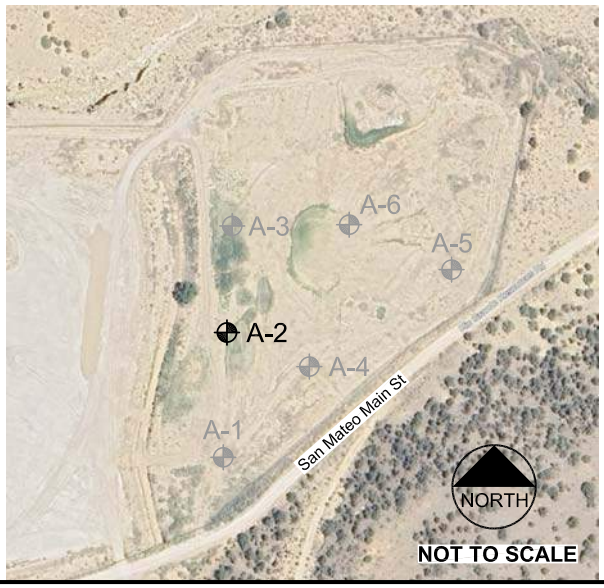
PROJECT NO.: 111360

CLIENT: MT. TAYLOR

OWNER:

LOCATION: GRANTS, NEW MEXICO

TEST PIT LOCATION



FIELD INFORMATION

DATE & TIME ARRIVED:

TEST PIT LOGGED BY: JBB

VISITORS:

WEATHER:

EXCAVATION INFORMATION

EXCAVATION COMPANY: RGR

START TIME:

TEST PIT DEPTH: 6 FT TEST PIT DIA.: 2 FT

EXCAVATION METHOD:

SAMPLING METHOD:

TIME EXCAVATION COMPLETE:

TEST PIT COMPLETION / ABANDONMENT INFORMATION

START TIME: COMPLETE TIME:

INSTRUMENTATION: BACKFILL:

GROUNDWATER CONDITIONS

FOLLOWING FIELD WORK

TIME OF CLEAN-UP COMPLETE: TIME LEFT SITE:

NOTES:

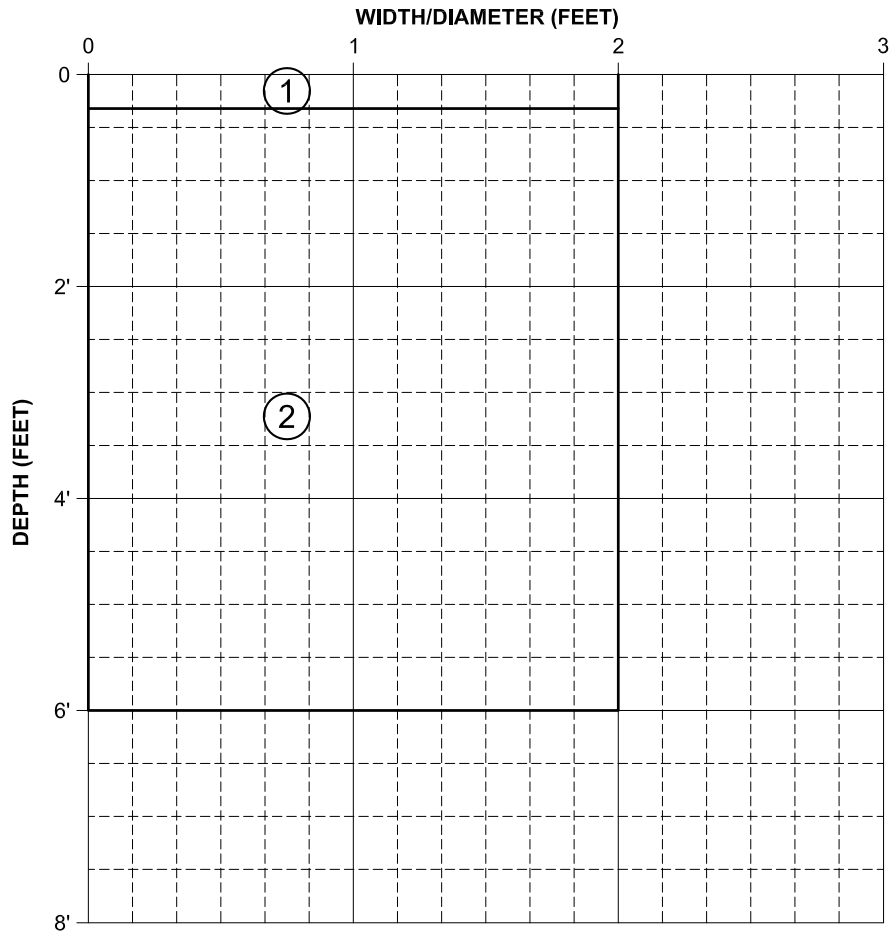
Engineering Analytics, Inc.

TEST PIT LOG

PROJECT: MT. TAYLOR **PAGE:** 2 OF 2

PROJECT NO.: 111360 **DATE:**

TEST PIT NO.: A-2



DEPTH	SAMPLE I.D.	SAMPLE TYPE
3'	A2	BKT
6'	A2	BKT
NR	---	CA

SOIL TYPE	SOIL DEPTH	SOIL DESCRIPTION AND EXCAVATION NOTES
1	0 - 2"	VEGETATION, SAND, DRY, (2.5Y, 5/3), LOOSE
2	2" - E.O.B.	SAND, DRY, (TAN 2.5Y, 5/3), VERY LOOSE, NO PLASTICITY
		NO CLAY

NOTES:

Engineering Analytics, Inc.

TEST PIT LOG

PAGE: 1 of 2

DATE:

TEST PIT NO.: A-3

PROJECT INFORMATION

PROJECT: MT. TAYLOR

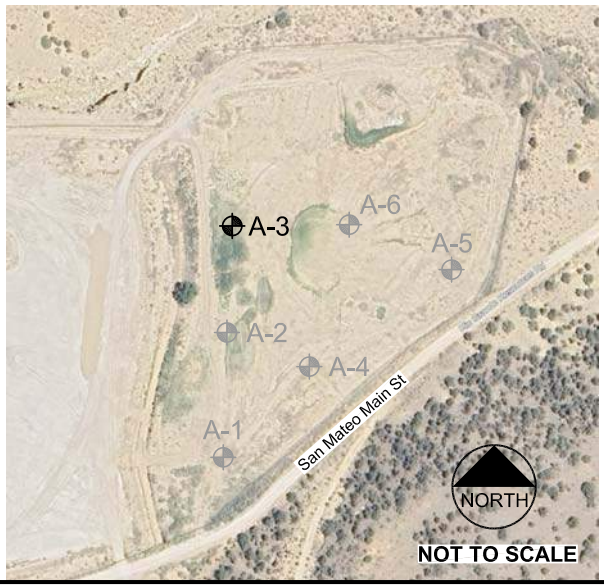
PROJECT NO.: 111360

CLIENT: MT. TAYLOR

OWNER:

LOCATION: GRANTS, NEW MEXICO

TEST PIT LOCATION



FIELD INFORMATION

DATE & TIME ARRIVED:

TEST PIT LOGGED BY: JBB

VISITORS:

WEATHER:

EXCAVATION INFORMATION

EXCAVATION COMPANY: RGR

START TIME:

TEST PIT DEPTH: 6 FT TEST PIT DIA.: 2 FT

EXCAVATION METHOD:

SAMPLING METHOD:

TIME EXCAVATION COMPLETE:

TEST PIT COMPLETION / ABANDONMENT INFORMATION

START TIME: COMPLETE TIME:

INSTRUMENTATION: BACKFILL:

GROUNDWATER CONDITIONS

FOLLOWING FIELD WORK

TIME OF CLEAN-UP COMPLETE: TIME LEFT SITE:

NOTES:

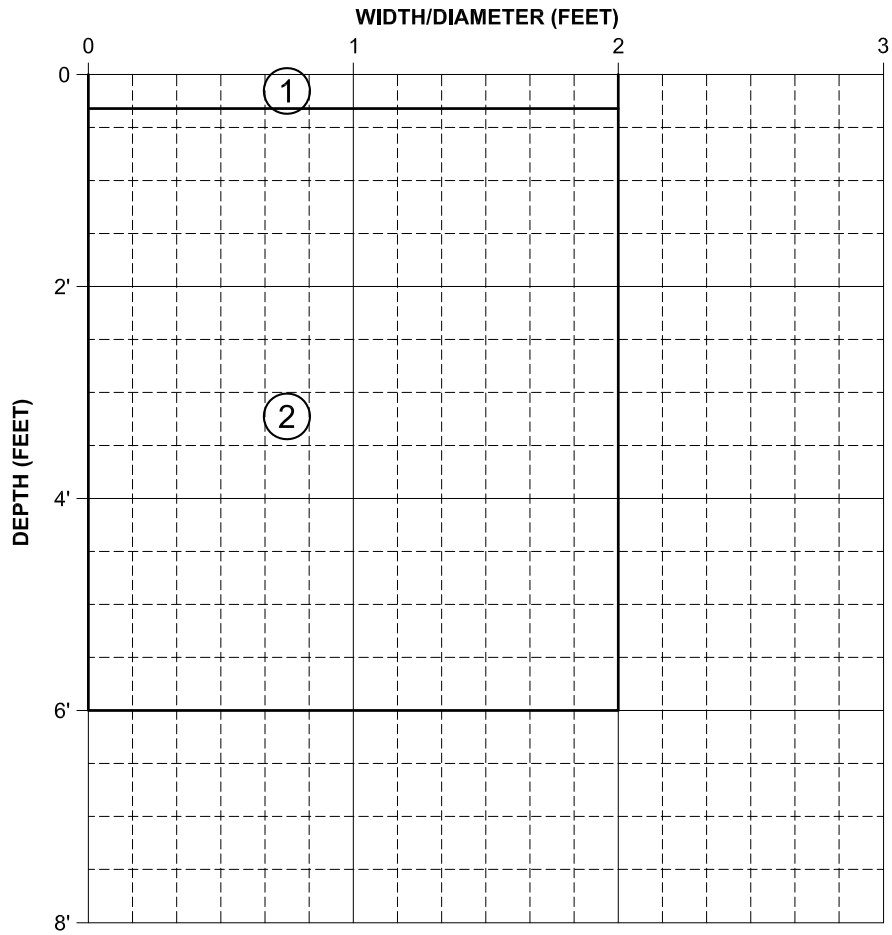
Engineering Analytics, Inc.

TEST PIT LOG

PROJECT: MT. TAYLOR **PAGE:** 2 OF 2

PROJECT NO.: 111360 **DATE:**

TEST PIT NO.: A-3



DEPTH	SAMPLE I.D.	SAMPLE TYPE
3'	A3	BKT
6'	A3	BKT
NR	---	CA

SOIL TYPE	SOIL DEPTH	SOIL DESCRIPTION AND EXCAVATION NOTES
1	0 - 3"	VEGETATION, SAND, DRY, (2.5Y, 5/3), LOOSE, NO PLASTICITY
2	3" - E.O.B.	SAND, FROZEN, (2.5Y, 5/3), LOOSE BITS, NO PLASTICITY

NOTES: NO CLAY

Engineering Analytics, Inc.

TEST PIT LOG

PAGE: 1 of 2

DATE:

TEST PIT NO.: **A-4**

PROJECT INFORMATION

PROJECT: MT. TAYLOR

PROJECT NO.: 111360

CLIENT: MT. TAYLOR

OWNER:

LOCATION: GRANTS, NEW MEXICO

TEST PIT LOCATION

FIELD INFORMATION

DATE & TIME ARRIVED:

TEST PIT LOGGED BY: JBB

VISITORS:

WEATHER:

EXCAVATION INFORMATION

EXCAVATION COMPANY: RGR

START TIME:

TEST PIT DEPTH: 6 FT TEST PIT DIA.: 2 FT

EXCAVATION METHOD:

SAMPLING METHOD:

TIME EXCAVATION COMPLETE:

TEST PIT COMPLETION / ABANDONMENT INFORMATION

START TIME: COMPLETE TIME:

INSTRUMENTATION: BACKFILL:

GROUNDWATER CONDITIONS

FOLLOWING FIELD WORK

TIME OF CLEAN-UP COMPLETE: TIME LEFT SITE:

NOTES:

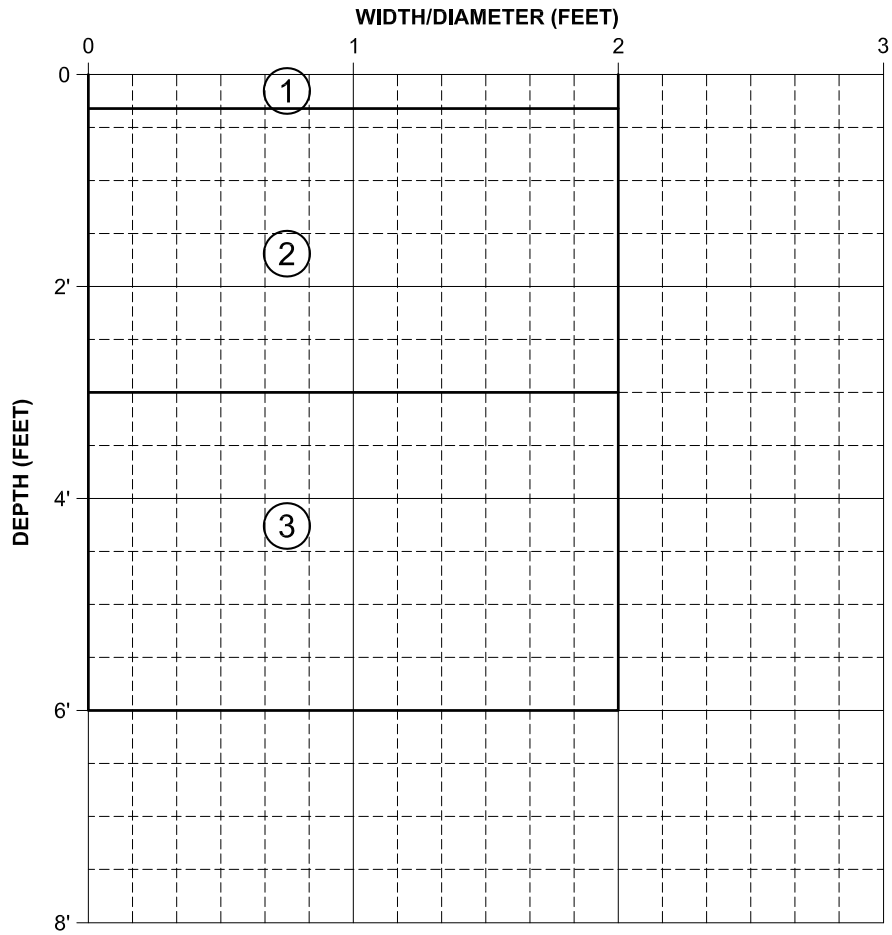
Engineering Analytics, Inc.

TEST PIT LOG

PROJECT: MT. TAYLOR **PAGE:** 2 OF 2

PROJECT NO.: 111360 **DATE:**

TEST PIT NO.: A-4



DEPTH	SAMPLE I.D.	SAMPLE TYPE
3'	A4C	CA
3'	A4	BKT
6'	A4	BKT

SOIL TYPE	SOIL DEPTH	SOIL DESCRIPTION AND EXCAVATION NOTES
1	0 - 2"	VEGETATION, SAND, DRY, (2.5Y, 5/3), LOOSE
2	2" -3'	SAND, FROZEN, (2.5Y, 5/3), NO PLASTICITY, CAME OFF IN BLOCKS, ROOTS
3	3' - E.O.B.	VERY SANDY CLAY, (TAN/ BROWN 2.5Y, 5/3), CHUNKY, BRITTLE
		E.O.T.P. = 6'

NOTES: HARD TO DISTINGUISH CLAY FROM FROZEN SAND.

Engineering Analytics, Inc.

TEST PIT LOG

PAGE: 1 of 2

DATE:

TEST PIT NO.: A-5

PROJECT INFORMATION

PROJECT: MT. TAYLOR

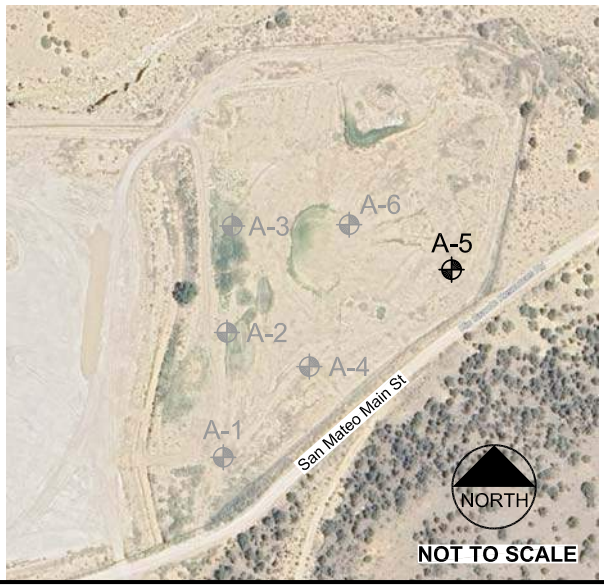
PROJECT NO.: 111360

CLIENT: MT. TAYLOR

OWNER:

LOCATION: GRANTS, NEW MEXICO

TEST PIT LOCATION



FIELD INFORMATION

DATE & TIME ARRIVED:

TEST PIT LOGGED BY: JBB

VISITORS:

WEATHER:

EXCAVATION INFORMATION

EXCAVATION COMPANY: RGR

START TIME:

TEST PIT DEPTH: 6 FT TEST PIT DIA.: 2 FT

EXCAVATION METHOD:

SAMPLING METHOD:

TIME EXCAVATION COMPLETE:

TEST PIT COMPLETION / ABANDONMENT INFORMATION

START TIME: COMPLETE TIME:

INSTRUMENTATION: BACKFILL:

GROUNDWATER CONDITIONS

FOLLOWING FIELD WORK

TIME OF CLEAN-UP COMPLETE: TIME LEFT SITE:

NOTES:

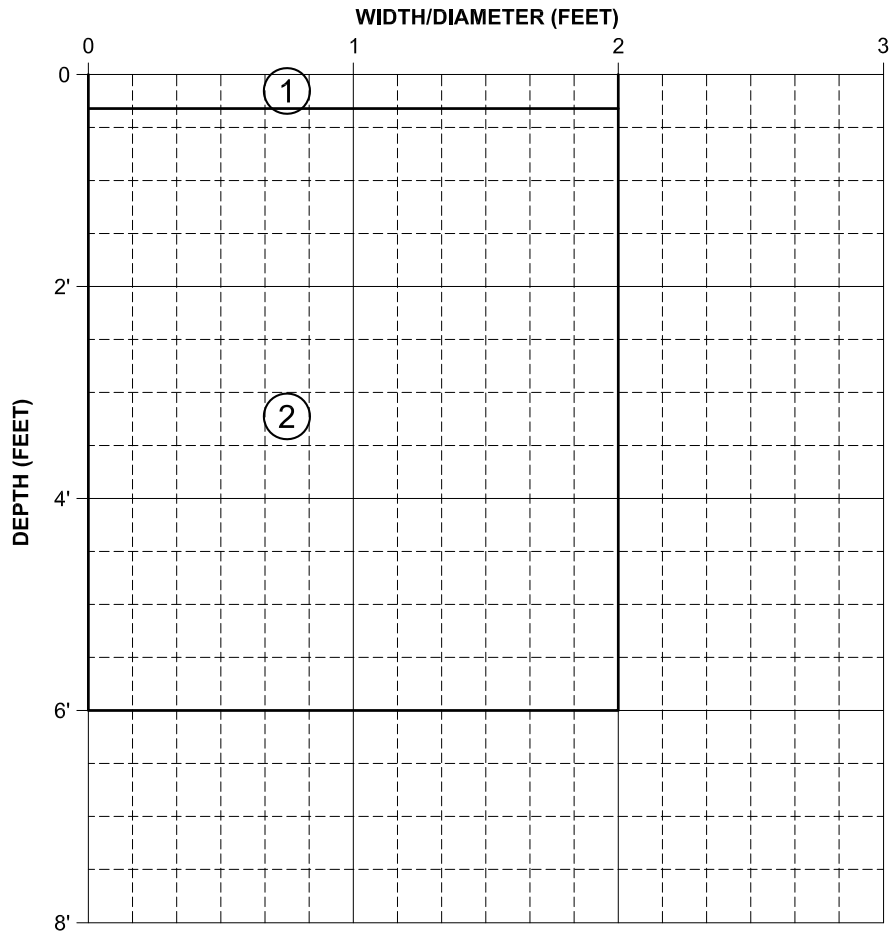
Engineering Analytics, Inc.

TEST PIT LOG

PROJECT: MT. TAYLOR **PAGE:** 2 OF 2

PROJECT NO.: 111360 **DATE:**

TEST PIT NO.: A-5



DEPTH	SAMPLE I.D.	SAMPLE TYPE
3'	A5	BKT
6'	A5	BKT
NR	---	CA

SOIL TYPE	SOIL DEPTH	SOIL DESCRIPTION AND EXCAVATION NOTES
1	0 - 2"	VEGETATION, SAND, DRY, (2.5Y, 5/3), NO PLASTICITY
2	2" - E.O.B.	SAND, (2.5Y, 5/3), VERY LOOSE, VERY FINE, CHUNKS THAT ARE BRITTLE
		E.O.T.P. = 6'

NOTES: NO CLAY

Engineering Analytics, Inc.

TEST PIT LOG

PAGE: 1 of 2

DATE:

TEST PIT NO.: A-6

PROJECT INFORMATION

PROJECT: MT. TAYLOR

PROJECT NO.: 111360

CLIENT: MT. TAYLOR

OWNER:

LOCATION: GRANTS, NEW MEXICO

FIELD INFORMATION

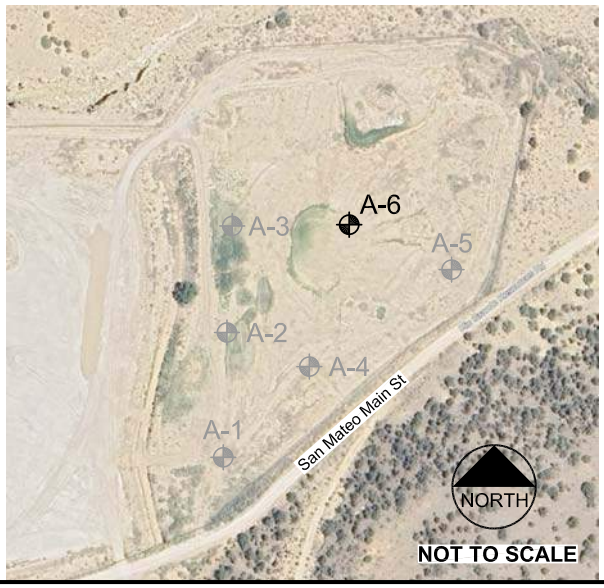
DATE & TIME ARRIVED:

TEST PIT LOGGED BY: JBB

VISITORS:

WEATHER:

TEST PIT LOCATION



EXCAVATION INFORMATION

EXCAVATION COMPANY: RGR

START TIME:

TEST PIT DEPTH: 6 FT TEST PIT DIA.: 2 FT

EXCAVATION METHOD:

SAMPLING METHOD:

TIME EXCAVATION COMPLETE:

TEST PIT COMPLETION / ABANDONMENT INFORMATION

START TIME: COMPLETE TIME:

INSTRUMENTATION: BACKFILL:

GROUNDWATER CONDITIONS

FOLLOWING FIELD WORK

TIME OF CLEAN-UP COMPLETE: TIME LEFT SITE:

NOTES:

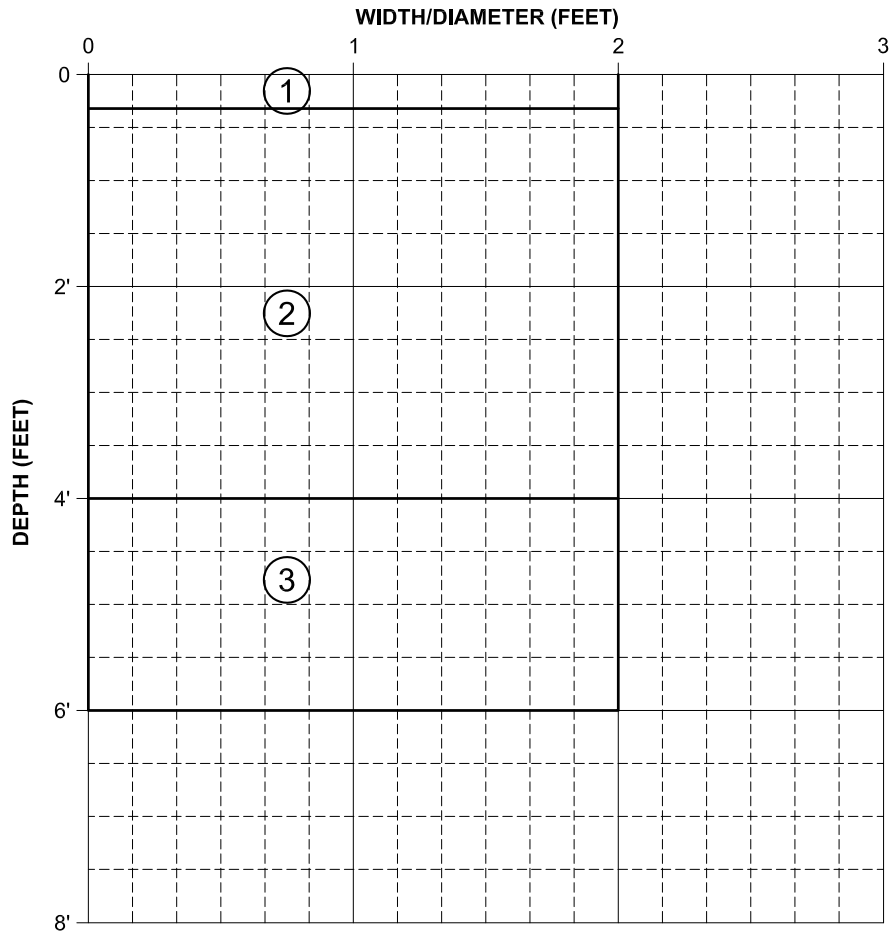
Engineering Analytics, Inc.

TEST PIT LOG

PROJECT: MT. TAYLOR **PAGE:** 2 OF 2

PROJECT NO.: 111360 **DATE:**

TEST PIT NO.: A-6



DEPTH	SAMPLE I.D.	SAMPLE TYPE
3'	A6	BKT
5'	A6	BKT
NR	---	CA

SOIL TYPE	SOIL DEPTH	SOIL DESCRIPTION AND EXCAVATION NOTES
1	0 - 2"	VEGETATION, SAND, DRY, (2.5Y, 5/3), LOOSE, NO PLASTICITY
2	2" - 4'	SILTY SAND, SLIGHTLY MOIST, (2.5Y, 5/3), LOOSE, VERY FINE, NO PLASTICITY
3	4' - E.O.B.	SILTSTONE, DRY, GRAY (2.5Y, 7/1), FINE, THIN FRAGMENTS AND SILT, NO PLASTICITY
		E.O.T.P. = 6'

NOTES:

Engineering Analytics, Inc.

TEST PIT LOG

PAGE: 1 of 2

DATE:

TEST PIT NO.: **B-1**

PROJECT INFORMATION

PROJECT: MT. TAYLOR

PROJECT NO.: 111360

CLIENT: MT. TAYLOR

OWNER:

LOCATION: GRANTS, NEW MEXICO

FIELD INFORMATION

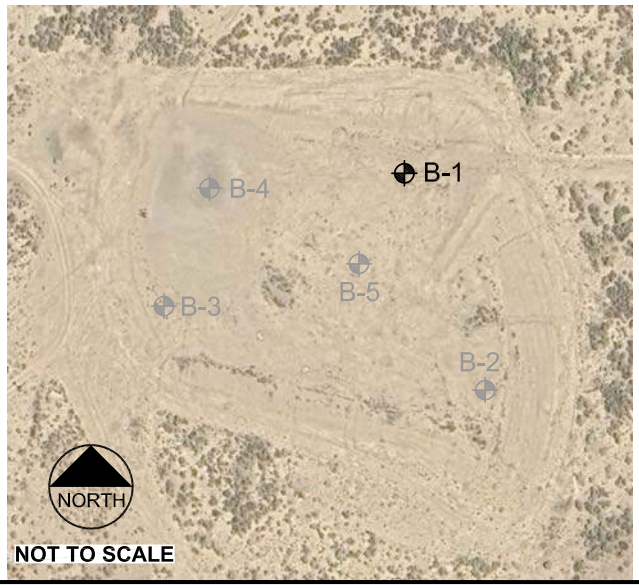
DATE & TIME ARRIVED:

TEST PIT LOGGED BY: JBB

VISITORS:

WEATHER: VERY COLD

TEST PIT LOCATION



NOT TO SCALE

EXCAVATION INFORMATION

EXCAVATION COMPANY: RGR

START TIME:

TEST PIT DEPTH: 5 FT TEST PIT DIA.: 2 FT

EXCAVATION METHOD:

SAMPLING METHOD:

TIME EXCAVATION COMPLETE:

TEST PIT COMPLETION / ABANDONMENT INFORMATION

START TIME: COMPLETE TIME:

INSTRUMENTATION: BACKFILL:

GROUNDWATER CONDITIONS

FOLLOWING FIELD WORK

TIME OF CLEAN-UP COMPLETE: TIME LEFT SITE:

NOTES:

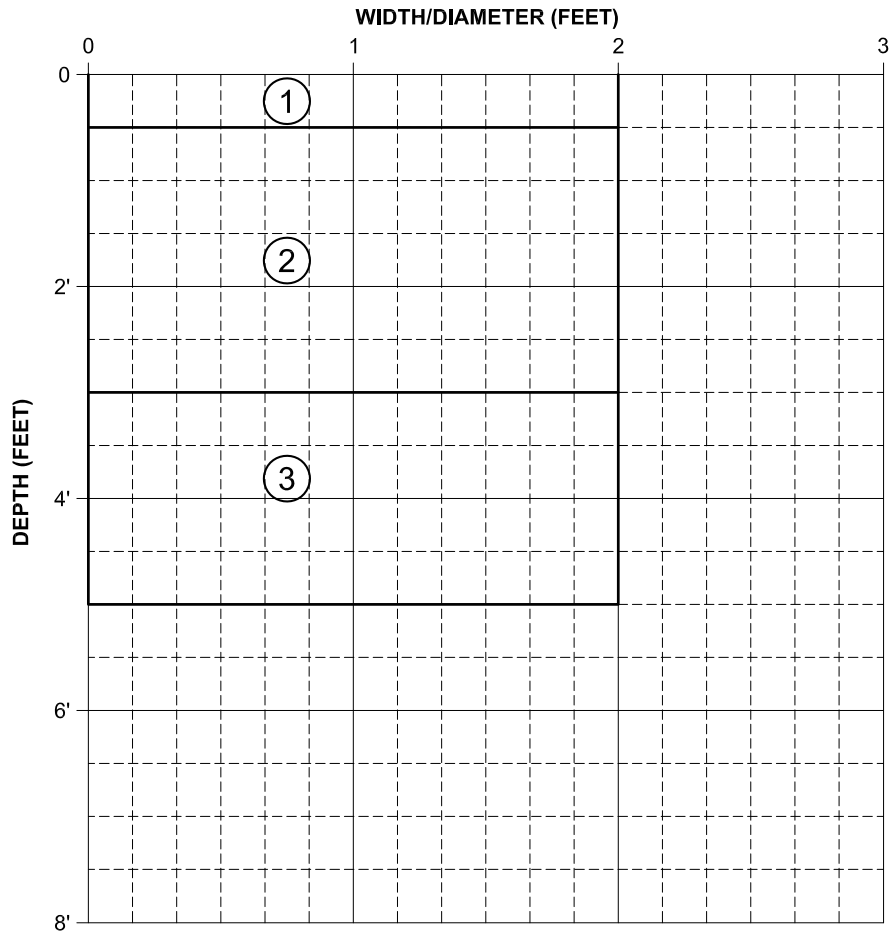
Engineering Analytics, Inc.

TEST PIT LOG

PROJECT: MT. TAYLOR **PAGE:** 2 OF 2

PROJECT NO.: 111360 **DATE:**

TEST PIT NO.: B-1



DEPTH	SAMPLE I.D.	SAMPLE TYPE
3'	BK1-3	BKT
5'	BK1-5	BKT
2'	NR	CA
3'	NR	CA
5'	NR	CA

SOIL TYPE	SOIL DEPTH	SOIL DESCRIPTION AND EXCAVATION NOTES
1	0 - 6"	VEGETATION AND TOPSOIL (MOSTLY VEGETATION), SAND
2	6" - 3'	SAND WITH GRAVEL, DRY, LOOSE SAND WITH GRAVEL UP TO 1.5", BROWN/TAN (2.5Y 5/3), NON PLASTIC
3	3' - E.O.B.	SANDY CLAY, BROWN/ BLACK (2.5Y, 2.5/1), VERY STIFF, MIXED, INTERBEDDED, CLAY LAYER VERY STIFF AT BOTTOM
		E.O.T.P. = 5'

NOTES: HARD CLAY LAYERS AT 3FT, BACKHOE STRUGGLING, REFUSAL AT 5'.

NO CAL RECOVERY (SAND IN 2FT CAL, 3FT & 5FT 100 BLOWS).

Engineering Analytics, Inc.

TEST PIT LOG

PAGE: 1 of 2

DATE:

TEST PIT NO.: **B-2**

PROJECT INFORMATION

PROJECT: MT. TAYLOR

PROJECT NO.: 111360

CLIENT: MT. TAYLOR

OWNER:

LOCATION: GRANTS, NEW MEXICO

FIELD INFORMATION

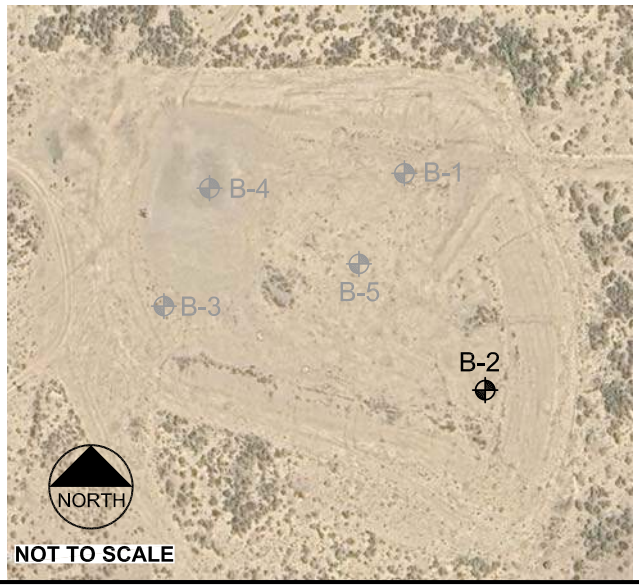
DATE & TIME ARRIVED:

TEST PIT LOGGED BY: JBB

VISITORS:

WEATHER: VERY COLD

TEST PIT LOCATION



EXCAVATION INFORMATION

EXCAVATION COMPANY: RGR

START TIME:

TEST PIT DEPTH: 6 FT TEST PIT DIA.: 2 FT

EXCAVATION METHOD:

SAMPLING METHOD:

TIME EXCAVATION COMPLETE:

TEST PIT COMPLETION / ABANDONMENT INFORMATION

START TIME: COMPLETE TIME:

INSTRUMENTATION: BACKFILL:

GROUNDWATER CONDITIONS

FOLLOWING FIELD WORK

TIME OF CLEAN-UP COMPLETE: TIME LEFT SITE:

NOTES:

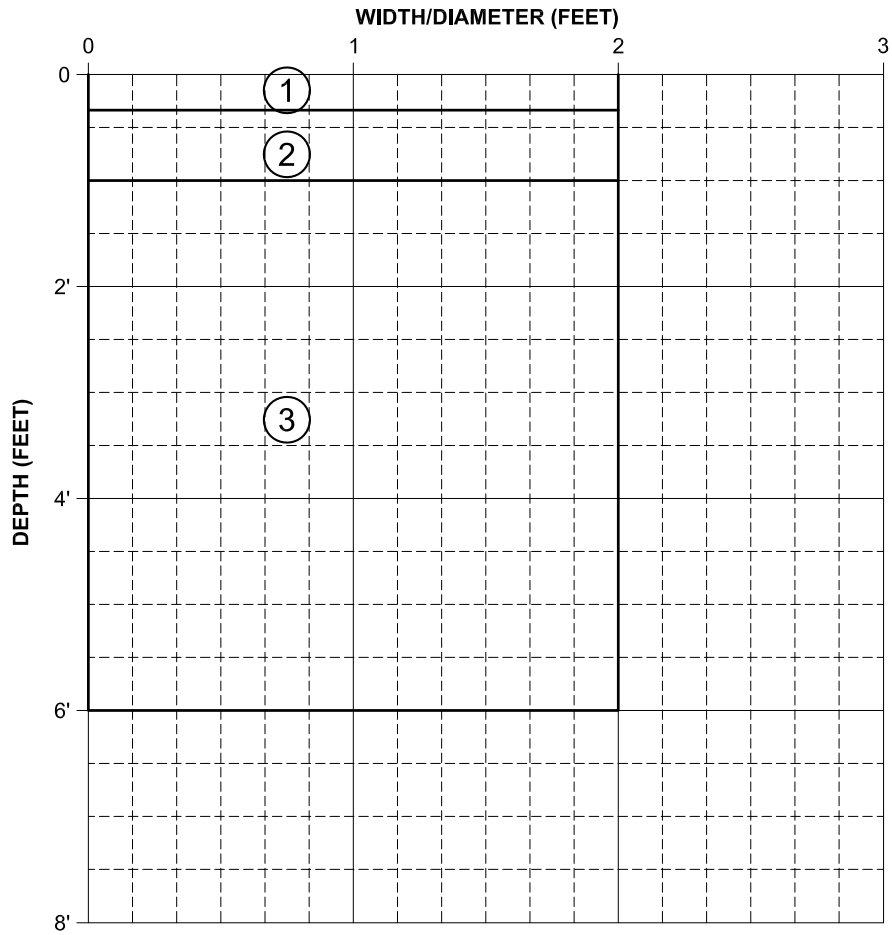
Engineering Analytics, Inc.

TEST PIT LOG

PROJECT: MT. TAYLOR **PAGE:** 2 OF 2

PROJECT NO.: 111360 **DATE:**

TEST PIT NO.: B-2



DEPTH	SAMPLE I.D.	SAMPLE TYPE
8"	B2	BKT
5'	B2	BKT
1'	NR	CA
4'	B-2C	CA

SOIL TYPE	SOIL DEPTH	SOIL DESCRIPTION AND EXCAVATION NOTES
1	0 - 4"	OVERBURDEN, VEGETATION, LOOSE SAND
2	4" - 1'	CLAY, BROWN (2.5Y 2.5/1), STIFF, PLASTIC, MOISTURE PRESENT BUT FROZEN
3	1' - E.O.B.	SAND, DRY, TAN/ BROWN (2.5Y, 2.5/1), VERY LOOSE, NO PLASTICITY
		E.O.T.P. = 6'

NOTES: CAL BARREL ON CLAY LAYER IS FROZEN, 0/ 100

TRYING WITH HAND DRIVE BUT NOT WORKING

Engineering Analytics, Inc.

TEST PIT LOG

PAGE: 1 of 2

DATE:

TEST PIT NO.: B-3

PROJECT INFORMATION

PROJECT: MT. TAYLOR

PROJECT NO.: 111360

CLIENT: MT. TAYLOR

OWNER:

LOCATION: GRANTS, NEW MEXICO

FIELD INFORMATION

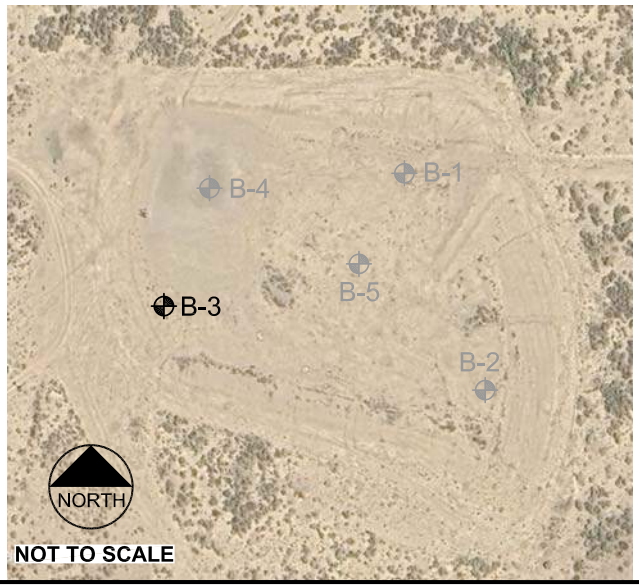
DATE & TIME ARRIVED:

TEST PIT LOGGED BY: JBB

VISITORS:

WEATHER: VERY COLD

TEST PIT LOCATION



NOT TO SCALE

EXCAVATION INFORMATION

EXCAVATION COMPANY: RGR

START TIME:

TEST PIT DEPTH: 6 FT TEST PIT DIA.: 2 FT

EXCAVATION METHOD:

SAMPLING METHOD:

TIME EXCAVATION COMPLETE:

TEST PIT COMPLETION / ABANDONMENT INFORMATION

START TIME: COMPLETE TIME:

INSTRUMENTATION: BACKFILL:

GROUNDWATER CONDITIONS

FOLLOWING FIELD WORK

TIME OF CLEAN-UP COMPLETE: TIME LEFT SITE:

NOTES:

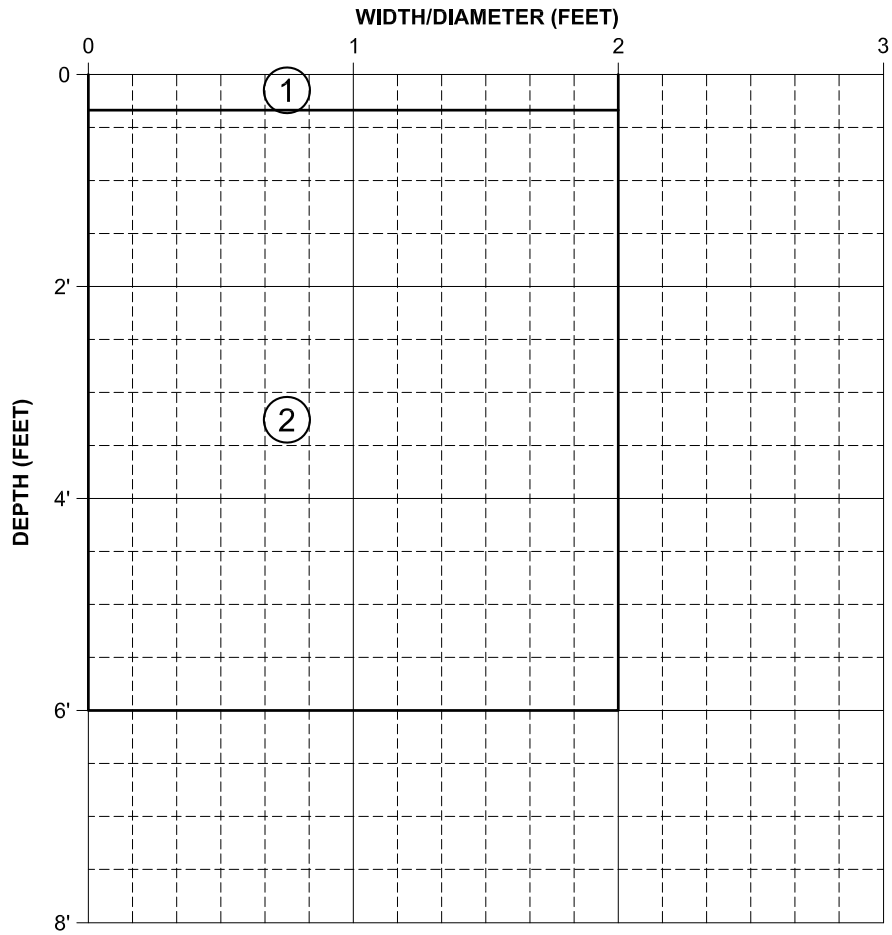
Engineering Analytics, Inc.

TEST PIT LOG

PROJECT: MT. TAYLOR **PAGE:** 2 OF 2

PROJECT NO.: 111360 **DATE:**

TEST PIT NO.: B-3



DEPTH	SAMPLE I.D.	SAMPLE TYPE
2'	B3-C	CA
4'	B3	BKT
6'	B3	BKT

SOIL TYPE	SOIL DEPTH	SOIL DESCRIPTION AND EXCAVATION NOTES
1	0 - 4"	OVERBURDEN, VEGETATION, LOOSE SAND
2	4" - E.O.B.	SAND, TAN/ BROWN (2.5Y, 2.5/3), VERY LOOSE, NO PLASTICITY
		E.O.T.P. = 6'

NOTES: NO CLAY IN HOLE AT ALL

Engineering Analytics, Inc.

TEST PIT LOG

PAGE: 1 of 2

DATE:

TEST PIT NO.: **B-4**

PROJECT INFORMATION

PROJECT: MT. TAYLOR

PROJECT NO.: 111360

CLIENT: MT. TAYLOR

OWNER:

LOCATION: GRANTS, NEW MEXICO

FIELD INFORMATION

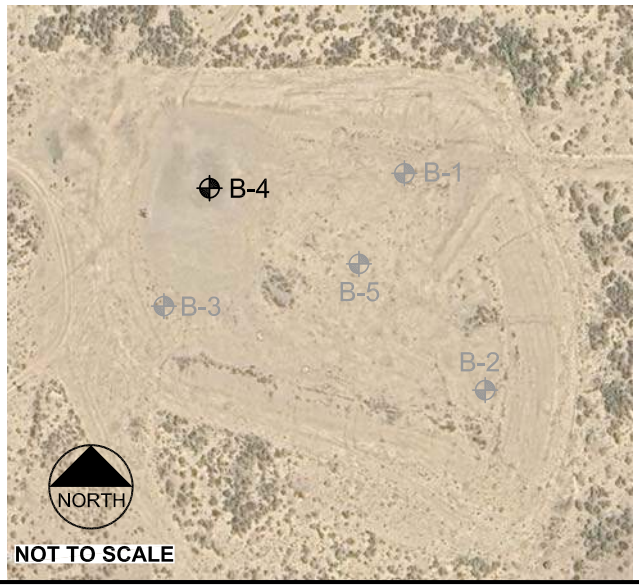
DATE & TIME ARRIVED:

TEST PIT LOGGED BY: JBB

VISITORS:

WEATHER: VERY COLD

TEST PIT LOCATION



NOT TO SCALE

EXCAVATION INFORMATION

EXCAVATION COMPANY: RGR

START TIME:

TEST PIT DEPTH: 6 FT TEST PIT DIA.: 2 FT

EXCAVATION METHOD:

SAMPLING METHOD:

TIME EXCAVATION COMPLETE:

TEST PIT COMPLETION / ABANDONMENT INFORMATION

START TIME: COMPLETE TIME:

INSTRUMENTATION: BACKFILL:

GROUNDWATER CONDITIONS

FOLLOWING FIELD WORK

TIME OF CLEAN-UP COMPLETE: TIME LEFT SITE:

NOTES:

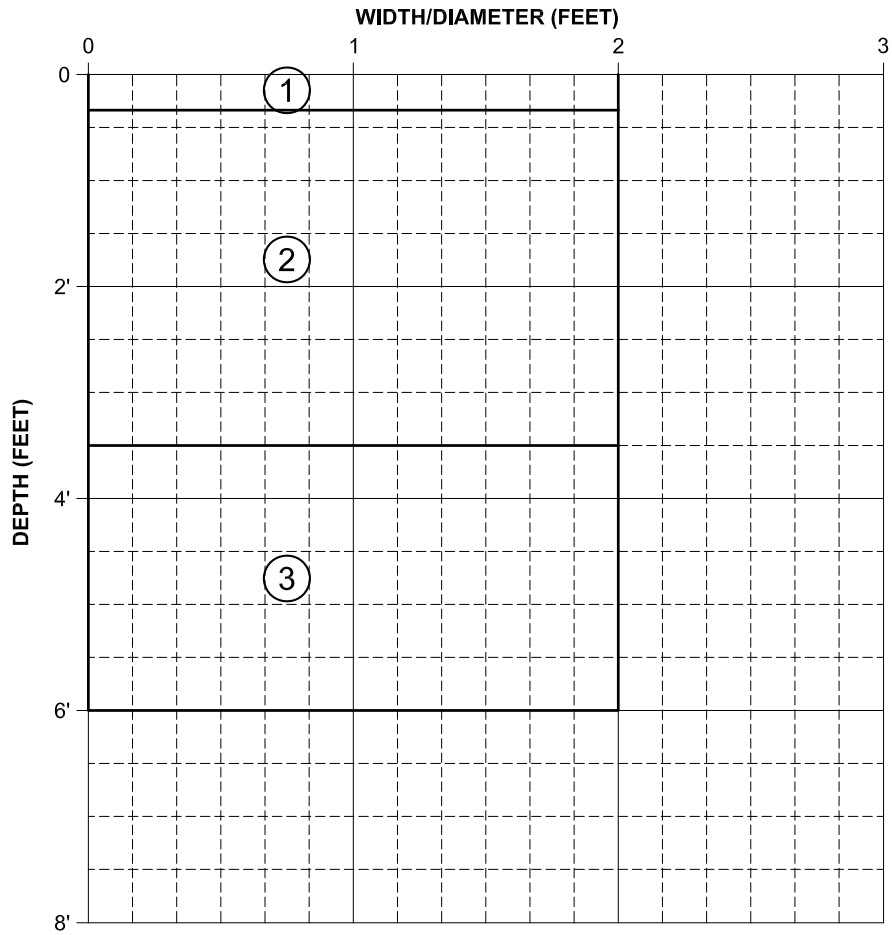
Engineering Analytics, Inc.

TEST PIT LOG

PROJECT: MT. TAYLOR **PAGE:** 2 OF 2

PROJECT NO.: 111360 **DATE:**

TEST PIT NO.: B-4



DEPTH	SAMPLE I.D.	SAMPLE TYPE
3'	B4	BKT
5'	B4	BKT
5'	B4-C	CA

SOIL TYPE	SOIL DEPTH	SOIL DESCRIPTION AND EXCAVATION NOTES
1	0 - 4"	VEGETATION, DRY, LOOSE SAND
2	4" - 3.5'	SAND, DRY, TAN/ BROWN (2.5Y, 2.5/3), VERY LOOSE, NO PLASTICITY
3	3.5' - E.O.B.	CLAY WITH SAND, DARK BROWN (2.5Y, 2.5/1), STIFF, PLASTIC
		E.O.T.P. = 6'

NOTES: 100 DRIVES

Engineering Analytics, Inc.

TEST PIT LOG

PAGE: 1 of 2

DATE:

TEST PIT NO.: **B-5**

PROJECT INFORMATION

PROJECT: MT. TAYLOR

PROJECT NO.: 111360

CLIENT: MT. TAYLOR

OWNER:

LOCATION: GRANTS, NEW MEXICO

FIELD INFORMATION

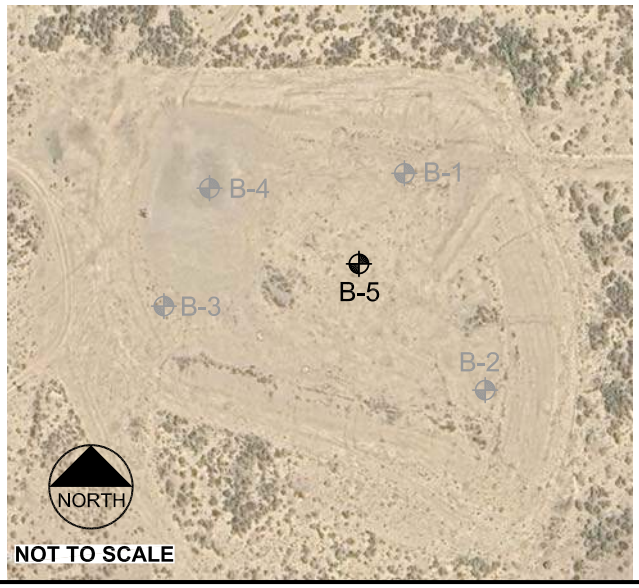
DATE & TIME ARRIVED:

TEST PIT LOGGED BY: JBB

VISITORS:

WEATHER: VERY COLD

TEST PIT LOCATION



NOT TO SCALE

EXCAVATION INFORMATION

EXCAVATION COMPANY: RGR

START TIME:

TEST PIT DEPTH: 6 FT TEST PIT DIA.: 2 FT

EXCAVATION METHOD:

SAMPLING METHOD:

TIME EXCAVATION COMPLETE:

TEST PIT COMPLETION / ABANDONMENT INFORMATION

START TIME: COMPLETE TIME:

INSTRUMENTATION: BACKFILL:

GROUNDWATER CONDITIONS

FOLLOWING FIELD WORK

TIME OF CLEAN-UP COMPLETE: TIME LEFT SITE:

NOTES:

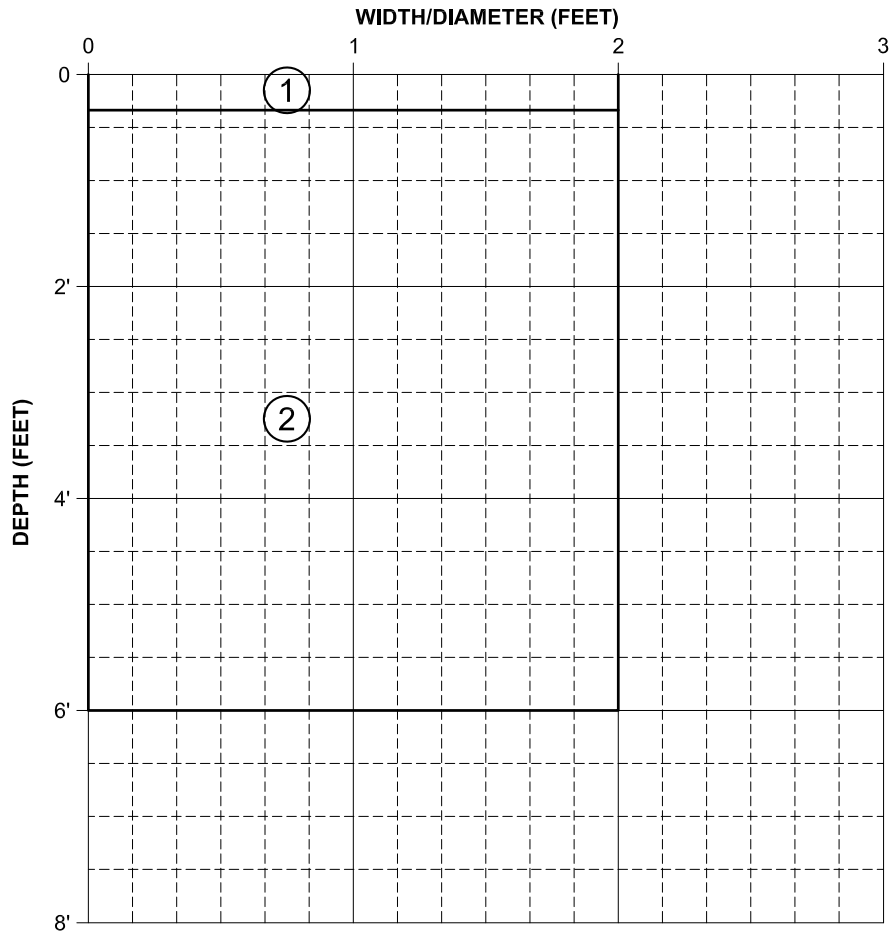
Engineering Analytics, Inc.

TEST PIT LOG

PROJECT: MT. TAYLOR **PAGE:** 2 OF 2

PROJECT NO.: 111360 **DATE:**

TEST PIT NO.: B-5



DEPTH	SAMPLE I.D.	SAMPLE TYPE
3'	B5	BKT
6'	B5	BKT

SOIL TYPE	SOIL DEPTH	SOIL DESCRIPTION AND EXCAVATION NOTES
1	0 - 4"	VEGETATION, DRY, LOOSE SAND
2	4" - E.O.B.	SAND, DRY, BROWN/ TAN (2.5Y, 5/3), VERY LOOSE, NO PLASTICITY
		E.O.T.P. = 6'

NOTES: NO CLAY TO 7'

Engineering Analytics, Inc.

TEST PIT LOG

PAGE: 1 of 2

DATE:

TEST PIT NO.: C-1

PROJECT INFORMATION

PROJECT: MT. TAYLOR

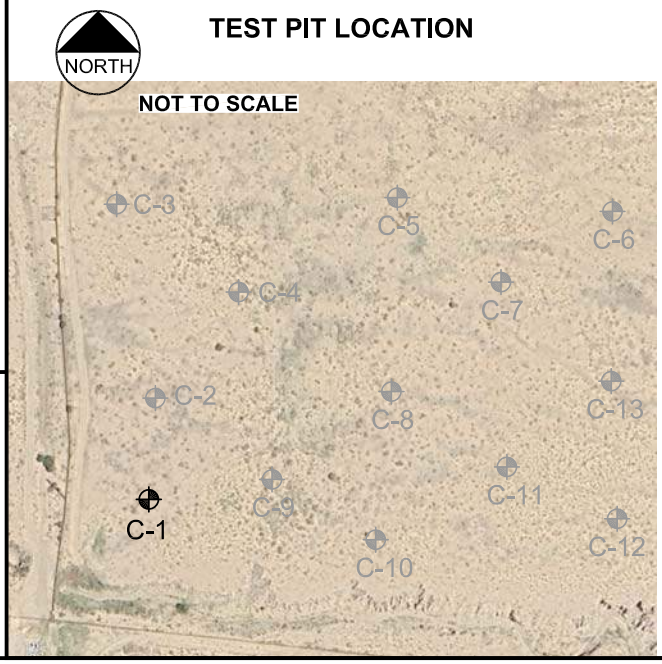
PROJECT NO.: 111360

CLIENT: MT. TAYLOR

OWNER:

LOCATION: GRANTS, NEW MEXICO

TEST PIT LOCATION



FIELD INFORMATION

DATE & TIME ARRIVED:

TEST PIT LOGGED BY: JBB

VISITORS:

WEATHER: VERY COLD

EXCAVATION INFORMATION

EXCAVATION COMPANY: RGR

START TIME:

TEST PIT DEPTH: 5 FT TEST PIT DIA.: 2 FT

EXCAVATION METHOD:

SAMPLING METHOD:

TIME EXCAVATION COMPLETE:

TEST PIT COMPLETION / ABANDONMENT INFORMATION

START TIME: COMPLETE TIME:

INSTRUMENTATION: BACKFILL:

GROUNDWATER CONDITIONS

FOLLOWING FIELD WORK

TIME OF CLEAN-UP COMPLETE: TIME LEFT SITE:

NOTES:

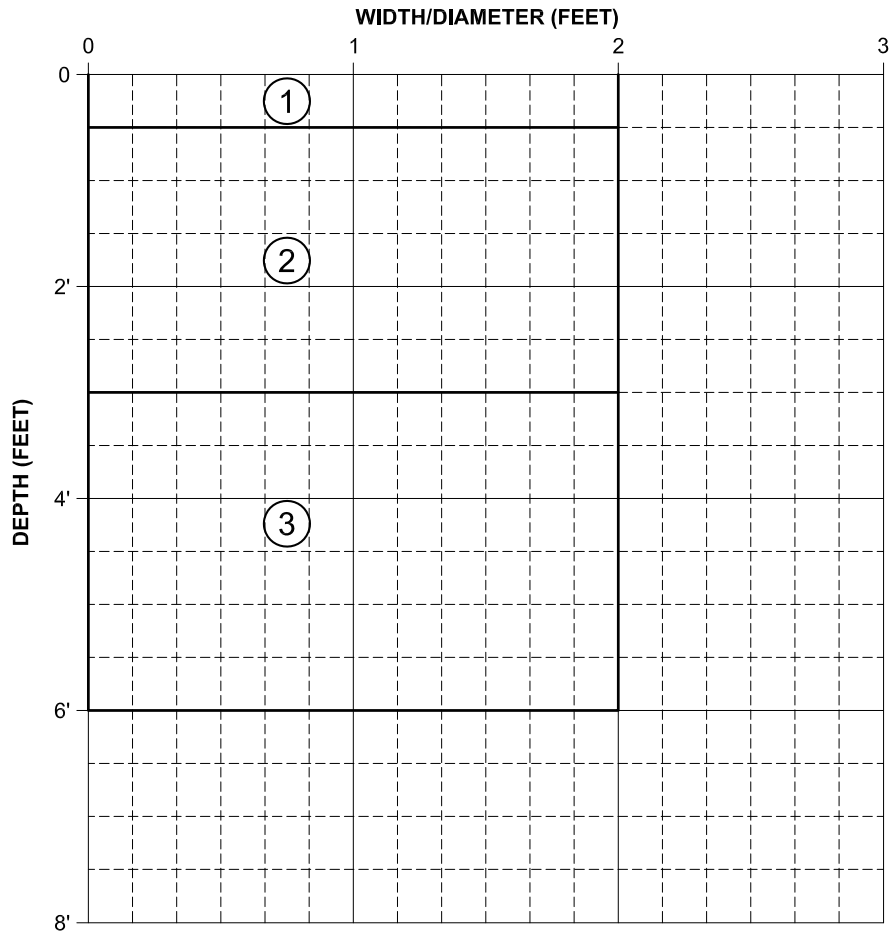
Engineering Analytics, Inc.

TEST PIT LOG

PROJECT: MT. TAYLOR **PAGE:** 2 OF 2

PROJECT NO.: 111360 **DATE:**

TEST PIT NO.: C-1



DEPTH	SAMPLE I.D.	SAMPLE TYPE
3'	C-1C	CA
2'	C-1	BKT
5'	C-1	BKT

SOIL TYPE	SOIL DEPTH	SOIL DESCRIPTION AND EXCAVATION NOTES
1	0 - 6"	SAND WITH VEGETATION, DRY, TAN/ BROWN (2.5Y, 5/3), LOOSE
2	6" - 3'	VERY LOOSE SAND, DRY, TAN/ BROWN (2.5Y, 5/3), NO PLASTICITY
3	3' - E.O.B.	SANDY CLAY WITH SAND, MOTTLED BROWN (5YR, 3/1), BRITTLE, CALCITE
		E.O.T.P. = 6'

NOTES:

Engineering Analytics, Inc.

TEST PIT LOG

PAGE: 1 of 2

DATE:

TEST PIT NO.: C-2

PROJECT INFORMATION

PROJECT: MT. TAYLOR

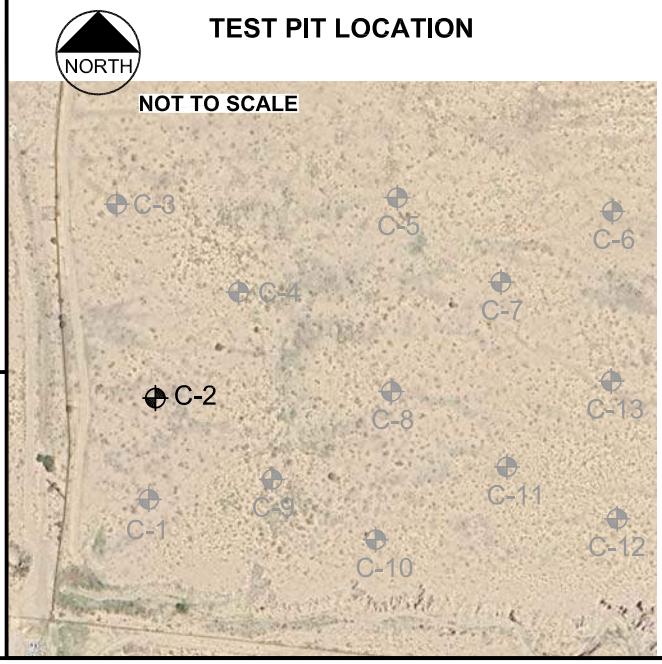
PROJECT NO.: 111360

CLIENT: MT. TAYLOR

OWNER:

LOCATION: GRANTS, NEW MEXICO

TEST PIT LOCATION



FIELD INFORMATION

DATE & TIME ARRIVED:

TEST PIT LOGGED BY: JBB

VISITORS:

WEATHER: VERY COLD

EXCAVATION INFORMATION

EXCAVATION COMPANY: RGR

START TIME:

TEST PIT DEPTH: 5 FT TEST PIT DIA.: 2 FT

EXCAVATION METHOD:

SAMPLING METHOD:

TIME EXCAVATION COMPLETE:

TEST PIT COMPLETION / ABANDONMENT INFORMATION

START TIME: COMPLETE TIME:

INSTRUMENTATION: BACKFILL:

GROUNDWATER CONDITIONS

FOLLOWING FIELD WORK

TIME OF CLEAN-UP COMPLETE: TIME LEFT SITE:

NOTES:

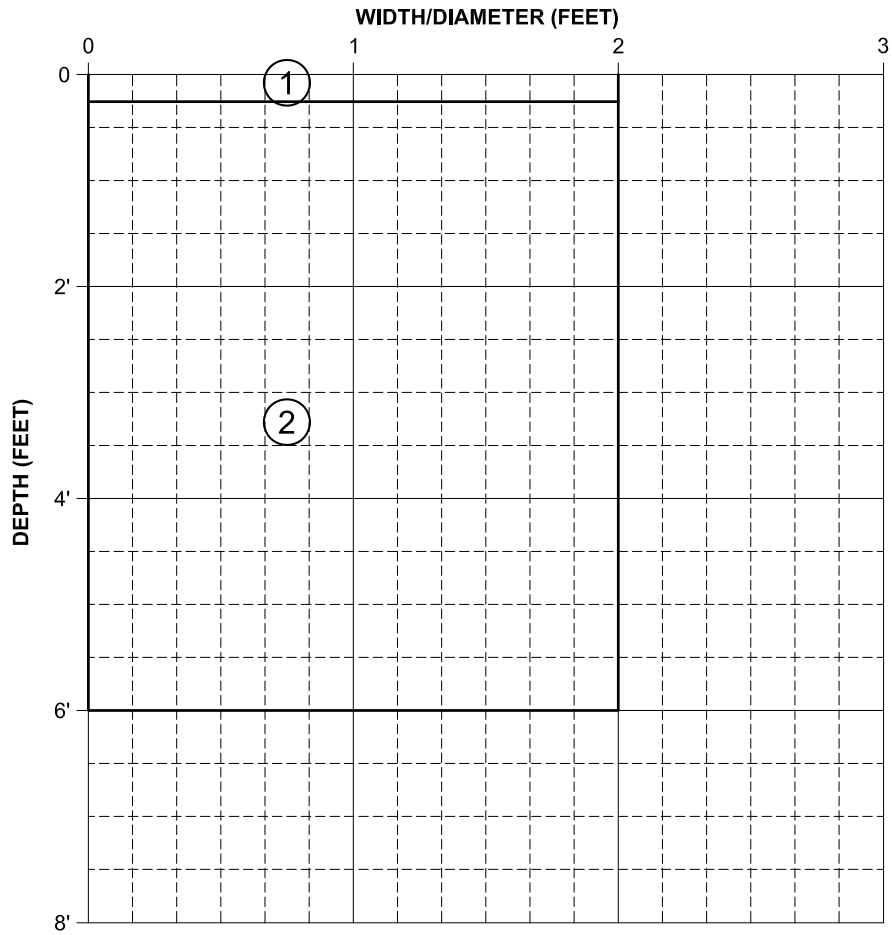
Engineering Analytics, Inc.

TEST PIT LOG

PROJECT: MT. TAYLOR **PAGE:** 2 OF 2

PROJECT NO.: 111360 **DATE:**

TEST PIT NO.: C-2



DEPTH	SAMPLE I.D.	SAMPLE TYPE
3'	C-2C	CA
2'	C-2	BKT
5'	C-2	BKT

SOIL TYPE	SOIL DEPTH	SOIL DESCRIPTION AND EXCAVATION NOTES
1	0 - 3"	SANDY VEGETATION, TAN (2.5Y, 5/3)
2	3" - E.O.B.	SANDY CLAY, DRY, BROWN (5YR, 3/1), BRITTLE, LOOSE/ CHUNKS, CALCITE
	4'	MORE SAND
		E.O.T.P. = 6'

NOTES:

Engineering Analytics, Inc.

TEST PIT LOG

PAGE: 1 of 2

DATE:

TEST PIT NO.: C-3

PROJECT INFORMATION

PROJECT: MT. TAYLOR

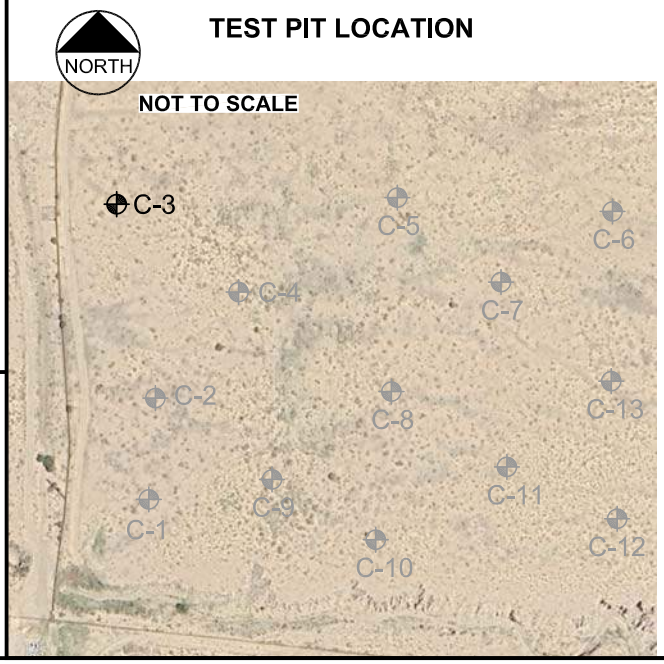
PROJECT NO.: 111360

CLIENT: MT. TAYLOR

OWNER:

LOCATION: GRANTS, NEW MEXICO

TEST PIT LOCATION



FIELD INFORMATION

DATE & TIME ARRIVED:

TEST PIT LOGGED BY: JBB

VISITORS:

WEATHER: VERY COLD

EXCAVATION INFORMATION

EXCAVATION COMPANY: RGR

START TIME:

TEST PIT DEPTH: 6 FT TEST PIT DIA.: 2 FT

EXCAVATION METHOD:

SAMPLING METHOD:

TIME EXCAVATION COMPLETE:

TEST PIT COMPLETION / ABANDONMENT INFORMATION

START TIME: COMPLETE TIME:

INSTRUMENTATION: BACKFILL:

GROUNDWATER CONDITIONS

FOLLOWING FIELD WORK

TIME OF CLEAN-UP COMPLETE: TIME LEFT SITE:

NOTES:

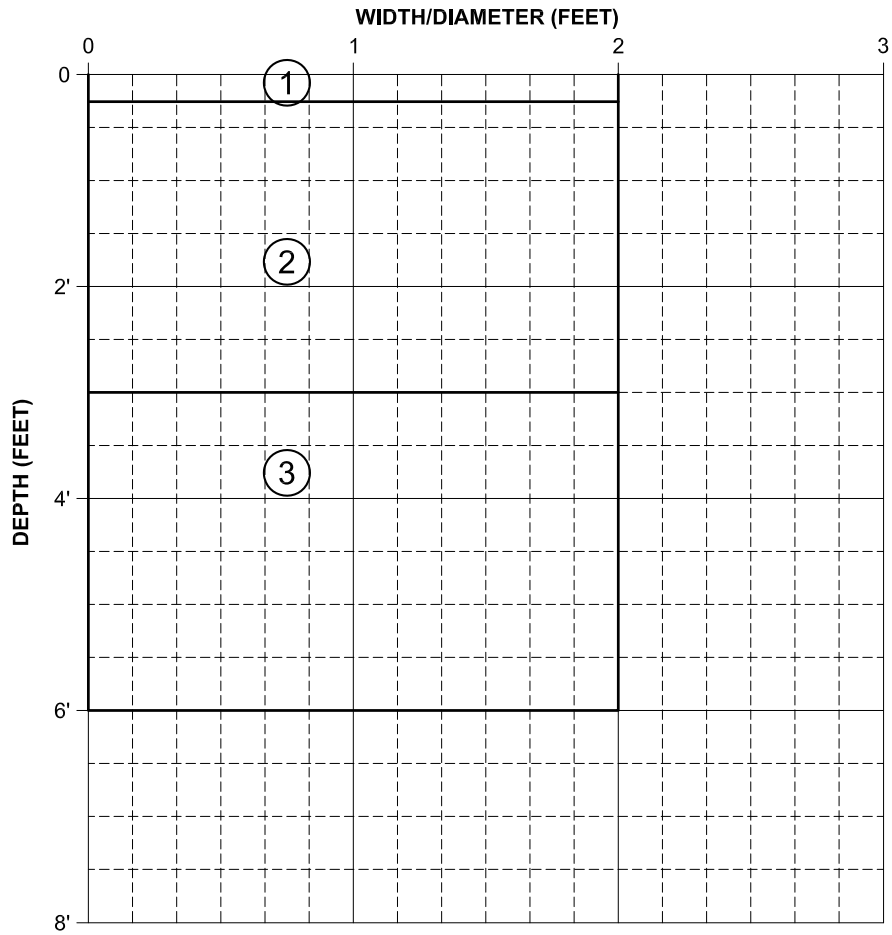
Engineering Analytics, Inc.

TEST PIT LOG

PROJECT: MT. TAYLOR **PAGE:** 2 OF 2

PROJECT NO.: 111360 **DATE:**

TEST PIT NO.: C-3



DEPTH	SAMPLE I.D.	SAMPLE TYPE
3'	C-3C	CA
2'	C-3	BKT
5'	C-3	BKT

SOIL TYPE	SOIL DEPTH	SOIL DESCRIPTION AND EXCAVATION NOTES
1	0 - 6"	SAND, LOTS OF VEGETATION, TAN (2.5Y, 5/3)
2	6" - 3'	VERY LOOSE SAND, DRY, TAN/ BROWN (2.5Y, 5/3), NO PLASTICITY
3	3' - E.O.B.	SANDY CLAY, DRY, MOTTLED BROWN (5YR, 3/1), BRITTLE
		E.O.T.P. = 6'

NOTES: ISSUES WITH HAND SAMPLER

Engineering Analytics, Inc.

TEST PIT LOG

PAGE: 1 of 2

DATE:

TEST PIT NO.: C-4

PROJECT INFORMATION

PROJECT: MT. TAYLOR

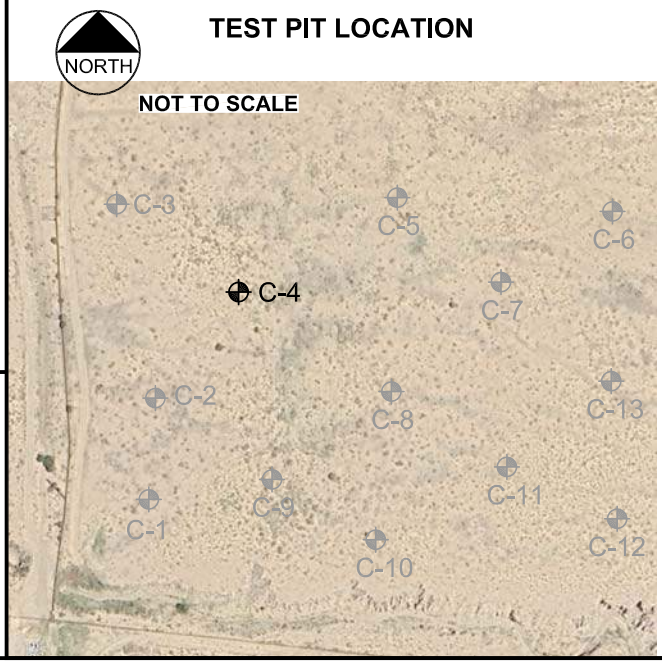
PROJECT NO.: 111360

CLIENT: MT. TAYLOR

OWNER:

LOCATION: GRANTS, NEW MEXICO

TEST PIT LOCATION



FIELD INFORMATION

DATE & TIME ARRIVED:

TEST PIT LOGGED BY: JBB

VISITORS:

WEATHER: VERY COLD

EXCAVATION INFORMATION

EXCAVATION COMPANY: RGR

START TIME:

TEST PIT DEPTH: 6 FT TEST PIT DIA.: 2 FT

EXCAVATION METHOD:

SAMPLING METHOD:

TIME EXCAVATION COMPLETE:

TEST PIT COMPLETION / ABANDONMENT INFORMATION

START TIME: COMPLETE TIME:

INSTRUMENTATION: BACKFILL:

GROUNDWATER CONDITIONS

FOLLOWING FIELD WORK

TIME OF CLEAN-UP COMPLETE: TIME LEFT SITE:

NOTES:

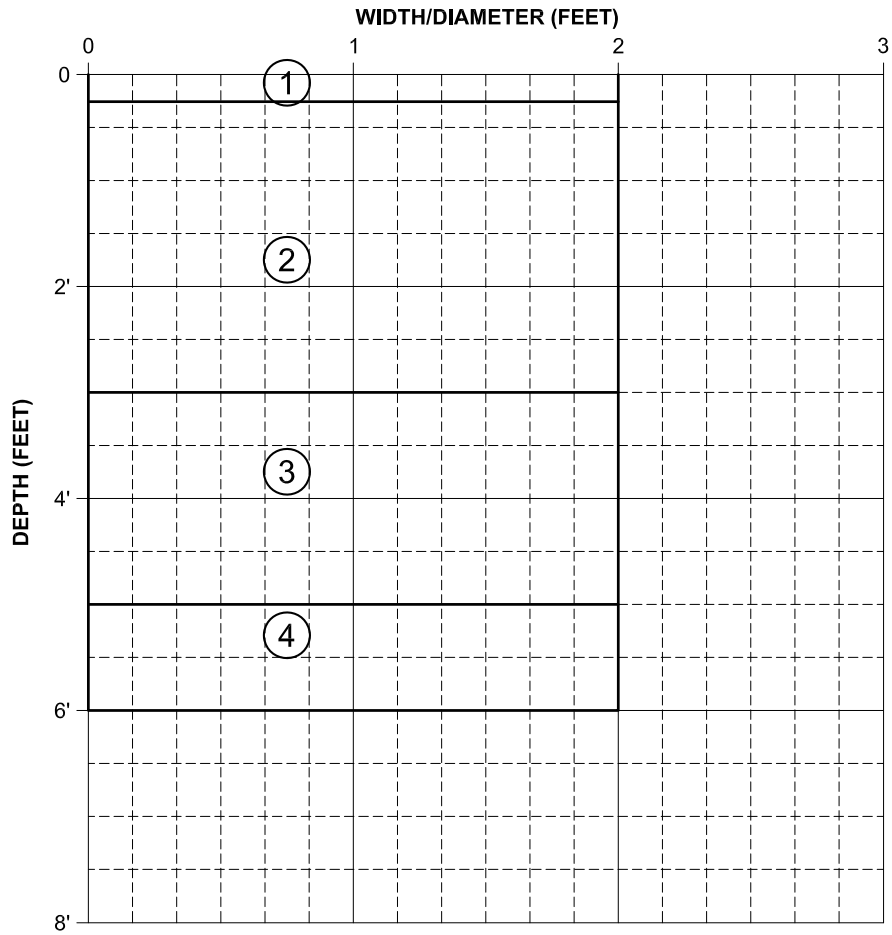
Engineering Analytics, Inc.

TEST PIT LOG

PROJECT: MT. TAYLOR **PAGE:** 2 OF 2

PROJECT NO.: 111360 **DATE:**

TEST PIT NO.: C-4



DEPTH	SAMPLE I.D.	SAMPLE TYPE
3'	C-4C	CA
4'	C-4	BKT
6'	C-4	BKT

SOIL TYPE	SOIL DEPTH	SOIL DESCRIPTION AND EXCAVATION NOTES
1	0 - 3"	VEGETATION, SAND, LOOSE
2	3" - 3'	VERY LOOSE SAND, DRY, TAN/ BROWN (2.5Y, 5/3), NO PLASTICITY
3	3' - 5'	SANDY CLAY, DRY, BROWN (5YR, 3/1), BRITTLE, CLUMPY
4	5' - E.O.B.	VERY LOOSE SAND, DRY, TAN/ BROWN (2.5Y, 5/3), NO PLASTICITY
		E.O.T.P. = 6'

NOTES: TEST PIT IN OLD WASHOUT FEATURE

Engineering Analytics, Inc.

TEST PIT LOG

PAGE: 1 of 2

DATE:

TEST PIT NO.: C-5

PROJECT INFORMATION

PROJECT: MT. TAYLOR

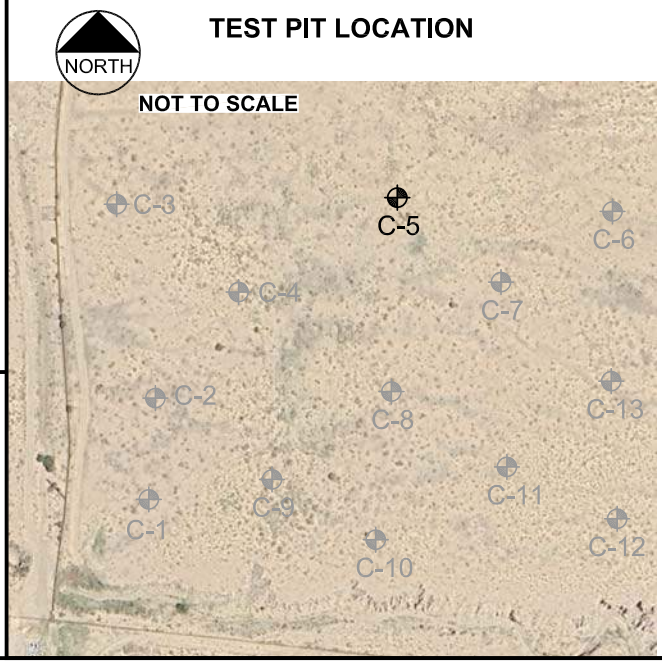
PROJECT NO.: 111360

CLIENT: MT. TAYLOR

OWNER:

LOCATION: GRANTS, NEW MEXICO

TEST PIT LOCATION



FIELD INFORMATION

DATE & TIME ARRIVED:

TEST PIT LOGGED BY: JBB

VISITORS:

WEATHER: VERY COLD

EXCAVATION INFORMATION

EXCAVATION COMPANY: RGR

START TIME:

TEST PIT DEPTH: 5 FT TEST PIT DIA.: 2 FT

EXCAVATION METHOD:

SAMPLING METHOD:

TIME EXCAVATION COMPLETE:

TEST PIT COMPLETION / ABANDONMENT INFORMATION

START TIME: COMPLETE TIME:

INSTRUMENTATION: BACKFILL:

GROUNDWATER CONDITIONS

FOLLOWING FIELD WORK

TIME OF CLEAN-UP COMPLETE: TIME LEFT SITE:

NOTES:

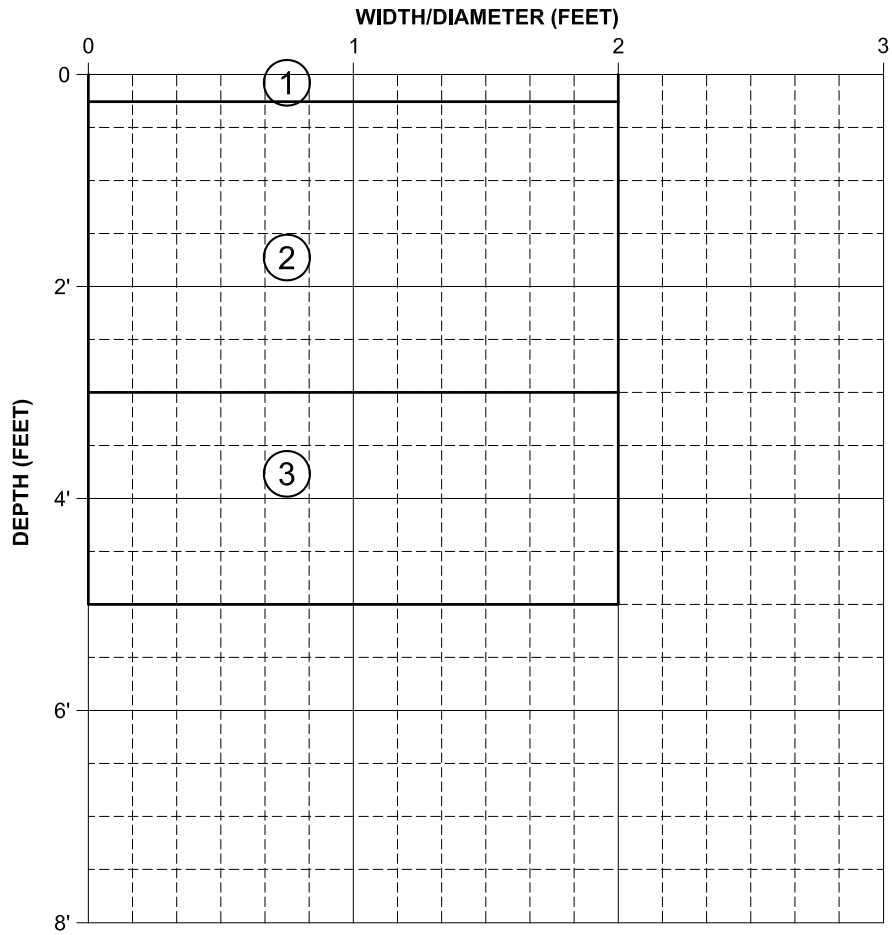
Engineering Analytics, Inc.

TEST PIT LOG

PROJECT: MT. TAYLOR **PAGE:** 2 OF 2

PROJECT NO.: 111360 **DATE:**

TEST PIT NO.: C-5



DEPTH	SAMPLE I.D.	SAMPLE TYPE
3'	C-5C	CA
2'	C-5	BKT
5'	C-5	BKT

SOIL TYPE	SOIL DEPTH	SOIL DESCRIPTION AND EXCAVATION NOTES
1	0 - 3"	VEGETATION, DRY, LOOSE SAND
2	3" - 3'	VERY LOOSE SAND, DRY, TAN/ BROWN (2.5Y, 5/3), NO PLASTICITY
3	3' - E.O.B.	SANDY CLAY, DRY, MOTTLED BROWN (5YR, 3/1), BRITTLE, LOOSE, CHUNKY, CALCITE
	5'	VERY FIRM, MOTTLED CLAY
		E.O.T.P. = 5'

NOTES: REFUSAL AT 5'

Engineering Analytics, Inc.

TEST PIT LOG

PAGE: 1 of 2

DATE:

TEST PIT NO.: C-6

PROJECT INFORMATION

PROJECT: MT. TAYLOR

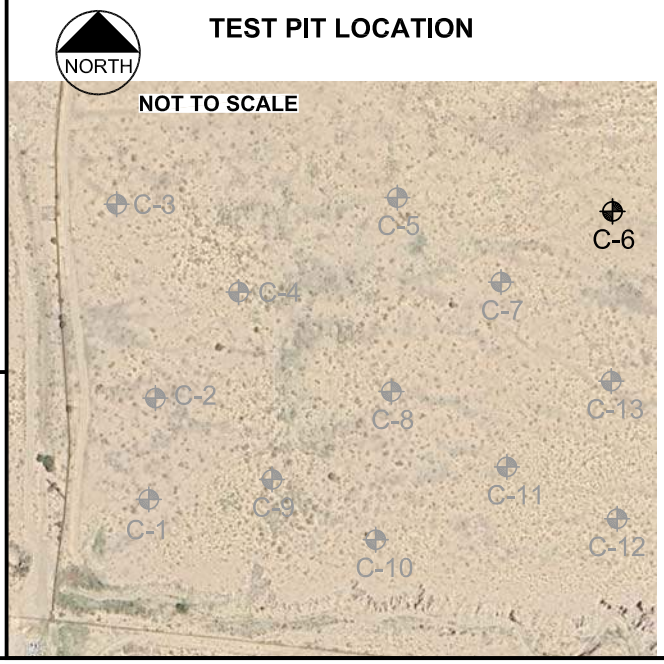
PROJECT NO.: 111360

CLIENT: MT. TAYLOR

OWNER:

LOCATION: GRANTS, NEW MEXICO

TEST PIT LOCATION



FIELD INFORMATION

DATE & TIME ARRIVED:

TEST PIT LOGGED BY: JBB

VISITORS:

WEATHER: VERY COLD

EXCAVATION INFORMATION

EXCAVATION COMPANY: RGR

START TIME:

TEST PIT DEPTH: 6 FT TEST PIT DIA.: 2 FT

EXCAVATION METHOD:

SAMPLING METHOD:

TIME EXCAVATION COMPLETE:

TEST PIT COMPLETION / ABANDONMENT INFORMATION

START TIME: COMPLETE TIME:

INSTRUMENTATION: BACKFILL:

GROUNDWATER CONDITIONS

FOLLOWING FIELD WORK

TIME OF CLEAN-UP COMPLETE: TIME LEFT SITE:

NOTES:

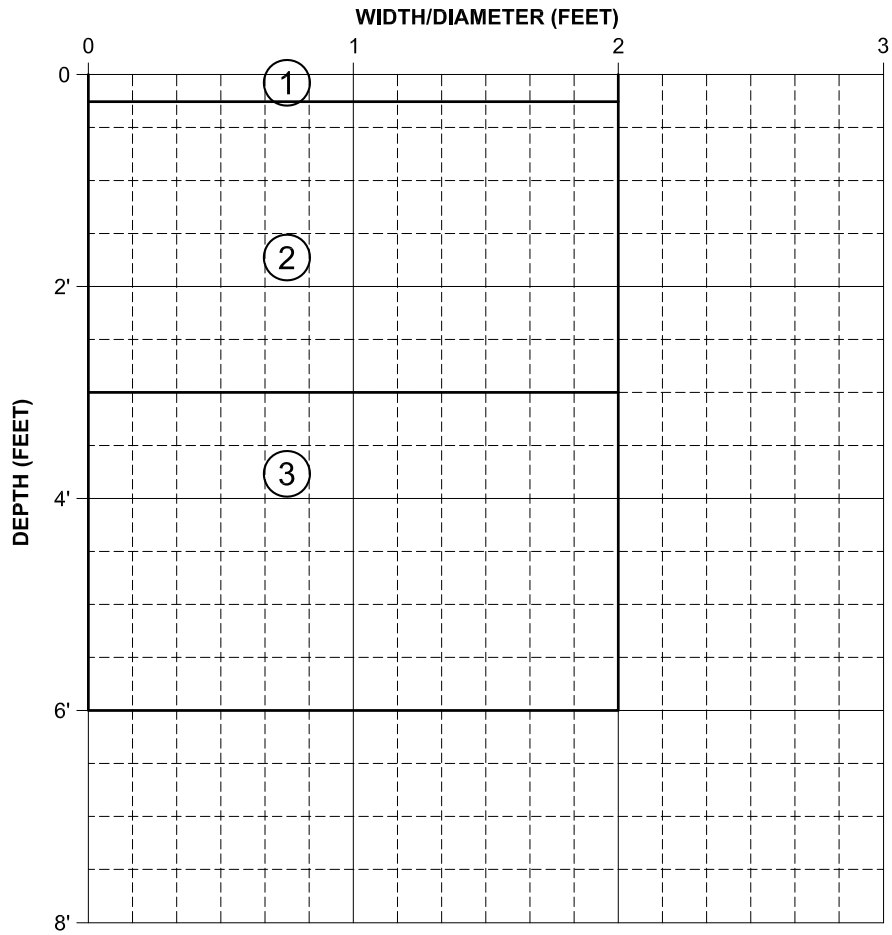
Engineering Analytics, Inc.

TEST PIT LOG

PROJECT: MT. TAYLOR **PAGE:** 2 OF 2

PROJECT NO.: 111360 **DATE:**

TEST PIT NO.: C-6



DEPTH	SAMPLE I.D.	SAMPLE TYPE
3'	C-6C	CA
2'	C-6	BKT
5'	C-6	BKT

SOIL TYPE	SOIL DEPTH	SOIL DESCRIPTION AND EXCAVATION NOTES
1	0 - 3"	VEGETATION, DRY, TAN (2.5Y, 5/3), SAND, NO PLASTICITY
2	3" - 3'	VERY LOOSE SAND, DRY, TAN/ BROWN (2.5Y, 5/3), NO PLASTICITY
3	3' - E.O.B.	SANDY CLAY, DRY, MOTTLED BROWN (5YR, 3/1), BRITTLE, CHUNKY, CALCITE
		E.O.T.P. = 6'

NOTES:

Engineering Analytics, Inc.

TEST PIT LOG

PAGE: 1 of 2

DATE:

TEST PIT NO.: C-7

PROJECT INFORMATION

PROJECT: MT. TAYLOR

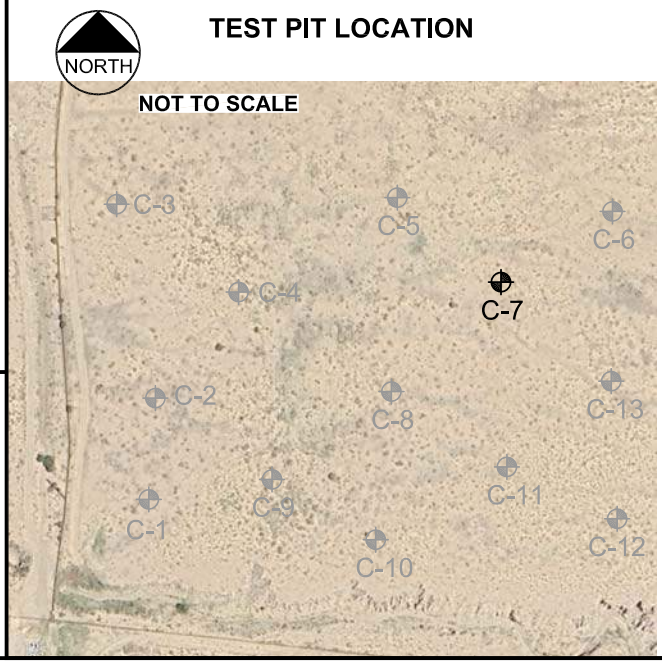
PROJECT NO.: 111360

CLIENT: MT. TAYLOR

OWNER:

LOCATION: GRANTS, NEW MEXICO

TEST PIT LOCATION



FIELD INFORMATION

DATE & TIME ARRIVED:

TEST PIT LOGGED BY: JBB

VISITORS:

WEATHER: VERY COLD

EXCAVATION INFORMATION

EXCAVATION COMPANY: RGR

START TIME:

TEST PIT DEPTH: 6 FT TEST PIT DIA.: 2 FT

EXCAVATION METHOD:

SAMPLING METHOD:

TIME EXCAVATION COMPLETE:

TEST PIT COMPLETION / ABANDONMENT INFORMATION

START TIME: COMPLETE TIME:

INSTRUMENTATION: BACKFILL:

GROUNDWATER CONDITIONS

FOLLOWING FIELD WORK

TIME OF CLEAN-UP COMPLETE: TIME LEFT SITE:

NOTES:

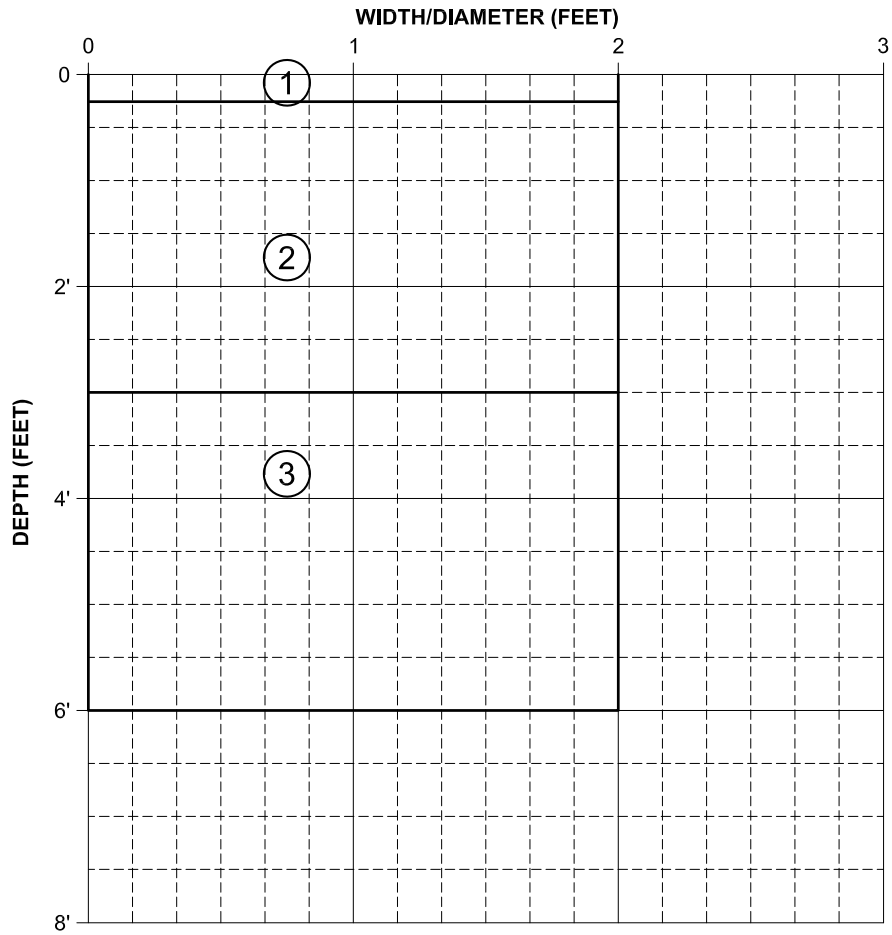
Engineering Analytics, Inc.

TEST PIT LOG

PROJECT: MT. TAYLOR **PAGE:** 2 OF 2

PROJECT NO.: 111360 **DATE:**

TEST PIT NO.: C-7



DEPTH	SAMPLE I.D.	SAMPLE TYPE
3'	C-7C	CA
2'	C-7	BKT
6'	C-7	BKT

SOIL TYPE	SOIL DEPTH	SOIL DESCRIPTION AND EXCAVATION NOTES
1	0 - 3"	VEGETATION, SAND, DRY, (2.5Y, 5/3)
2	3" - 3'	VERY LOOSE SAND, DRY, TAN/ BROWN (2.5Y, 5/3), NO PLASTICITY
3	3' - E.O.B.	SANDY CLAY, DRY, MOTTLED BROWN (5YR, 3/1), BRITTLE, CHUNKY
		E.O.T.P. = 6'

NOTES: RECOVERY WITH CAL SAMPLER HAS BEEN POOR

Engineering Analytics, Inc.

TEST PIT LOG

PAGE: 1 of 2

DATE:

TEST PIT NO.: C-8

PROJECT INFORMATION

PROJECT: MT. TAYLOR

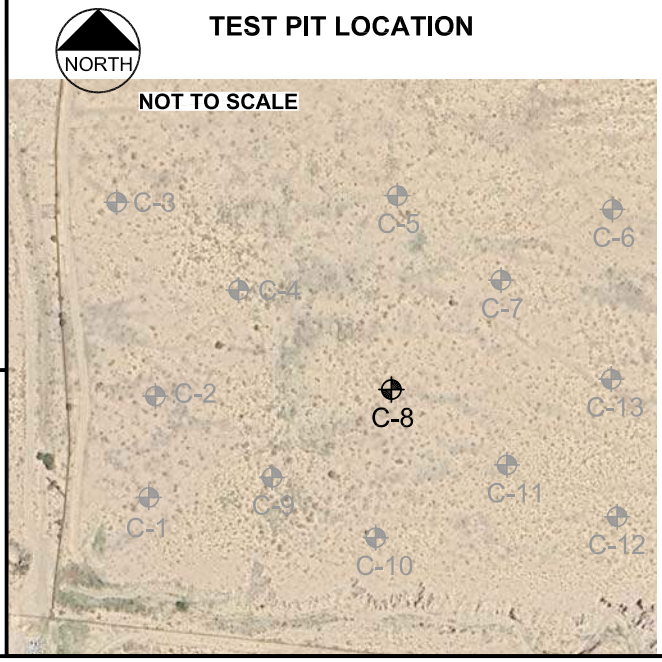
PROJECT NO.: 111360

CLIENT: MT. TAYLOR

OWNER:

LOCATION: GRANTS, NEW MEXICO

TEST PIT LOCATION



FIELD INFORMATION

DATE & TIME ARRIVED:

TEST PIT LOGGED BY: JBB

VISITORS:

WEATHER: VERY COLD

EXCAVATION INFORMATION

EXCAVATION COMPANY: RGR

START TIME:

TEST PIT DEPTH: 6 FT TEST PIT DIA.: 2 FT

EXCAVATION METHOD:

SAMPLING METHOD:

TIME EXCAVATION COMPLETE:

TEST PIT COMPLETION / ABANDONMENT INFORMATION

START TIME: COMPLETE TIME:

INSTRUMENTATION: BACKFILL:

GROUNDWATER CONDITIONS

FOLLOWING FIELD WORK

TIME OF CLEAN-UP COMPLETE: TIME LEFT SITE:

NOTES:

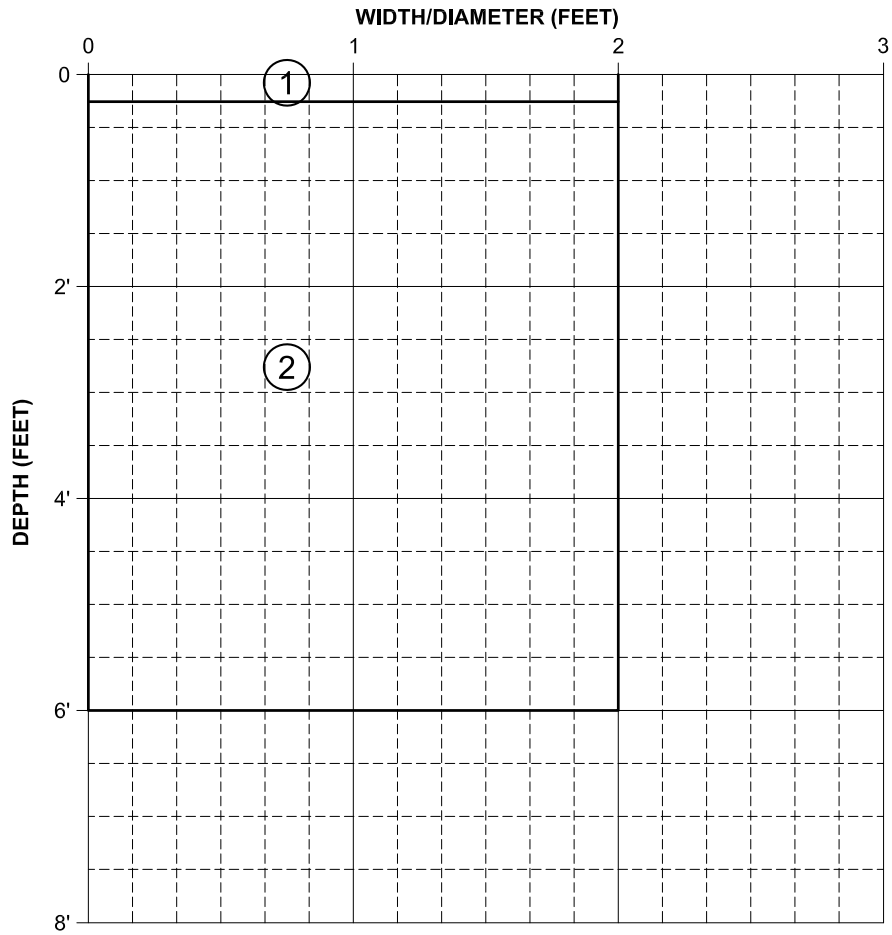
Engineering Analytics, Inc.

TEST PIT LOG

PROJECT: MT. TAYLOR **PAGE:** 2 OF 2

PROJECT NO.: 111360 **DATE:**

TEST PIT NO.: C-8



DEPTH	SAMPLE I.D.	SAMPLE TYPE
3'	C-8C	CA
2'	C-8	BKT
5'	C-8	BKT

SOIL TYPE	SOIL DEPTH	SOIL DESCRIPTION AND EXCAVATION NOTES
1	0 - 3"	VEGETATION, SAND, DRY, (2.5Y, 5/3), LOOSE
2	3" - E.O.B.	SANDY CLAY, DRY, BROWN (5YR, 3/1), BRITTLE, CHUNKY
	5'	SAND INCREASES
		E.O.T.P. = 6'

NOTES:

Engineering Analytics, Inc.

TEST PIT LOG

PAGE: 1 of 2

DATE:

TEST PIT NO.: C-9

PROJECT INFORMATION

PROJECT: MT. TAYLOR

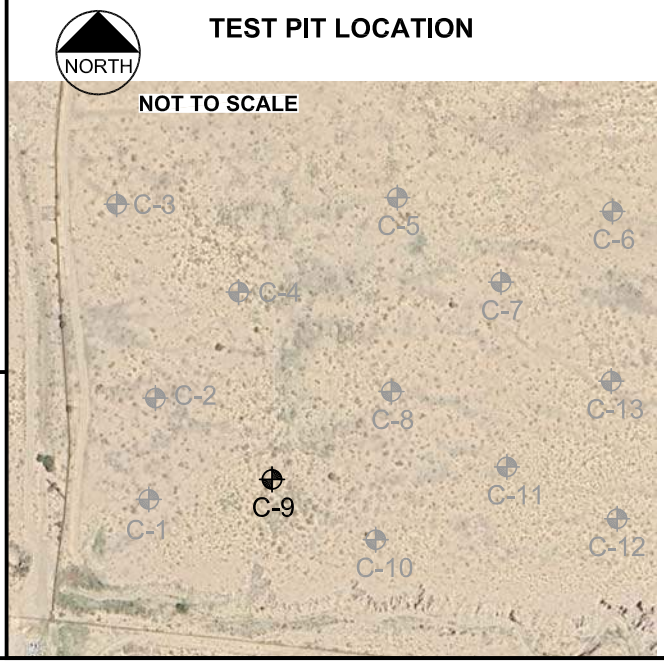
PROJECT NO.: 111360

CLIENT: MT. TAYLOR

OWNER:

LOCATION: GRANTS, NEW MEXICO

TEST PIT LOCATION



FIELD INFORMATION

DATE & TIME ARRIVED:

TEST PIT LOGGED BY: JBB

VISITORS:

WEATHER: VERY COLD

EXCAVATION INFORMATION

EXCAVATION COMPANY: RGR

START TIME:

TEST PIT DEPTH: 6 FT TEST PIT DIA.: 2 FT

EXCAVATION METHOD:

SAMPLING METHOD:

TIME EXCAVATION COMPLETE:

TEST PIT COMPLETION / ABANDONMENT INFORMATION

START TIME: COMPLETE TIME:

INSTRUMENTATION: BACKFILL:

GROUNDWATER CONDITIONS

FOLLOWING FIELD WORK

TIME OF CLEAN-UP COMPLETE: TIME LEFT SITE:

NOTES:

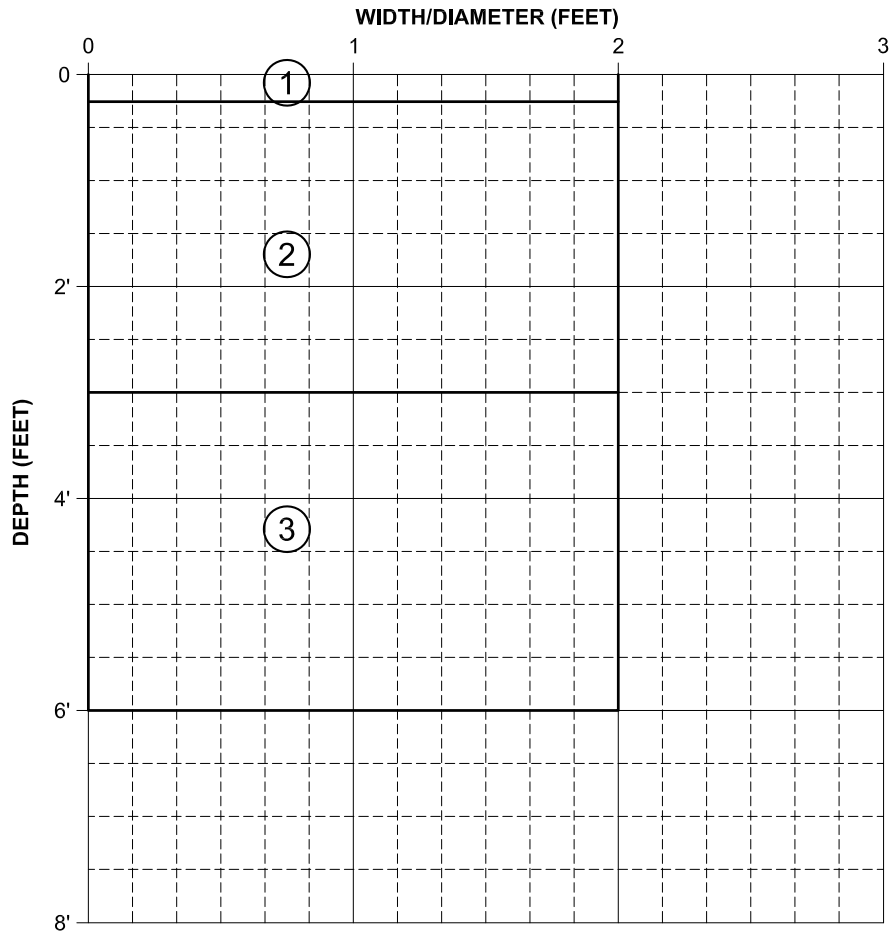
Engineering Analytics, Inc.

TEST PIT LOG

PROJECT: MT. TAYLOR **PAGE:** 2 OF 2

PROJECT NO.: 111360 **DATE:**

TEST PIT NO.: C-9



DEPTH	SAMPLE I.D.	SAMPLE TYPE
3'	C-9C	CA
2'	C-9	BKT
5'	C-9	BKT

SOIL TYPE	SOIL DEPTH	SOIL DESCRIPTION AND EXCAVATION NOTES
1	0 - 3"	VEGETATION, SAND, DRY, TAN (2.5Y, 5/3)
2	6" - 3'	VERY LOOSE SAND, DRY, TAN/ BROWN (2.5Y, 5/3), NO PLASTICITY
3	3' - E.O.B.	SANDY CLAY, DRY, MOTTLED BROWN (5YR, 3/1), CHUNKY, BRITTLE
		E.O.T.P. = 6'

NOTES: GROUND FROZEN

Engineering Analytics, Inc.

TEST PIT LOG

PAGE: 1 of 2

DATE:

TEST PIT NO.: C-10

PROJECT INFORMATION

PROJECT: MT. TAYLOR

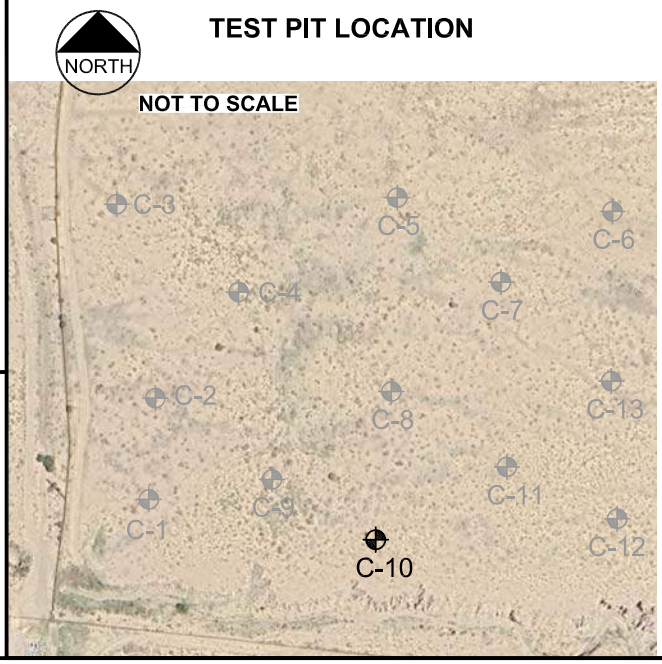
PROJECT NO.: 111360

CLIENT: MT. TAYLOR

OWNER:

LOCATION: GRANTS, NEW MEXICO

TEST PIT LOCATION



FIELD INFORMATION

DATE & TIME ARRIVED:

TEST PIT LOGGED BY: JBB

VISITORS:

WEATHER: VERY COLD

EXCAVATION INFORMATION

EXCAVATION COMPANY: RGR

START TIME:

TEST PIT DEPTH: 6 FT TEST PIT DIA.: 2 FT

EXCAVATION METHOD:

SAMPLING METHOD:

TIME EXCAVATION COMPLETE:

TEST PIT COMPLETION / ABANDONMENT INFORMATION

START TIME: COMPLETE TIME:

INSTRUMENTATION: BACKFILL:

GROUNDWATER CONDITIONS

FOLLOWING FIELD WORK

TIME OF CLEAN-UP COMPLETE: TIME LEFT SITE:

NOTES:

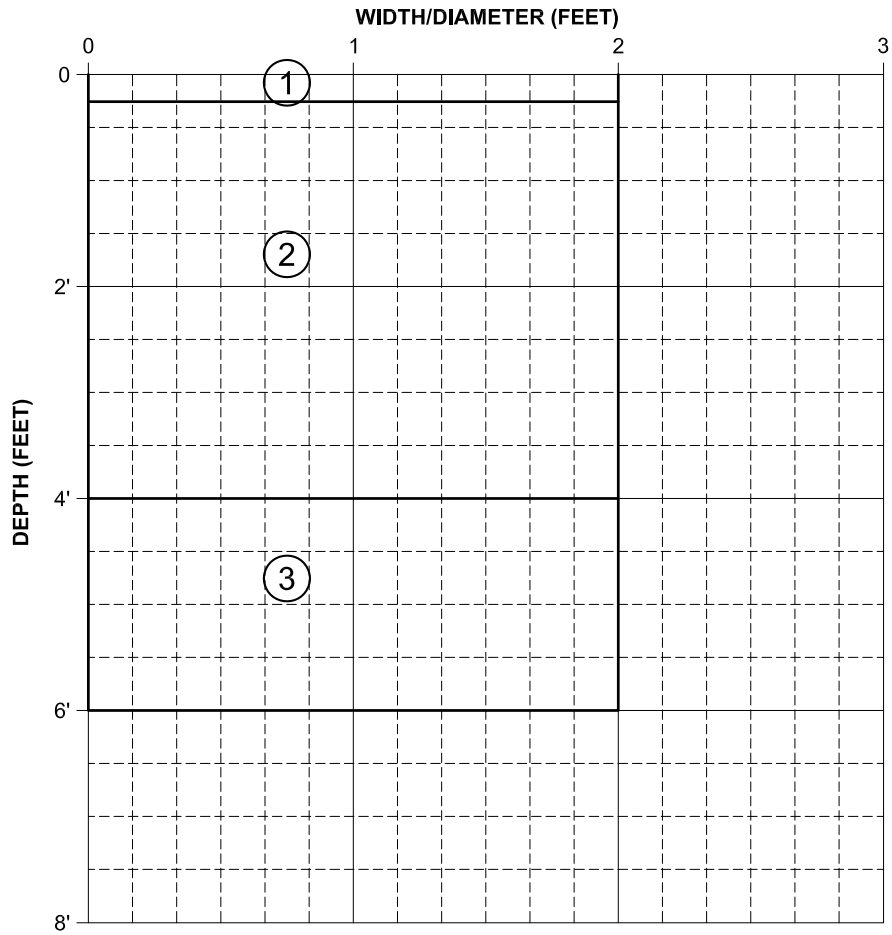
Engineering Analytics, Inc.

TEST PIT LOG

PROJECT: MT. TAYLOR **PAGE:** 2 OF 2

PROJECT NO.: 111360 **DATE:**

TEST PIT NO.: C-10



DEPTH	SAMPLE I.D.	SAMPLE TYPE
4'	C-10C	CA
3'	C-10	BKT
6'	C-10	BKT

SOIL TYPE	SOIL DEPTH	SOIL DESCRIPTION AND EXCAVATION NOTES
1	0 - 3"	VEGETATION, SAND, DRY, TAN (2.5Y, 5/3), NO PLASTICITY
2	6" - 4'	VERY LOOSE SAND, DRY, TAN (2.5Y, 5/3), NO PLASTICITY
3	4' - E.O.B.	SANDY CLAY, DRY, MOTTLED BROWN (5YR, 3/1), CHUNKY, BRITTLE MORE SAND
		E.O.T.P. = 6'

NOTES:

Engineering Analytics, Inc.

TEST PIT LOG

PAGE: 1 of 2

DATE:

TEST PIT NO.: C-11

PROJECT INFORMATION

PROJECT: MT. TAYLOR

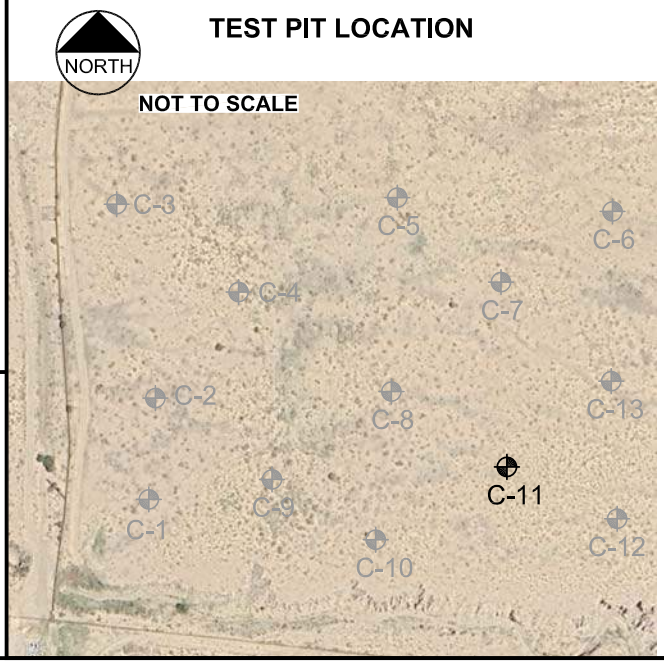
PROJECT NO.: 111360

CLIENT: MT. TAYLOR

OWNER:

LOCATION: GRANTS, NEW MEXICO

TEST PIT LOCATION



FIELD INFORMATION

DATE & TIME ARRIVED:

TEST PIT LOGGED BY: JBB

VISITORS:

WEATHER: VERY COLD

EXCAVATION INFORMATION

EXCAVATION COMPANY: RGR

START TIME:

TEST PIT DEPTH: 6 FT TEST PIT DIA.: 2 FT

EXCAVATION METHOD:

SAMPLING METHOD:

TIME EXCAVATION COMPLETE:

TEST PIT COMPLETION / ABANDONMENT INFORMATION

START TIME: COMPLETE TIME:

INSTRUMENTATION: BACKFILL:

GROUNDWATER CONDITIONS

FOLLOWING FIELD WORK

TIME OF CLEAN-UP COMPLETE: TIME LEFT SITE:

NOTES:

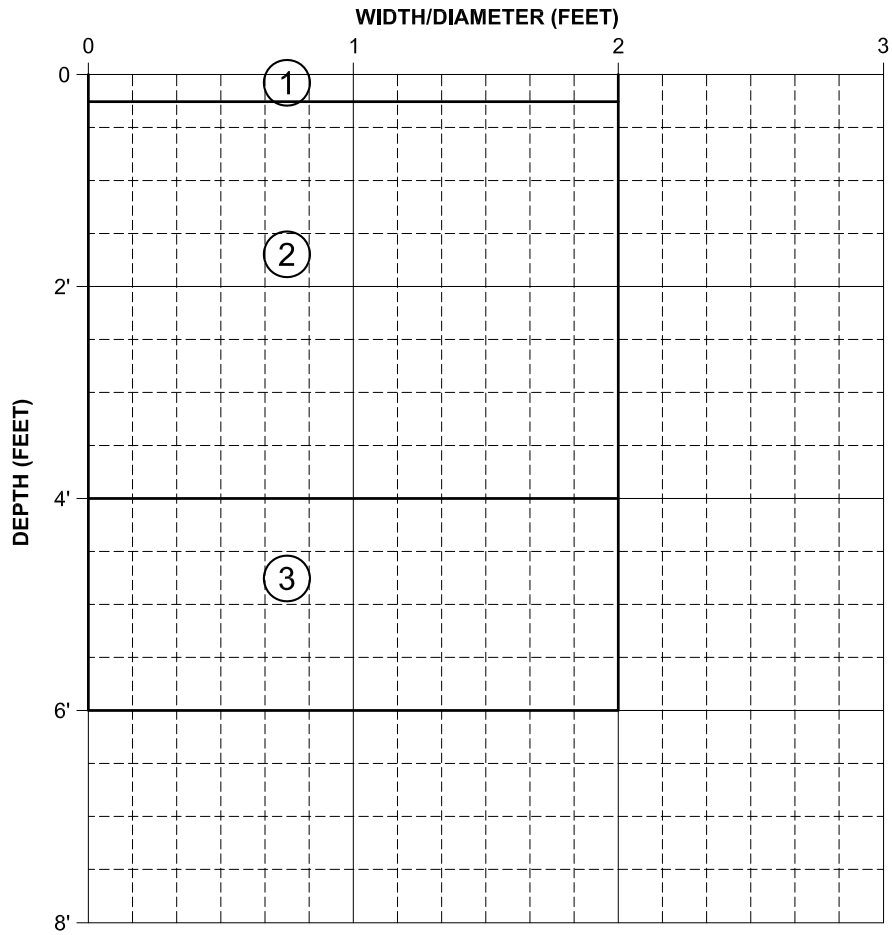
Engineering Analytics, Inc.

TEST PIT LOG

PROJECT: MT. TAYLOR **PAGE:** 2 OF 2

PROJECT NO.: 111360 **DATE:**

TEST PIT NO.: C-11



DEPTH	SAMPLE I.D.	SAMPLE TYPE
4'	C-11C	CA
3'	C-11	BKT
5'	C-11	BKT

SOIL TYPE	SOIL DEPTH	SOIL DESCRIPTION AND EXCAVATION NOTES
1	0 - 3"	VEGETATION, SAND, DRY, TAN (2.5Y, 5/3)
2	6" - 4'	VERY LOOSE SAND, DRY, TAN (2.5Y, 5/3), NO PLASTICITY
3	4' - E.O.B.	SANDY CLAY, DRY, MOTTLED BROWN (5YR, 3/1), CHUNKY, BRITTLE
		E.O.T.P. = 6'

NOTES:

Engineering Analytics, Inc.

TEST PIT LOG

PAGE: 1 of 2

DATE:

TEST PIT NO.: C-12

PROJECT INFORMATION

PROJECT: MT. TAYLOR

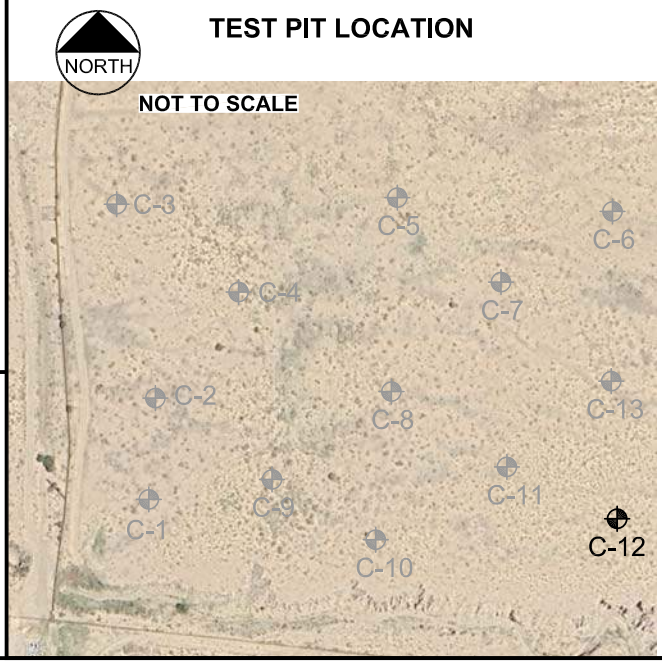
PROJECT NO.: 111360

CLIENT: MT. TAYLOR

OWNER:

LOCATION: GRANTS, NEW MEXICO

TEST PIT LOCATION



FIELD INFORMATION

DATE & TIME ARRIVED:

TEST PIT LOGGED BY: JBB

VISITORS:

WEATHER: VERY COLD

EXCAVATION INFORMATION

EXCAVATION COMPANY: RGR

START TIME:

TEST PIT DEPTH: 6 FT TEST PIT DIA.: 2 FT

EXCAVATION METHOD:

SAMPLING METHOD:

TIME EXCAVATION COMPLETE:

TEST PIT COMPLETION / ABANDONMENT INFORMATION

START TIME: COMPLETE TIME:

INSTRUMENTATION: BACKFILL:

GROUNDWATER CONDITIONS

FOLLOWING FIELD WORK

TIME OF CLEAN-UP COMPLETE: TIME LEFT SITE:

NOTES:

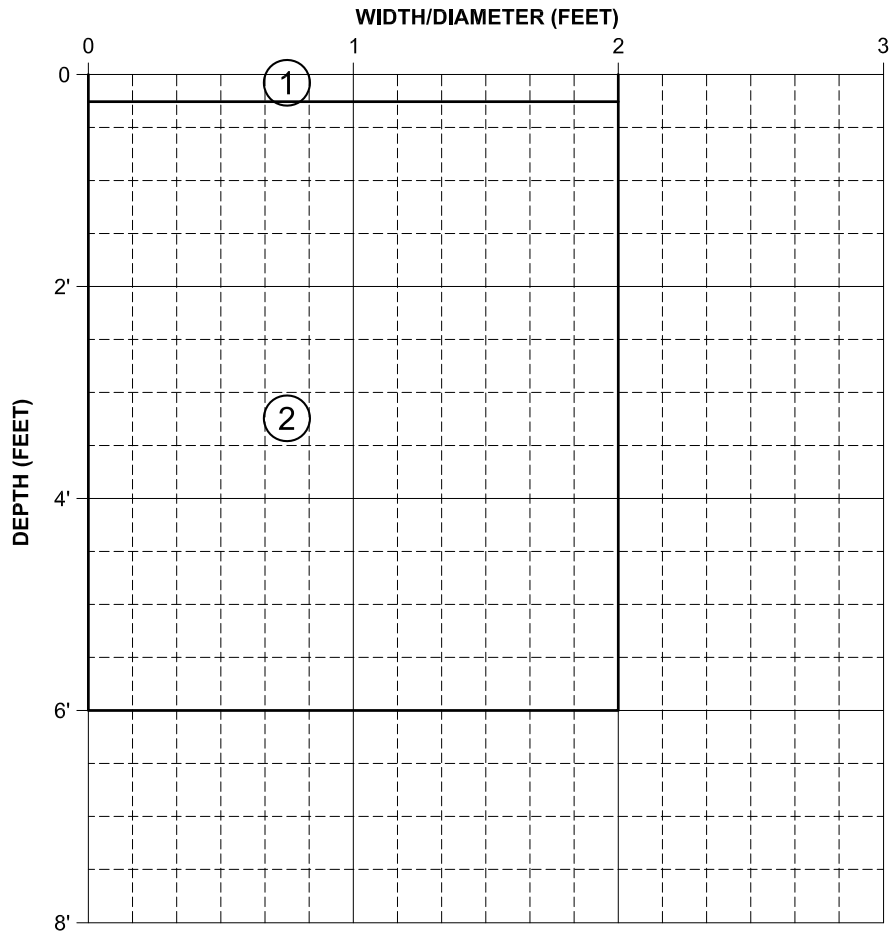
Engineering Analytics, Inc.

TEST PIT LOG

PROJECT: MT. TAYLOR **PAGE:** 2 OF 2

PROJECT NO.: 111360 **DATE:**

TEST PIT NO.: C-12



DEPTH	SAMPLE I.D.	SAMPLE TYPE
N/R	N/R	CA
3'	C-12	BKT
6'	C-12	BKT

SOIL TYPE	SOIL DEPTH	SOIL DESCRIPTION AND EXCAVATION NOTES
1	0 - 3"	VEGETATION, SAND, DRY, TAN (2.5Y, 5/3), NO PLASTICITY
2	3" - E.O.B.	VERY LOOSE SAND, DRY, TAN (2.5Y, 5/3), NO PLASTICITY
		E.O.T.P. = 6'

NOTES: NO CLAY

Engineering Analytics, Inc.

TEST PIT LOG

PAGE: 1 of 2

DATE:

TEST PIT NO.: C-13

PROJECT INFORMATION

PROJECT: MT. TAYLOR

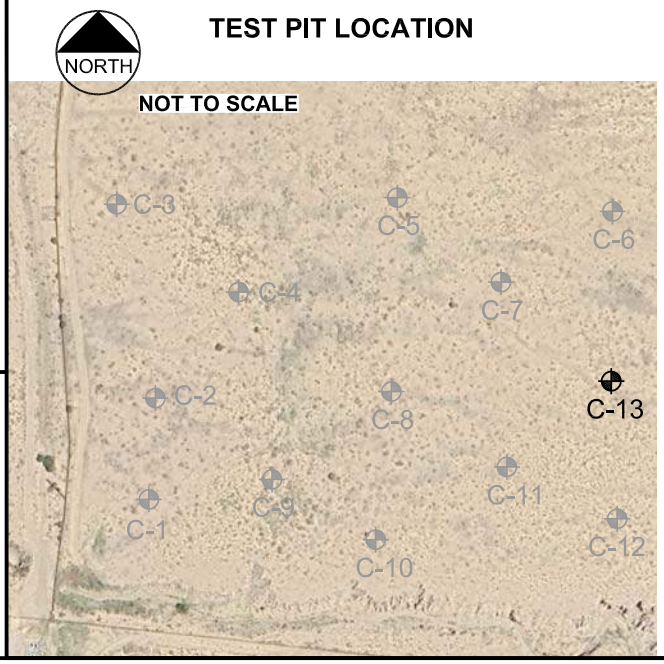
PROJECT NO.: 111360

CLIENT: MT. TAYLOR

OWNER:

LOCATION: GRANTS, NEW MEXICO

TEST PIT LOCATION



FIELD INFORMATION

DATE & TIME ARRIVED:

TEST PIT LOGGED BY: JBB

VISITORS:

WEATHER: VERY COLD

EXCAVATION INFORMATION

EXCAVATION COMPANY: RGR

START TIME:

TEST PIT DEPTH: 6 FT TEST PIT DIA.: 2 FT

EXCAVATION METHOD:

SAMPLING METHOD:

TIME EXCAVATION COMPLETE:

TEST PIT COMPLETION / ABANDONMENT INFORMATION

START TIME: COMPLETE TIME:

INSTRUMENTATION: BACKFILL:

GROUNDWATER CONDITIONS

FOLLOWING FIELD WORK

TIME OF CLEAN-UP COMPLETE: TIME LEFT SITE:

NOTES:

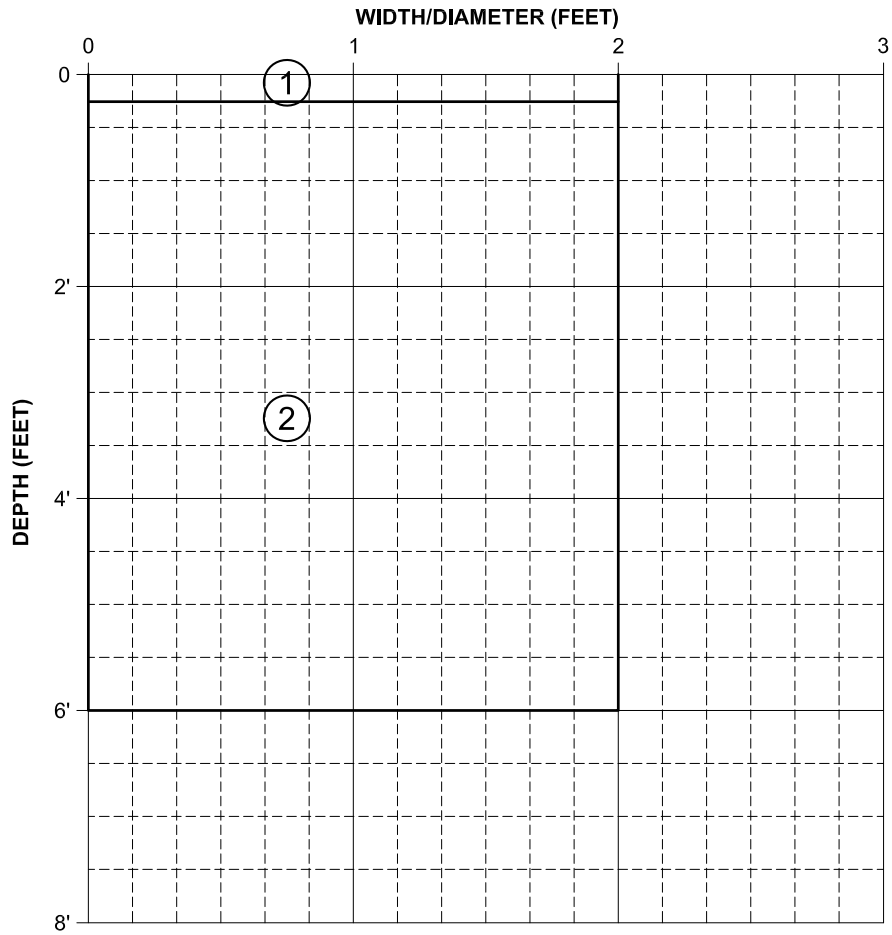
Engineering Analytics, Inc.

TEST PIT LOG

PROJECT: MT. TAYLOR **PAGE:** 2 OF 2

PROJECT NO.: 111360 **DATE:**

TEST PIT NO.: C-13



DEPTH	SAMPLE I.D.	SAMPLE TYPE
3'	C-13C	CA
3'	C-13	BKT
6'	C-13	BKT

SOIL TYPE	SOIL DEPTH	SOIL DESCRIPTION AND EXCAVATION NOTES
1	0 - 3"	VEGETATION, SAND, DRY, TAN (2.5Y, 5/3)
2	3" - E.O.B.	VERY SANDY CLAY, DRY, MOTTLED BROWN (2.5Y, 3/1), BRITTLE, CHUNKY
		CLAY AND SAND ALMOST 1/2 & 1/2
		E.O.T.P. = 6'

NOTES:

APPENDIX B
Results of Geotechnical Laboratory Testing for Mt. Taylor Disposal Cell

Geotechnical Laboratory Test Report
Mt. Taylor Mine

Prepared for:

Rio Grand Resources

750 W Pender Street, Suite 250,
Vancouver, BC, V6C 2T7,
Canada

Prepared by:

Engineering Analytics, Inc.

1600 Specht Point Road, Suite 209
Fort Collins, Colorado 80525
(970) 488-3111
Fax (970) 488-3112

Project No. 111360

November 2025

Table of Contents

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2.0 Summary of Test Results

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5.0 Atterberg Limits

6.0 Flexible Wall Permeability

7.0 Soil Water Characteristic Curve

8.0 Standard Proctor Compaction

9.0 Consolidated Undrained Triaxial Shear

1.0 Summary

This report presents the results of laboratory testing conducted on soil samples provided by Engineering Analytics of Fort Collins, Colorado. The sample selection and testing parameters were designated by personnel from Engineering Analytics. All laboratory analyses were performed by Engineering Analytics under the direct supervision of a Professional Engineer licensed in the State of Colorado.

The testing procedures adhered to the standards outlined by the American Society of Testing and Materials (ASTM). Where ASTM standards were not applicable, established industry standards were employed. Any deviations from standard procedures are explicitly noted within this report the table below lists ASTM procedures used in this investigation. The results of the laboratory tests, including relevant graphical representations, are presented in the following sections.

Test Performed	ASTM Test Method	No. of Tests Performed
Moisture Determination	D2216	48
Percent Passing No. 200	D1140	48
Atterberg Limits	D4318	48
Flexible Wall Permeability	D5084	2
Soil Water Characteristic Curve	D6836	7
Standard Proctor Compaction	D698	8
Consolidated Undrained Triaxial Shear	D4767	1

2.0 Summary of Test Results

Engineering Analytics, Inc.

					Project Name: Mt. Taylor Mine		**Project No.** 111360		**Date:** 02/21/2025		**Date:**
Hole ID	**Sample ID**	**Sampling Depth (ft)**		**Sample Type**	**Moisture Content (%)**	**Percent Passing #200 (ASTM D1140)**	**Atterberg Limits (ASTM D4318) (LL / PL / PI)**	**Flexible Wall Permeability (ASTM D5084)**	**Soil Water Characteristic Curve (SWCC)**	**Standard Proctor Compaction (ASTM D698)**	**Triaxial (CUPP), 3-stage (ASTM D4767)**
		From	**To**								
TOTAL NUMBER OF COMPLETED TESTS					**48**	**48**	**48**	**2**	**7**	**8**	**1**
EA-BSA01	EA-BSA01 A	2.0	3.0	BKT	9.7%	76.4%	40 / 20 / 20				
	EA-BSA01 B	5.0	6.0	BKT	12.4%	78.8%	38 / 19 / 19				
EA-BSA02	EA-BSA02 A	2.0	3.0	BKT	9.5%	66.5%	26 / 20 / 6				
	EA-BSA02 B	5.0	6.0	BKT	8.9%	65.1%	25 / 20 / 5				
EA-BSA03	EA-BSA03 A	2.0	3.0	BKT	7.0%	46.1%	NV / NP / NP				
	EA-BSA03 B	5.0	6.0	BKT	6.8%	40.8%	NV / NP / NP				
EA-BSA04	EA-BSA04 A	2.0	3.0	BKT	13.2%	56.5%	28 / 18 / 10				
	EA-BSA04 B	5.0	6.0	BKT	6.9%	51.2%	25 / 18 / 7				
EA-BSA05	EA-BSA05 A	2.0	3.0	BKT	6.2%	41.8%	25 / 20 / 5		(1)	111.1 @ 13.9%	
	EA-BSA05 B	5.0	6.0	BKT	6.5%	43.0%	25 / 20 / 5				
EA-BSA06	EA-BSA06 A	2.0	3.0	BKT	12.8%	51.9%	23 / 20 / 3				
	EA-BSA06 B	5.0	6.0	BKT	8.6%	28.9%	NV / NP / NP		(1)	117.6 @ 12.2%	
EA-BSB01	EA-BSB01 A	2.0	3.0	BKT	18.9%	81.1%	39 / 16 / 23				
	EA-BSB01 B	5.0	6.0	BKT	8.1%	39.0%	NV / NP / NP				
EA-BSB02	EA-BSB02 A	2.0	3.0	BKT	16.8%	68.0%	35 / 16 / 19				
	EA-BSB02 B	5.0	6.0	BKT	7.9%	55.0%	22 / 20 / 2		(1)	110.3 @ 16.2%	
EA-BSB03	EA-BSB03 A	2.0	3.0	BKT	14.6%	71.1%	26 / 19 / 7				
	EA-BSB03 B	5.0	6.0	BKT	11.6%	45.6%	NV / NP / NP				
EA-BSB04	EA-BSB04 A	2.0	3.0	BKT	6.1%	30.0%	NV / NP / NP		(1)	112.5 @ 15.0%	
	EA-BSB04 B	5.0	6.0	BKT	24.1%	90.1%	51 / 17 / 34				
EA-BSB05	EA-BSB05 A	2.0	3.0	BKT	10.4%	65.1%	31 / 19 / 12				
	EA-BSB05 B	5.0	6.0	BKT	4.6%	30.9%	NV / NP / NP				
EA-BSC01	EA-BSC01 A	2.0	3.0	BKT	9.7%	60.6%	31 / 16 / 15				
	EA-BSC01 B	5.0	6.0	BKT	11.9%	78.8%	42 / 17 / 25				
EA-BSC02	EA-BSC02 A	2.0	3.0	BKT	12.7%	87.6%	50 / 17 / 33				
	EA-BSC02 B	5.0	6.0	BKT	12.6%	80.7%	38 / 18 / 20				
EA-BSC03	EA-BSC03 A	2.0	3.0	BKT	9.6%	61.2%	29 / 15 / 14		(1)	108.2 @ 16.8%	
	EA-BSC03 B	5.0	6.0	BKT	11.7%	79.1%	39 / 18 / 21				
EA-BSC04	EA-BSC04 A	2.0	3.0	BKT	12.1%	80.0%	39 / 16 / 13				
	EA-BSC04 B	5.0	6.0	BKT	10.7%	68.9%	34 / 16 / 8				
EA-BSC05	EA-BSC05 A	2.0	3.0	BKT	8.6%	57.0%	23 / 18 / 5				
	EA-BSC05 B	5.0	6.0	BKT	13.8%	90.2%	56 / 16 / 40				
EA-BSC06	EA-BSC06 A	2.0	3.0	BKT	7.9%	58.5%	30 / 17 / 13				
	EA-BSC06 B	5.0	6.0	BKT	17.2%	95.3%	65 / 23 / 42			89.8 @ 26.6%	(1)
EA-BSC07	EA-BSC07 A	2.0	3.0	BKT	10.1%	77.7%	35 / 19 / 16				
	EA-BSC07 B	5.0	6.0	BKT	10.4%	71.9%	35 / 17 / 18				
EA-BSC08	EA-BSC08 A	2.0	3.0	BKT	11.2%	77.2%	44 / 17 / 27				
	EA-BSC08 B	5.0	6.0	BKT	11.7%	86.5%	49 / 24 / 25				
EA-BSC09	EA-BSC09 A	2.0	3.0	BKT	6.8%	50.0%	26 / 18 / 8	7.9E-06	(1)	110.4 @ 16.1%	
	EA-BSC09 B	5.0	6.0	BKT	14.7%	96.9%	60 / 27 / 33				
EA-BSC10	EA-BSC10 A	2.0	3.0	BKT	9.0%	69.4%	39 / 16 / 23				
	EA-BSC10 B	5.0	6.0	BKT	12.0%	69.6%	33 / 18 / 15				
EA-BSC11	EA-BSC11 A	2.0	3.0	BKT	10.0%	63.5%	30 / 19 / 11				
	EA-BSC11 B	5.0	6.0	BKT	12.7%	69.1%	42 / 18 / 24				
EA-BSC12	EA-BSC12 A	2.0	3.0	BKT	7.3%	52.7%	NV / NP / NP	1.2E-04	(1)	109.3 @ 16.4%	
	EA-BSC12 B	5.0	6.0	BKT	8.2%	49.0%	23 / 20 / 3				
EA-BSC13	EA-BSC13 A	2.0	3.0	BKT	9.5%	75.8%	38 / 17 / 21				
	EA-BSC13 B	5.0	6.0	BKT	13.3%	81.4%	45 / 23 / 22				

MCS = Modified California Sample, BKT = Bucket

3.0 Moisture Content

The natural moisture content of 48 soil samples was determined in accordance with ASTM D2216, "Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass."

This test yields the gravimetric moisture content, expressed as a percentage, which represents the ratio of the mass of water to the mass of dry soil within the sample.

A summary of the natural moisture content results are presented in Section 2.0 of this report.

4.0 Percent Passing No. 200

A selection of 48 soil samples was tested in general accordance with ASTM D1140, "Standard Test Methods for Determining the Amount of Material Finer than 75-µm (No. 200) Sieve in Soils by Washing."

- A selection of soil samples was tested in general accordance with ASTM D1140, "Standard Test Methods for Determining the Amount of Material Finer than 75-µm (No. 200) Sieve in Soils by Washing."
- The testing procedure involved oven-drying the samples, recording their initial dry weight, and then washing them through a 75-µm (No. 200) sieve.
- The material retained on the sieve was recovered, oven-dried, and weighed.
- The percentage of material passing the No. 200 sieve was calculated using the initial total dry weight of the sample and the dry weight of the material retained on the sieve.

A summary of the percent finer than No. 200 sieve results is presented in Section 2.0 of this report.

5.0 Atterberg Limits

The Atterberg Limits, specifically the liquid limit (LL) and plastic limit (PL), were determined on 48 soil samples in accordance with ASTM D4318, "Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils."

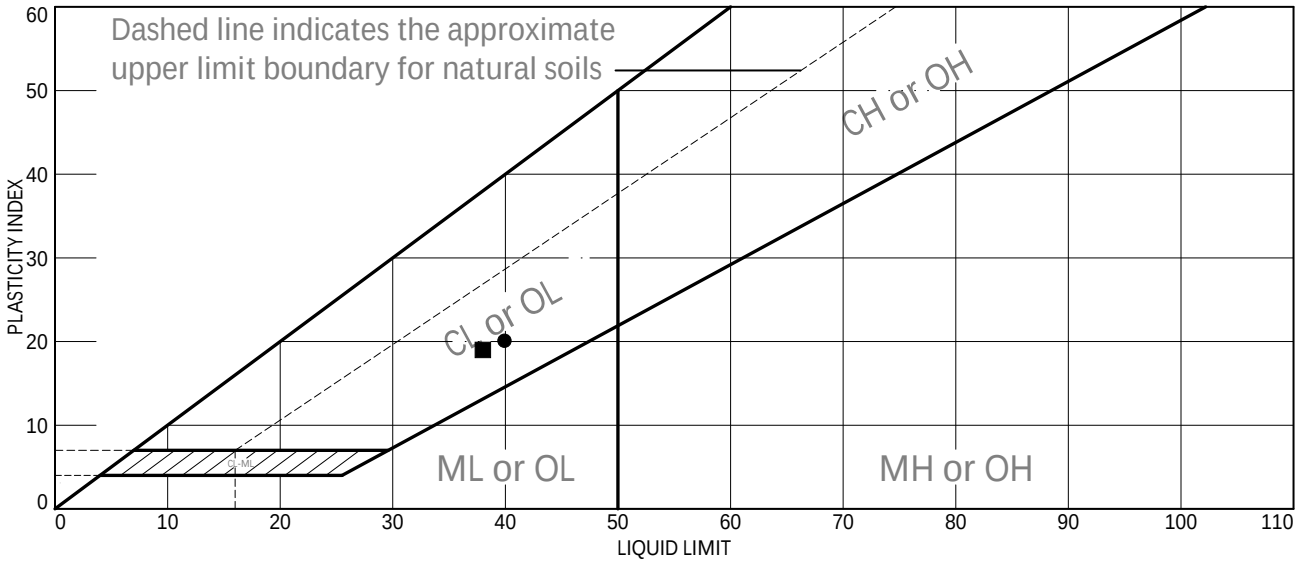
- Sample Preparation:
    - The soil sample is processed to pass the 0.425 mm (No. 40) sieve.
    - A representative portion of this fine-grained material is used for the tests.
- Liquid Limit (LL):
    - A soil paste is prepared with distilled water.
    - The paste is placed in a Casagrande cup, and a groove is made in the soil.
    - The cup is repeatedly dropped from a specified height.
    - The liquid limit is determined as the moisture content at which the groove closes over a distance of 12.7 mm (0.5 inches) after 25 blows.
- Plastic Limit (PL):
    - A soil thread is rolled out on a flat surface.
    - The plastic limit is determined as the moisture content at which the soil thread crumbles when rolled to a diameter of 3.2 mm (1/8 inch).
- Plasticity Index (PI):
    - The plasticity index is calculated by subtracting the plastic limit from the liquid limit (PI = LL - PL).

A summary of the Atterberg Limits test results is presented in Section 2.0 of this report.

A graph depicting the Plasticity Index versus the Liquid Limit is included on the following pages.

LIQUID AND PLASTIC LIMITS TEST REPORT

ASTM D4318



	Sample Identification	Sampled	Received	Tested	Technician
●	Source of Sample: EA-BSA01 Depth: 2' - 3' Sample Number: A			02/21/2025	CF
■	Source of Sample: EA-BSA01 Depth: 5' - 6' Sample Number: B			02/20/2025	CF

	Material Description	USCS	LL	PL	PI	NM	%<#40
●	Silty Clay		40	20	20		
■	Clay		38	19	19		

	PL Rolling Method	LL Device	Grooving Tool	Test Remarks
●	Hand rolled	Manual	Metal	
■	Hand rolled	Manual	Metal	

Project No. 111360 Client: Rio Grand Resources

Project: Mt.Taylor

Checked by: KG

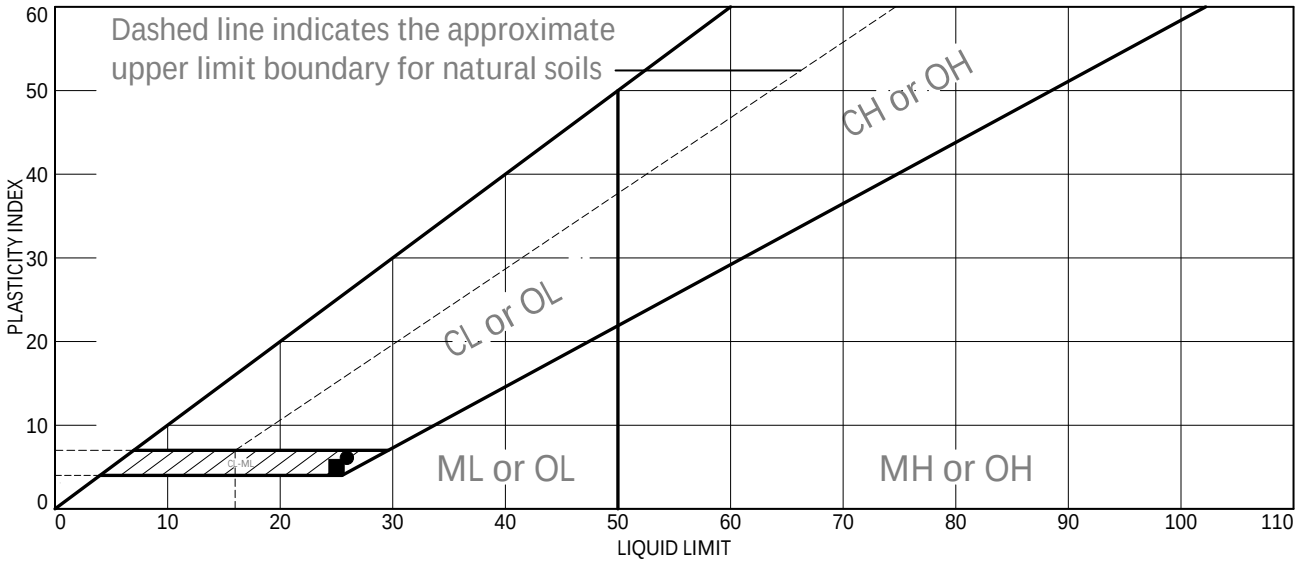
Title:

ENGINEERING ANALYTICS, INC.

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT

ASTM D4318



	Sample Identification	Sampled	Received	Tested	Technician
●	Source of Sample: EA-BSA02 Depth: 2' - 3' Sample Number: A			02/18/2025	CF
■	Source of Sample: EA-BSA02 Depth: 5' - 6' Sample Number: B			02/20/2025	SY

	Material Description	USCS	LL	PL	PI	NM	%<#40
●	Silty Clay		26	20	6		
■	Sandy Clay		25	20	5		

	PL Rolling Method	LL Device	Grooving Tool	Test Remarks
●	Hand rolled	Manual	Metal	
■	Hand rolled	Manual	Metal	

Project No. 111360 Client: Rio Grand Resources

Project: Mt.Taylor

Checked by: KG

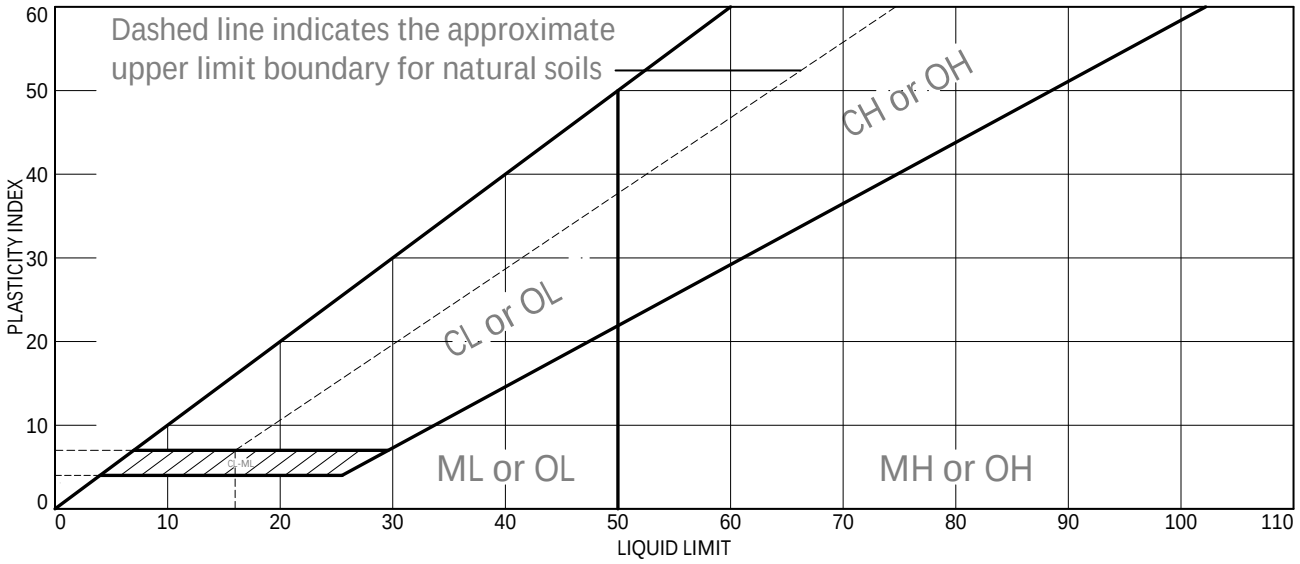
Title:

ENGINEERING ANALYTICS, INC.

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT

ASTM D4318



	Sample Identification	Sampled	Received	Tested	Technician
●	Source of Sample: EA-BSA03 Depth: 2' - 3' Sample Number: A			02/20/2025	SY
■	Source of Sample: EA-BSA03 Depth: 5' - 6' Sample Number: B			02/20/2025	CF

	Material Description	USCS	LL	PL	PI	NM	%<#40
●	Sand		NV	NP	NP		
■	Sandy Clay		NV	NP	NP		

	PL Rolling Method	LL Device	Grooving Tool	Test Remarks
●	Hand rolled	Manual	Metal	
■	Hand rolled	Manual	Metal	

Project No. 111360 Client: Rio Grand Resources

Project: Mt.Taylor

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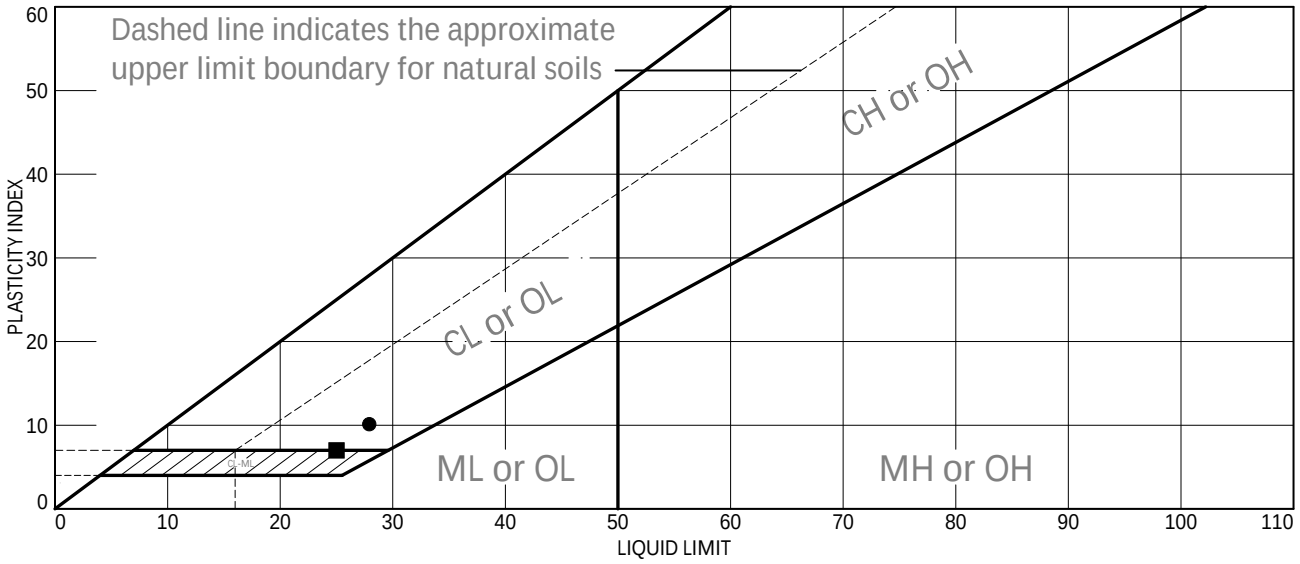
Figure

LIQUID AND PLASTIC LIMITS TEST REPORT

ASTM D4318



	Sample Identification	Sampled	Received	Tested	Technician
●	Source of Sample: EA-BSA04 Depth: 2' - 3' Sample Number: A			02/21/2025	CF
■	Source of Sample: EA-BSA04 Depth: 5' - 6' Sample Number: B			02/19/2025	CF

	Material Description	USCS	LL	PL	PI	NM	%<#40
●	Silty Clay		28	18	10		
■	Silty Clay		25	18	7		

	PL Rolling Method	LL Device	Grooving Tool	Test Remarks
●	Hand rolled	Manual	Metal	
■	Hand rolled	Manual	Metal	

Project No. 111360 Client: Rio Grand Resources

Project: Mt.Taylor

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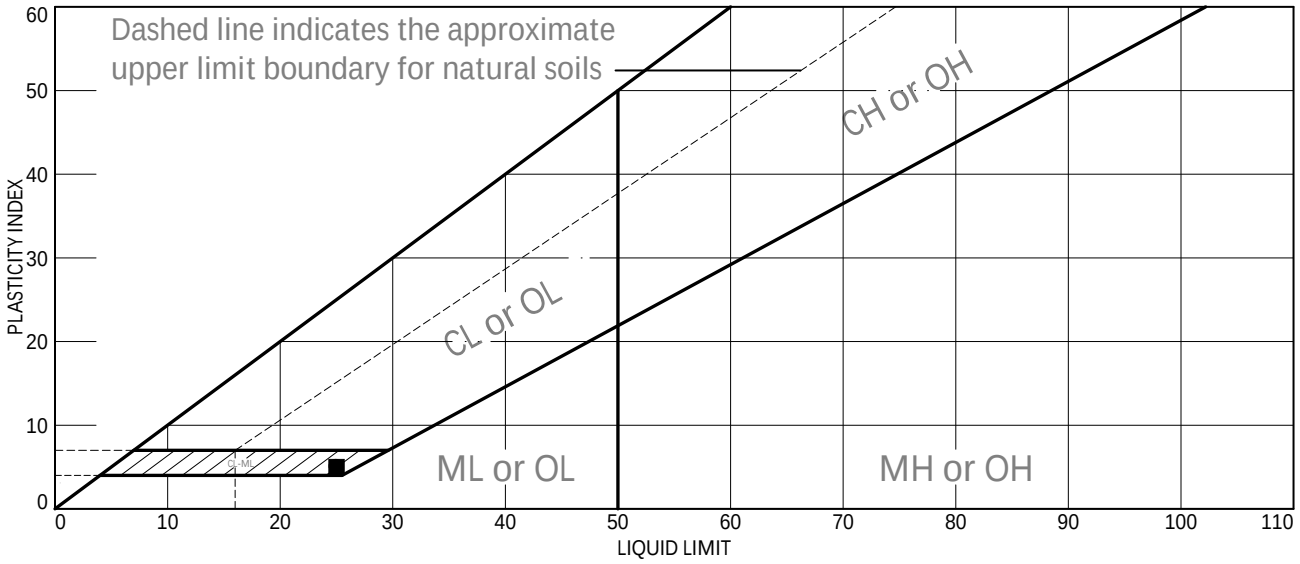
Figure

LIQUID AND PLASTIC LIMITS TEST REPORT

ASTM D4318



	Sample Identification	Sampled	Received	Tested	Technician
●	Source of Sample: EA-BSA05 Depth: 2' - 3' Sample Number: A			02/20/2025	SY
■	Source of Sample: EA-BSA05 Depth: 5' - 6' Sample Number: B			02/20/2025	CF

	Material Description	USCS	LL	PL	PI	NM	%<#40
●	Sand		25	20	5		
■	Clayey Sand		25	20	5		

	PL Rolling Method	LL Device	Grooving Tool	Test Remarks
●	Hand rolled	Manual	Metal	
■	Hand rolled	Manual	Metal	

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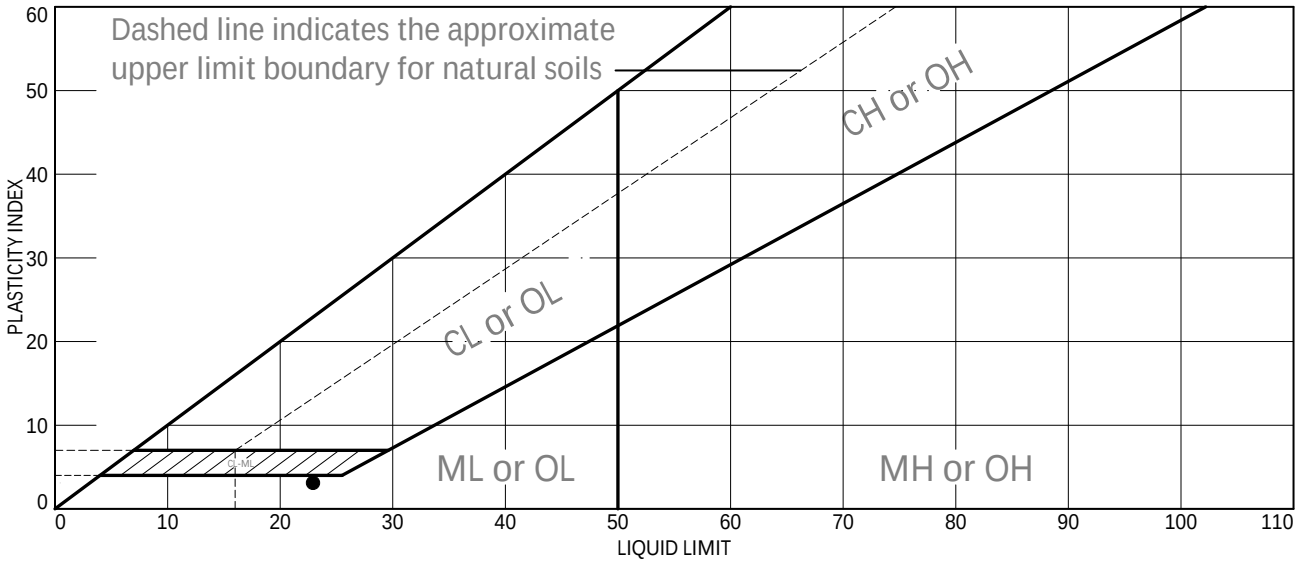
Figure

LIQUID AND PLASTIC LIMITS TEST REPORT

ASTM D4318



	Sample Identification	Sampled	Received	Tested	Technician
●	Source of Sample: EA-BSA06 Depth: 2' - 3' Sample Number: A			02/20/2025	CF
■	Source of Sample: EA-BSA06 Depth: 5' - 6' Sample Number: B			2/21/2025	CF

	Material Description	USCS	LL	PL	PI	NM	%<#40
●	Silty Clay		23	20	3		
■	Sand		NV	NP	NP		

	PL Rolling Method	LL Device	Grooving Tool	Test Remarks
●	Hand rolled	Manual	Metal	
■	Hand rolled	Manual	Metal	

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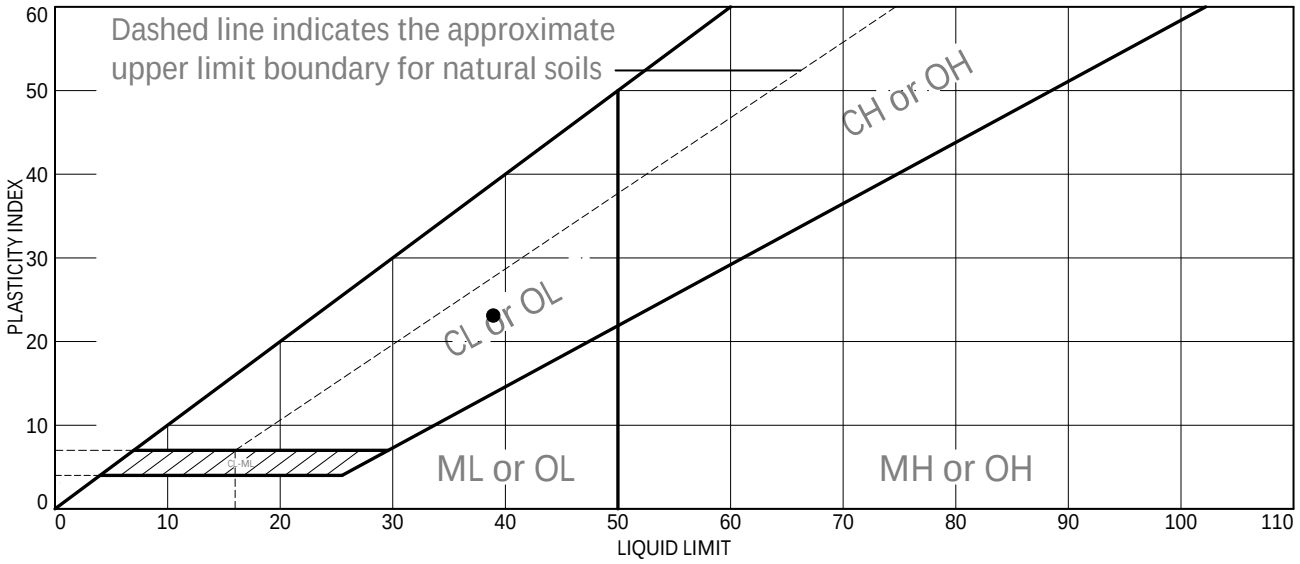
Figure

LIQUID AND PLASTIC LIMITS TEST REPORT

ASTM D4318



	Sample Identification	Sampled	Received	Tested	Technician
●	Source of Sample: EA-BSB01 Depth: 2' - 3' Sample Number: A			02/21/2025	CF
■	Source of Sample: EA-BSB01 Depth: 5' - 6' Sample Number: B			02/20/2025	SY

	Material Description	USCS	LL	PL	PI	NM	%<#40
●	Silty Clay		39	16	23		
■	Sand		NV	NP	NP		

	PL Rolling Method	LL Device	Grooving Tool	Test Remarks
●	Hand rolled	Manual	Metal	
■	Hand rolled	Manual	Metal	

Project No. 111360 Client: Rio Grand Resources

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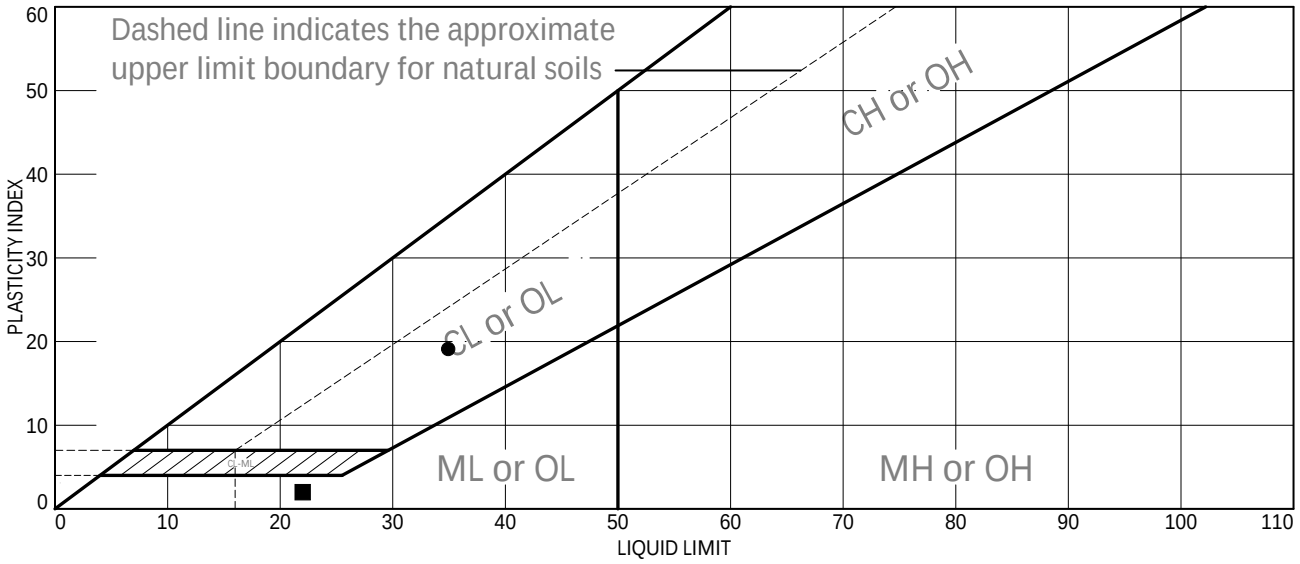
Figure

LIQUID AND PLASTIC LIMITS TEST REPORT

ASTM D4318



	Sample Identification	Sampled	Received	Tested	Technician
●	Source of Sample: EA-BSB02 Depth: 2' - 3' Sample Number: A			02/24/2025	CF
■	Source of Sample: EA-BSB02 Depth: 5' - 6' Sample Number: B			02/20/2025	CF

	Material Description	USCS	LL	PL	PI	NM	%<#40
●	Silty Clay		35	16	19		
■	Silty Clay		22	20	2		

	PL Rolling Method	LL Device	Grooving Tool	Test Remarks
●	Hand rolled	Manual	Metal	
■	Hand rolled	Manual	Metal	

Project No. 111360 Client: Rio Grand Resources

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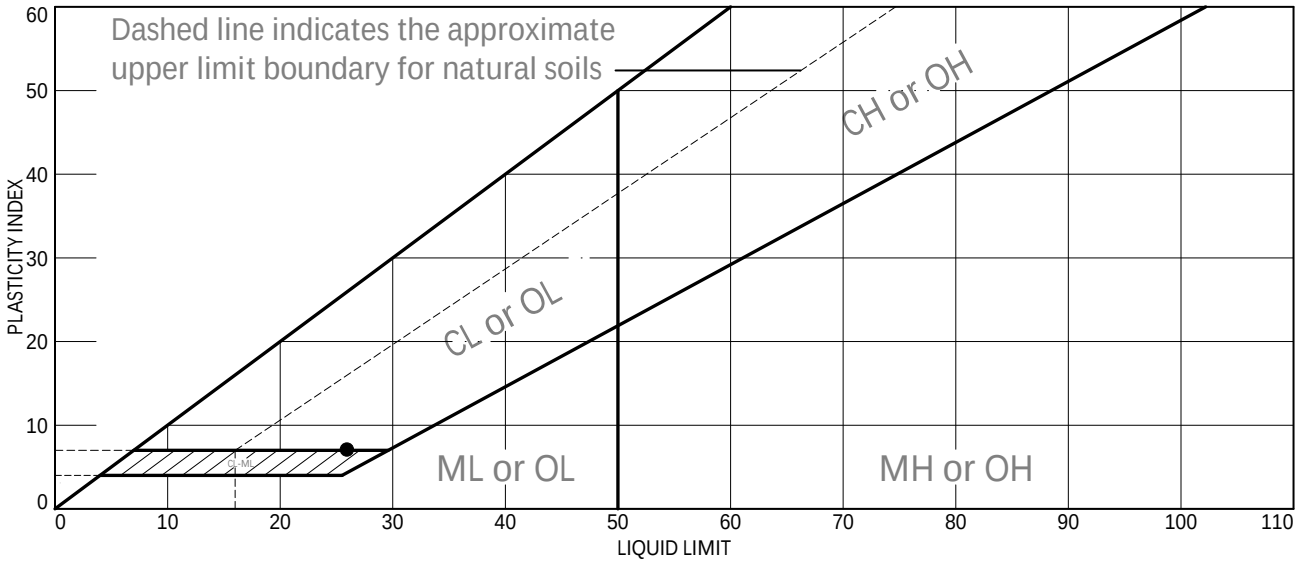
Figure

LIQUID AND PLASTIC LIMITS TEST REPORT

ASTM D4318



	Sample Identification	Sampled	Received	Tested	Technician
●	Source of Sample: EA-BSB03 Depth: 2' - 3' Sample Number: A			02/20/2025	CF
■	Source of Sample: EA-BSB03 Depth: 5' - 6' Sample Number: B			02/20/2025	CF

	Material Description	USCS	LL	PL	PI	NM	%<#40
●	Silty Clay		26	19	7		
■	Sand		NV	NP	NP		

	PL Rolling Method	LL Device	Grooving Tool	Test Remarks
●	Hand rolled	Manual	Metal	
■	Hand rolled	Manual	Metal	

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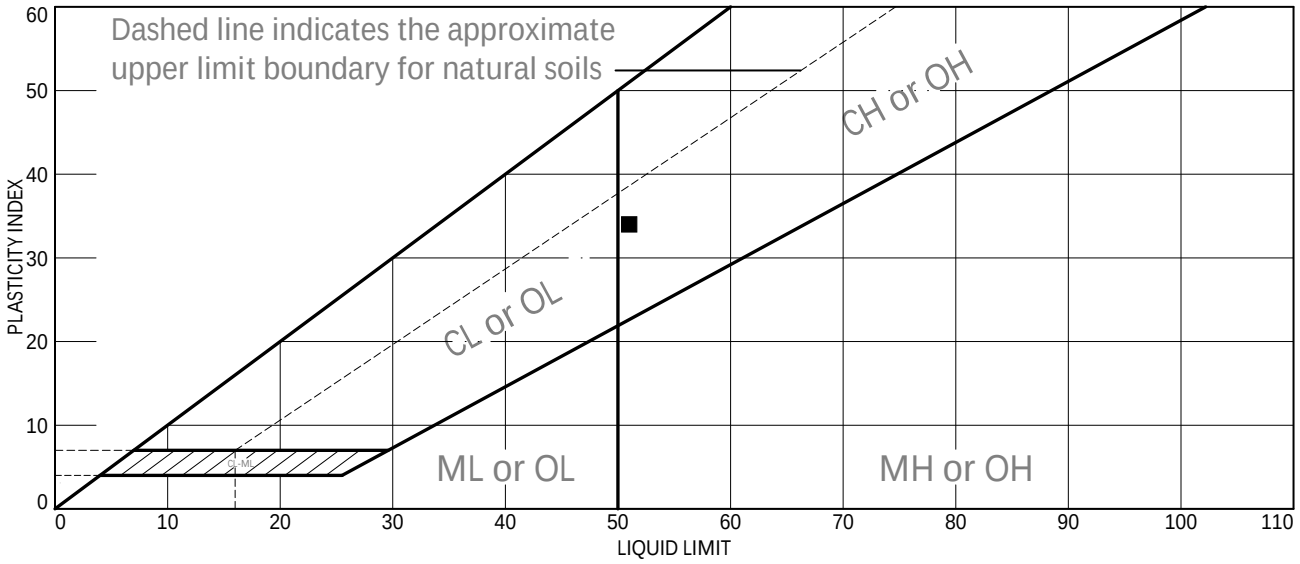
LIQUID AND PLASTIC LIMITS TEST REPORT

ASTM D4318



	Sample Identification	Sampled	Received	Tested	Technician
●	Source of Sample: EA-BSB04 Depth: 2' - 3' Sample Number: A			02/20/2025	SY
■	Source of Sample: EA-BSB04 Depth: 5' - 6' Sample Number: B			02/21/2025	CF

	Material Description	USCS	LL	PL	PI	NM	%<#40
●	Sand		NV	NP	NP		
■	Silty Clay		51	17	34		

	PL Rolling Method	LL Device	Grooving Tool	Test Remarks
●	Hand rolled	Manual	Metal	
■	Hand rolled	Manual	Metal	

Project No. 111360 Client: Rio Grand Resources

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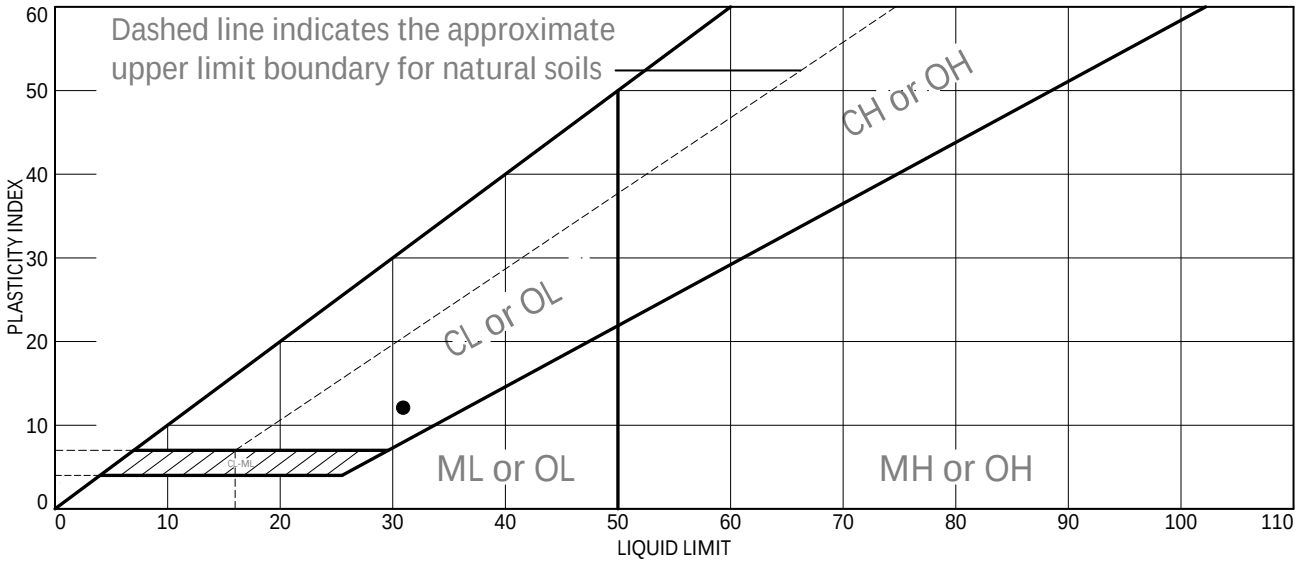
Figure

LIQUID AND PLASTIC LIMITS TEST REPORT

ASTM D4318



	Sample Identification	Sampled	Received	Tested	Technician
●	Source of Sample: EA-BSB05 Depth: 2' - 3' Sample Number: A			02/19/2025	CF
■	Source of Sample: EA-BSB05 Depth: 5' - 6' Sample Number: B			02/20/2025	SY

	Material Description	USCS	LL	PL	PI	NM	%<#40
●	Silty Clay		31	19	12		
■	Sand		NV	NP	NP		

	PL Rolling Method	LL Device	Grooving Tool	Test Remarks
●	Hand rolled	Manual	Metal	
■	Hand rolled	Manual	Metal	

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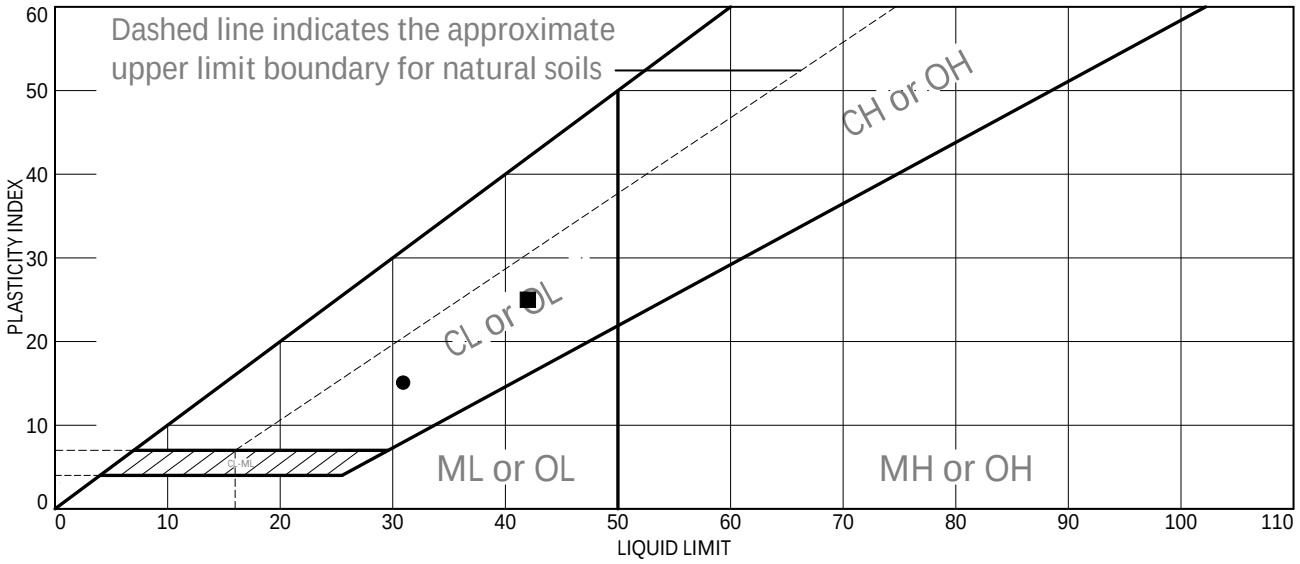
Figure

LIQUID AND PLASTIC LIMITS TEST REPORT

ASTM D4318



	Sample Identification	Sampled	Received	Tested	Technician
●	Source of Sample: EA-BSC01 Depth: 2' - 3' Sample Number: A			02/06/2025	CF
■	Source of Sample: EA-BSC01 Depth: 5' - 6' Sample Number: B			02/06/2025	CF

	Material Description	USCS	LL	PL	PI	NM	%<#40
●	Silty Clay		31	16	15		
■	Silty Clay		42	17	25		

	PL Rolling Method	LL Device	Grooving Tool	Test Remarks
●	Hand rolled	Manual	Metal	
■	Hand rolled	Manual	Metal	

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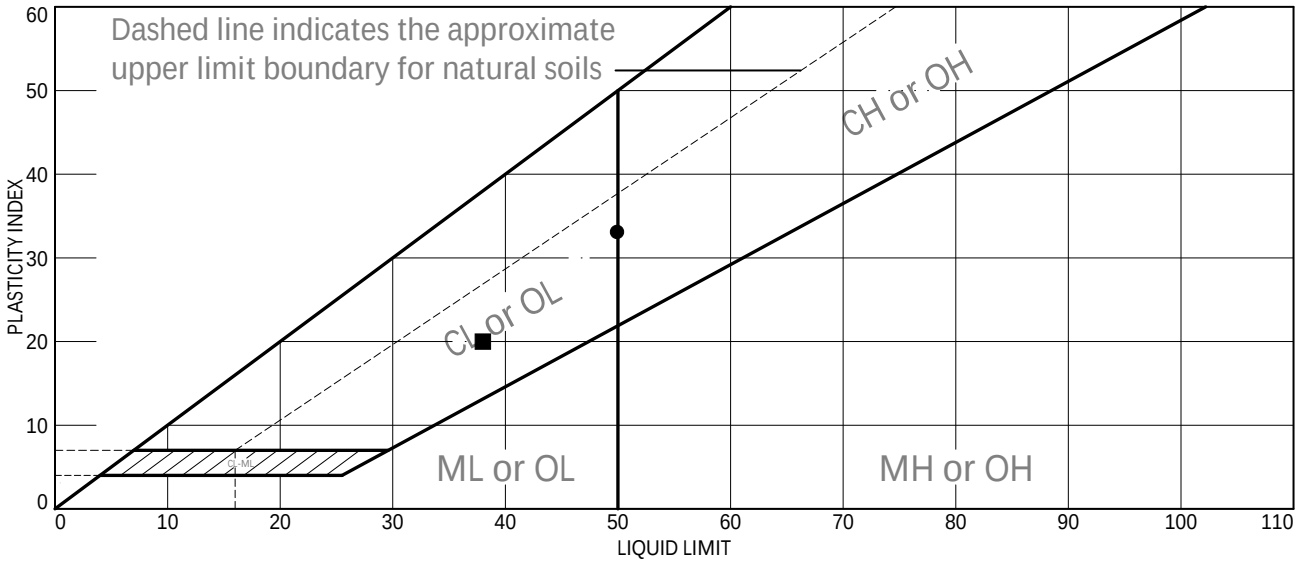
LIQUID AND PLASTIC LIMITS TEST REPORT

ASTM D4318



	Sample Identification	Sampled	Received	Tested	Technician
●	Source of Sample: EA-BSC02 Depth: 2' - 3' Sample Number: A			02/07/2025	EH
■	Source of Sample: EA-BSC02 Depth: 5' - 6' Sample Number: B				02/06/2025

	Material Description	USCS	LL	PL	PI	NM	%<#40
●	Clay		50	17	33		
■	Silty Clay		38	18	20		

	PL Rolling Method	LL Device	Grooving Tool	Test Remarks
●	Hand rolled	Manual	Metal	
■	Hand rolled	Manual	Metal	

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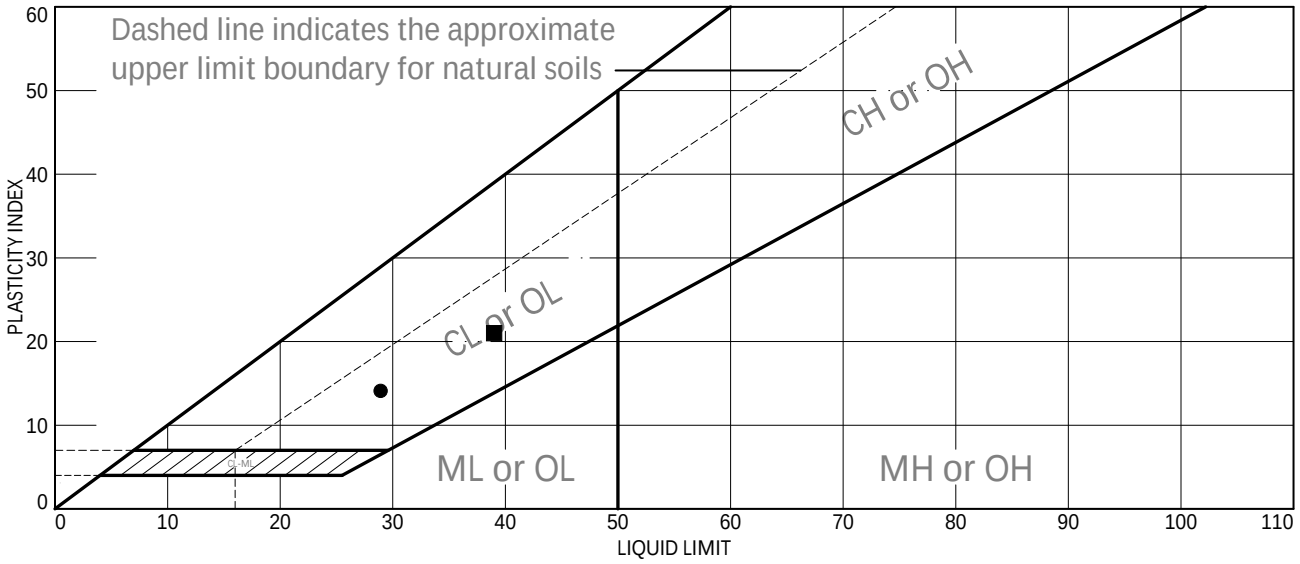
LIQUID AND PLASTIC LIMITS TEST REPORT

ASTM D4318



	Sample Identification	Sampled	Received	Tested	Technician
●	Source of Sample: EA-BSC03 Depth: 2' - 3' Sample Number: A			02/06/2025	CF
■	Source of Sample: EA-BSC03 Depth: 5' - 6' Sample Number: B			02/05/2025	CF

	Material Description	USCS	LL	PL	PI	NM	%<#40
●	Silty Clay		29	15	14		
■	Silty Clay		39	18	21		

	PL Rolling Method	LL Device	Grooving Tool	Test Remarks
●	Hand rolled	Manual	Metal	
■	Hand rolled	Manual	Metal	

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LIQUID AND PLASTIC LIMITS TEST REPORT

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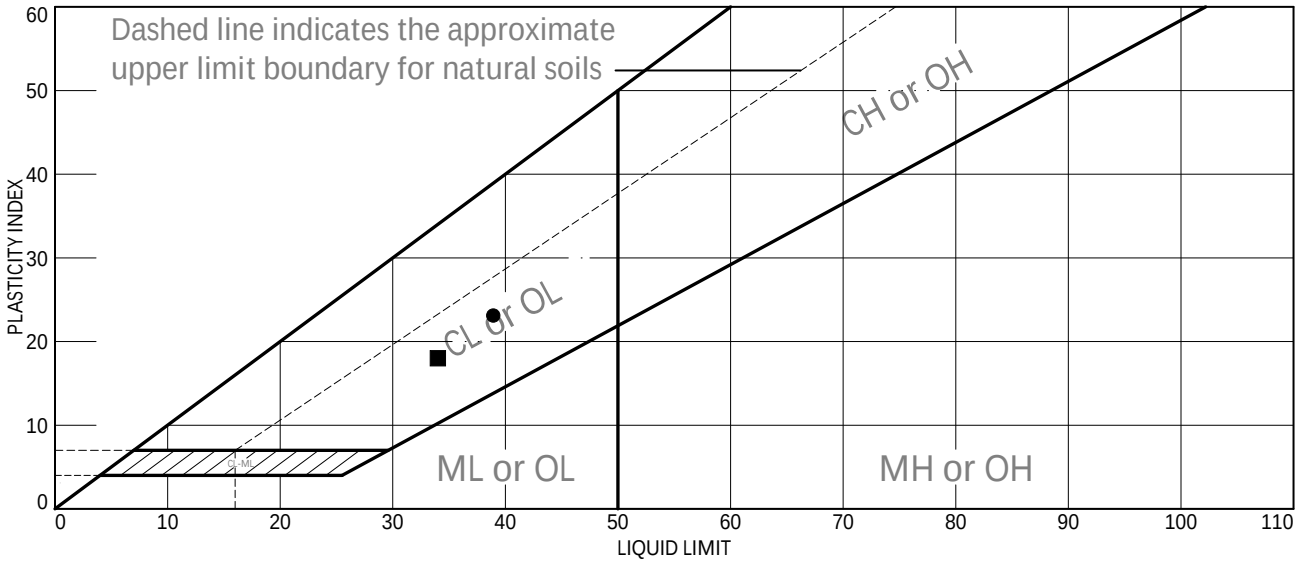

	Sample Identification	Sampled	Received	Tested	Technician
●	Source of Sample: EA-BSC04 Depth: 2' - 3' Sample Number: A			02/19/2025	CF
■	Source of Sample: EA-BSC04 Depth: 5' - 6' Sample Number: B			02/13/2025	CF

	Material Description	USCS	LL	PL	PI	NM	%<#40
●	Clay		39	16	23		
■	Silty Clay		34	16	18		

	PL Rolling Method	LL Device	Grooving Tool	Test Remarks
●	Hand rolled	Manual	Metal	
■	Hand rolled	Manual	Metal	

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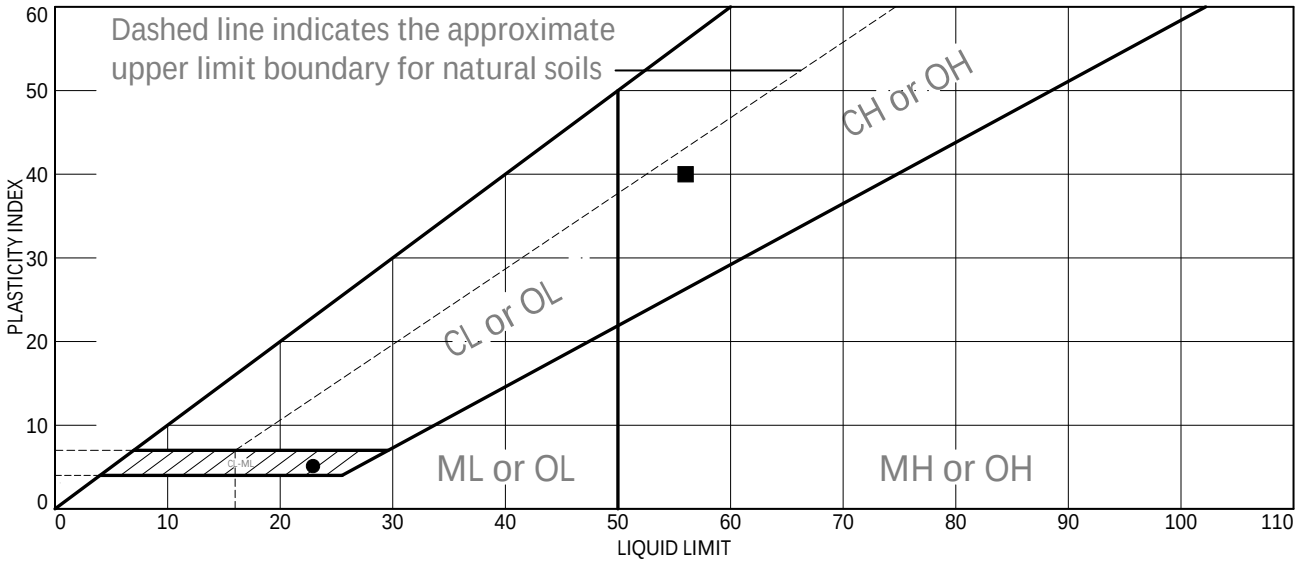
Figure

LIQUID AND PLASTIC LIMITS TEST REPORT

ASTM D4318



	Sample Identification	Sampled	Received	Tested	Technician
●	Source of Sample: EA-BSC05 Depth: 2' - 3' Sample Number: A			02/11/2025	CF
■	Source of Sample: EA-BSC05 Depth: 5' - 6' Sample Number: B			2/07/2025	CF

	Material Description	USCS	LL	PL	PI	NM	%<#40
●	Sandy Clay		23	18	5		
■	Silty Clay		56	16	40		

	PL Rolling Method	LL Device	Grooving Tool	Test Remarks
●	Hand rolled	Manual	Metal	
■	Hand rolled	Manual	Metal	

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LIQUID AND PLASTIC LIMITS TEST REPORT

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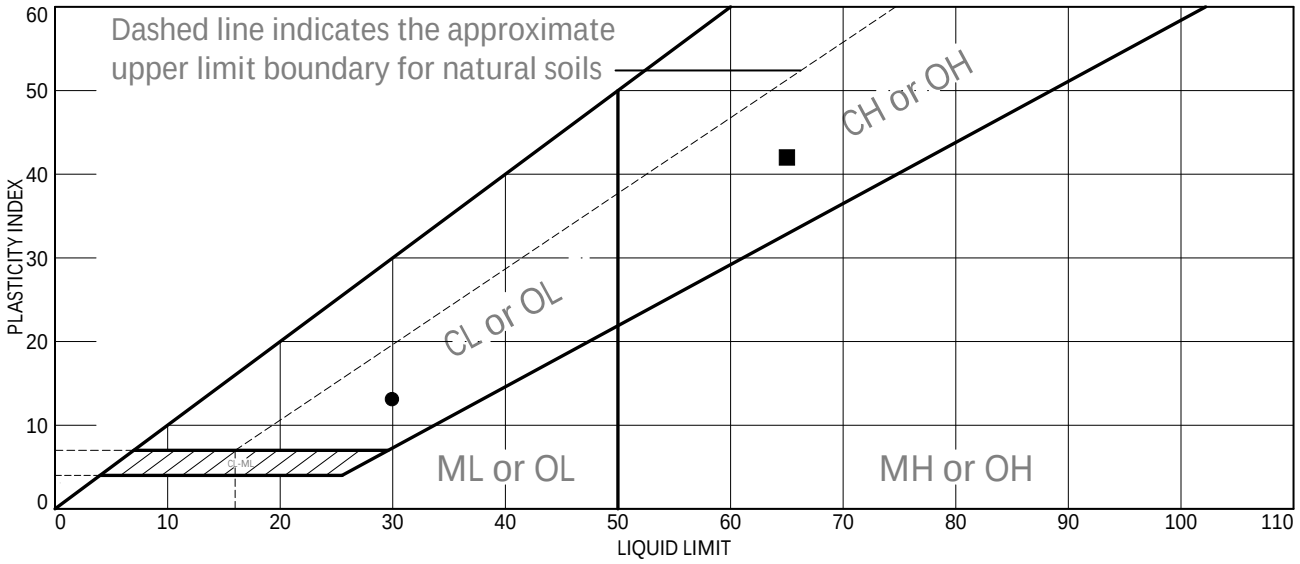

	Sample Identification	Sampled	Received	Tested	Technician
●	Source of Sample: EA-BSC06 Depth: 2' - 3' Sample Number: A			02/20/2025	CF
■	Source of Sample: EA-BSC06 Depth: 5' - 6' Sample Number: B			02/15/2025	CF

	Material Description	USCS	LL	PL	PI	NM	%<#40
●	Silty Clay		30	17	13		
■	Clay		65	23	42		

	PL Rolling Method	LL Device	Grooving Tool	Test Remarks
●	Hand rolled	Manual	Metal	
■	Hand rolled	Manual	Metal	

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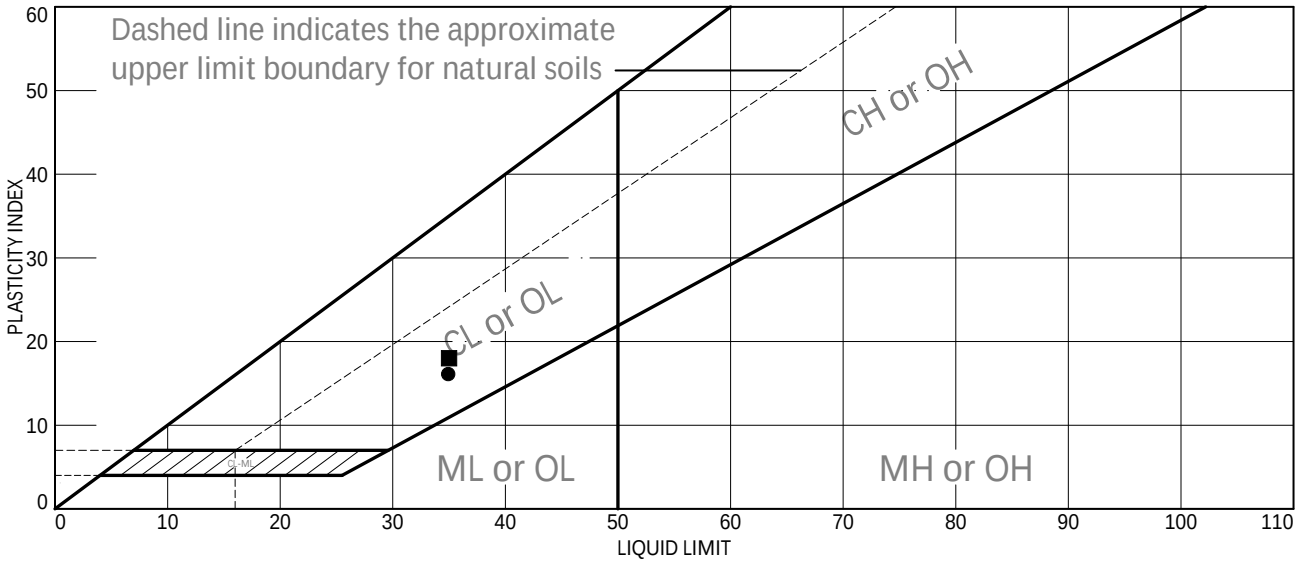
LIQUID AND PLASTIC LIMITS TEST REPORT

ASTM D4318



	Sample Identification	Sampled	Received	Tested	Technician
●	Source of Sample: EA-BSC07 Depth: 2' - 3' Sample Number: A			02/11/2025	SY
■	Source of Sample: EA-BSC07 Depth: 5' - 6' Sample Number: B			02/12/2025	CF

	Material Description	USCS	LL	PL	PI	NM	%<#40
●	SAndy Clay		35	19	16		
■	Silty Clay		35	17	18		

	PL Rolling Method	LL Device	Grooving Tool	Test Remarks
●	Hand rolled	Manual	Metal	
■	Hand rolled	Manual	Metal	

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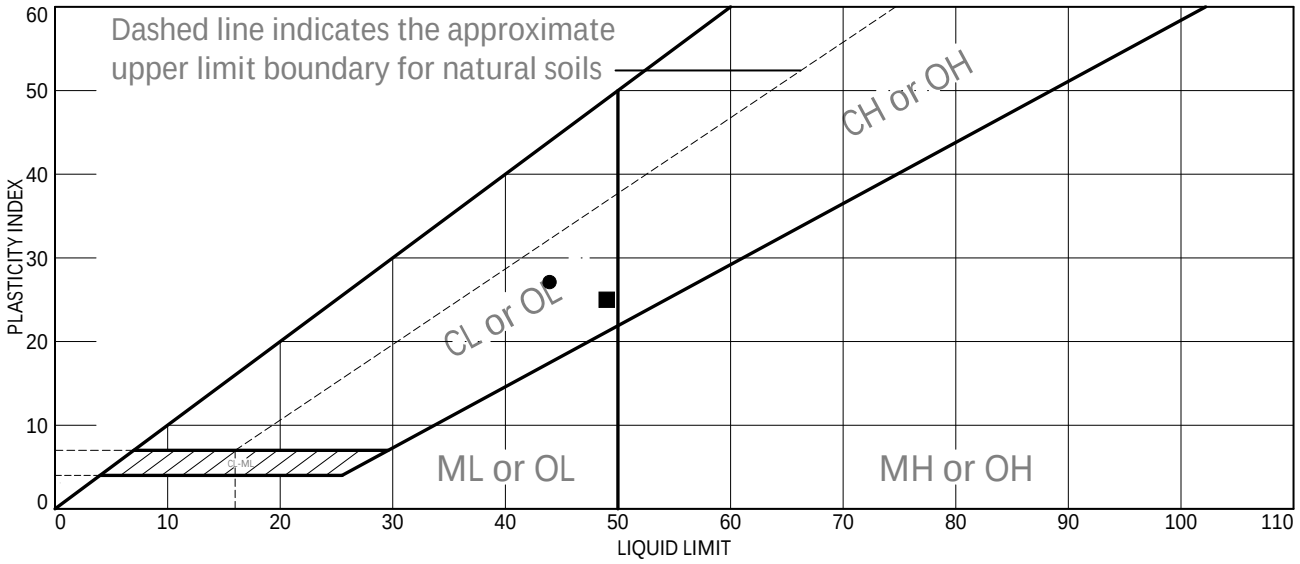
LIQUID AND PLASTIC LIMITS TEST REPORT

ASTM D4318



	Sample Identification	Sampled	Received	Tested	Technician
●	Source of Sample: EA-BSC08 Depth: 2' - 3' Sample Number: A			2/13/2025	CF
■	Source of Sample: EA-BSC08 Depth: 5' - 6' Sample Number: B			02/18/2025	SY

	Material Description	USCS	LL	PL	PI	NM	%<#40
●	Silty Clay		44	17	27		
■	Sandy Clay		49	24	25		

	PL Rolling Method	LL Device	Grooving Tool	Test Remarks
●	Hand rolled	Manual	Metal	
■	Hand rolled	Manual	Metal	

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LIQUID AND PLASTIC LIMITS TEST REPORT

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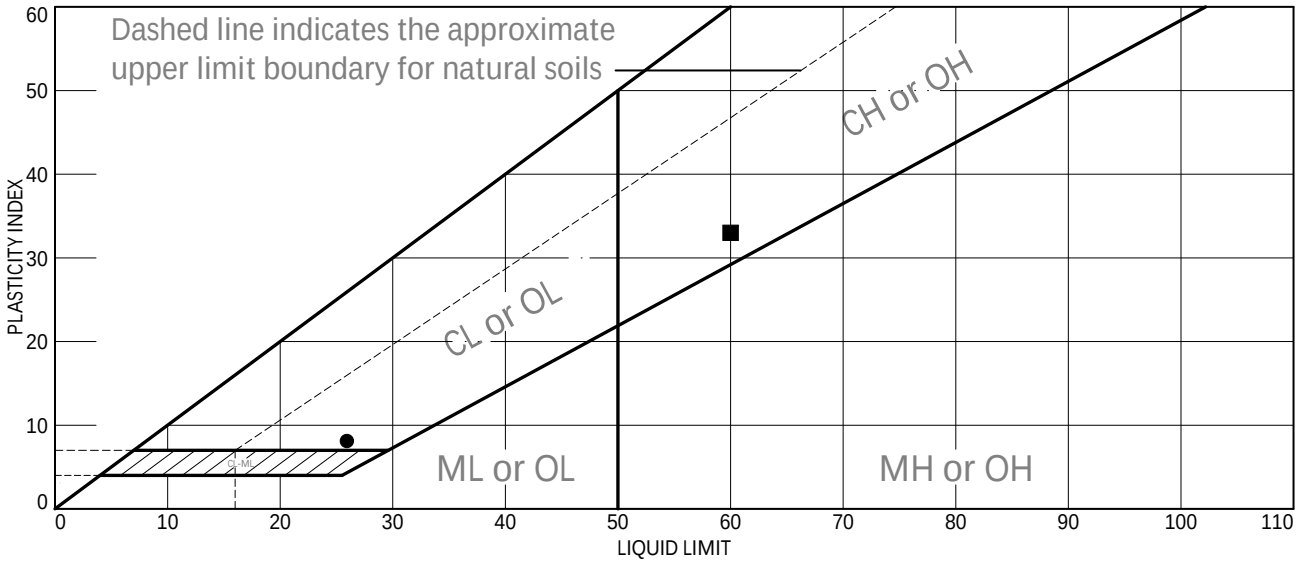

	Sample Identification	Sampled	Received	Tested	Technician
●	Source of Sample: EA-BSC09 Depth: 2' - 3' Sample Number: A			02/18/2025	CF
■	Source of Sample: EA-BSC09 Depth: 5' - 6' Sample Number: B			02/19/2025	AW

	Material Description	USCS	LL	PL	PI	NM	%<#40
●	Silty Clay		26	18	8		
■	Clay		60	27	33		

	PL Rolling Method	LL Device	Grooving Tool	Test Remarks
●	Hand rolled	Manual	Metal	
■	Hand rolled	Manual	Metal	

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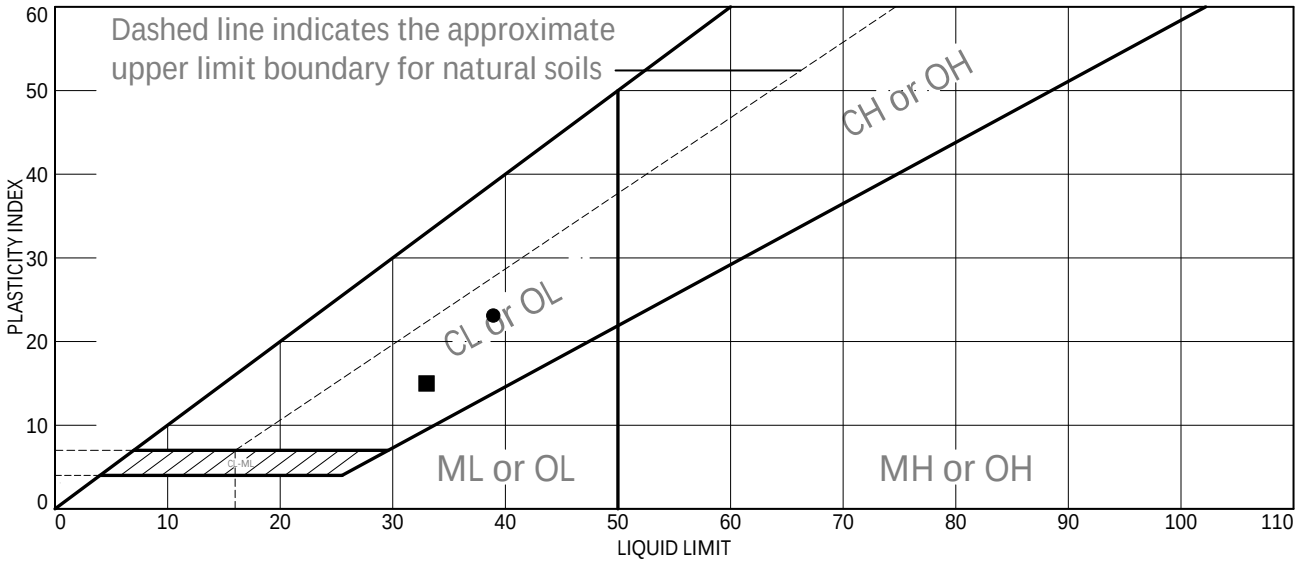

	Sample Identification	Sampled	Received	Tested	Technician
●	Source of Sample: EA-BSC10 Depth: 2' - 3' Sample Number: A			02/10/2025	CF
■	Source of Sample: EA-BSC10 Depth: 5' - 6' Sample Number: B			02/18/2025	SY

	Material Description	USCS	LL	PL	PI	NM	%<#40
●	Silty Clay		39	16	23		
■	Sandy Clay		33	18	15		

	PL Rolling Method	LL Device	Grooving Tool	Test Remarks
●	Hand rolled	Manual	Metal	
■	Hand rolled	Manual	Metal	

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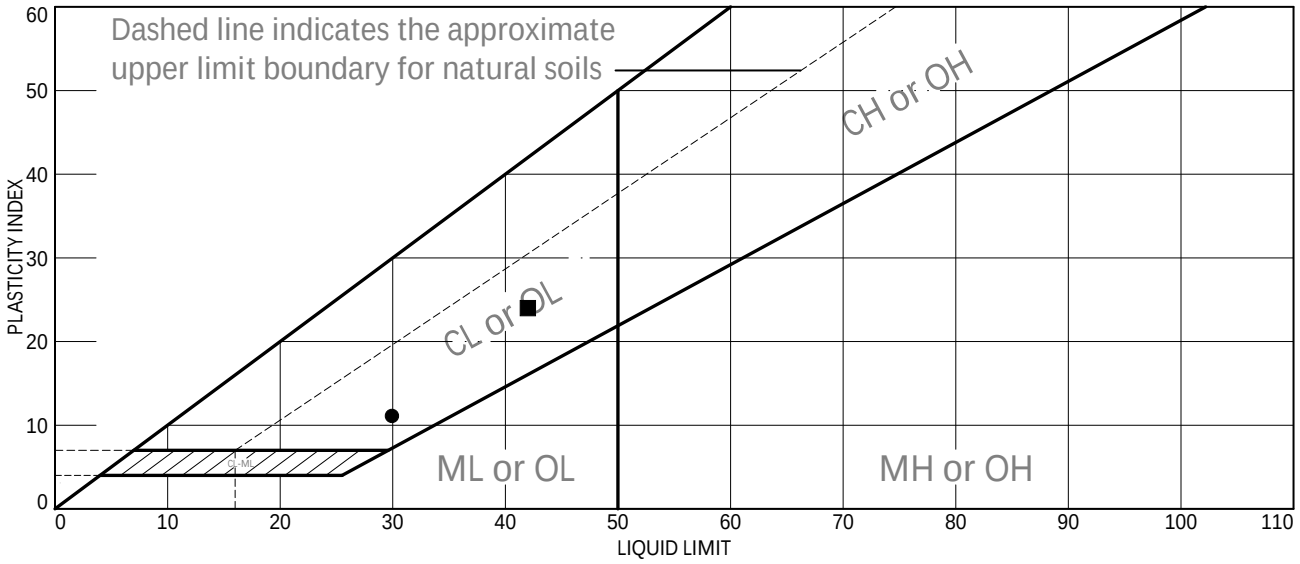

	Sample Identification	Sampled	Received	Tested	Technician
●	Source of Sample: EA-BSC11 Depth: 2' - 3' Sample Number: A			02/10/2025	CF
■	Source of Sample: EA-BSC11 Depth: 5' - 6' Sample Number: B			02/12/2025	CF

	Material Description	USCS	LL	PL	PI	NM	%<#40
●	Silty Clay		30	19	11		
■	Silty Clay		42	18	24		

	PL Rolling Method	LL Device	Grooving Tool	Test Remarks
●	Hand rolled	Manual	Metal	
■	Hand rolled	Manual	Metal	

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LIQUID AND PLASTIC LIMITS TEST REPORT

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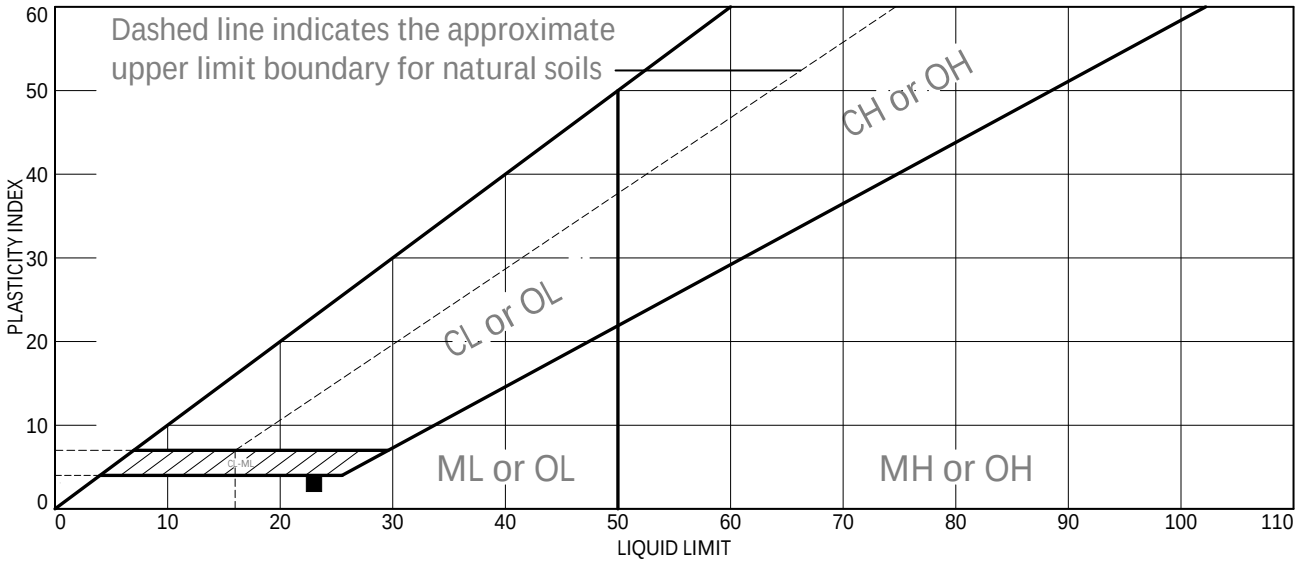

	Sample Identification	Sampled	Received	Tested	Technician
●	Source of Sample: EA-BSC12 Depth: 2' - 3' Sample Number: A			02/11/2025	CF
■	Source of Sample: EA-BSC12 Depth: 5' - 6' Sample Number: B				02/07/2025

	Material Description	USCS	LL	PL	PI	NM	%<#40
●	Sandy Clay		NV	NP	NP		
■	Sandy Clay		23	20	3		

	PL Rolling Method	LL Device	Grooving Tool	Test Remarks
●	Hand rolled	Manual	Metal	
■	Hand rolled	Manual	Metal	

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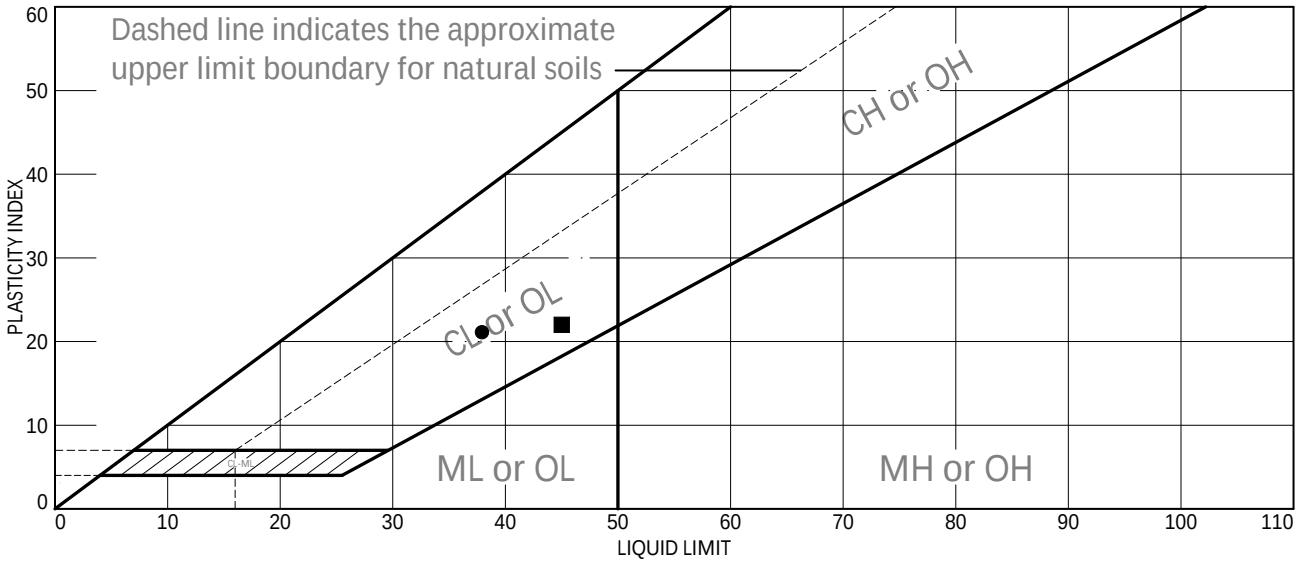
ASTM D4318



	Sample Identification	Sampled	Received	Tested	Technician
●	Source of Sample: EA-BSC13 Depth: 2' - 3' Sample Number: A			02/14/2025	CF
■	Source of Sample: EA-BSC13 Depth: 5' - 6' Sample Number: B			02/11/2025	SY

	Material Description	USCS	LL	PL	PI	NM	%<#40
●	Silty Clay		38	17	21		
■	Clay		45	23	22		

	PL Rolling Method	LL Device	Grooving Tool	Test Remarks
●	Hand rolled	Manual	Metal	
■	Hand rolled	Manual	Metal	

Project No. 111360 Client: Rio Grand Resources

Project: Mt.Taylor

Checked by: KG

Title:

ENGINEERING ANALYTICS, INC.

Figure

6.0 Flexible Wall Permeability

The hydraulic conductivity (coefficient of permeability) of saturated porous material was determined on 2 soil samples using a flexible wall permeameter in accordance with ASTM D5084, "Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall[1] Permeameter (Method C: Falling Head Test)."

- Soil samples were trimmed, encased within a flexible rubber membrane, and placed within a triaxial test cell.
- An initial effective stress of 1-3 psi was applied to each sample to facilitate saturation.
- Following saturation, each sample was consolidated to the effective stress specified by the project engineer.
- After a 24-hour consolidation period, a hydraulic gradient was established by applying differential pressures to the top and bottom of the samples. The magnitude of the gradient was determined based on the soil classification.
- The outflow of water from the top of the sample was measured at predetermined time intervals to determine the flow rate and, subsequently, the hydraulic conductivity.

The results of the hydraulic conductivity are presented on the following pages

Flexible Wall Permeability Test

Mt. Taylor - 111360

EA-BSC 9 @ 2'-3' Remolded

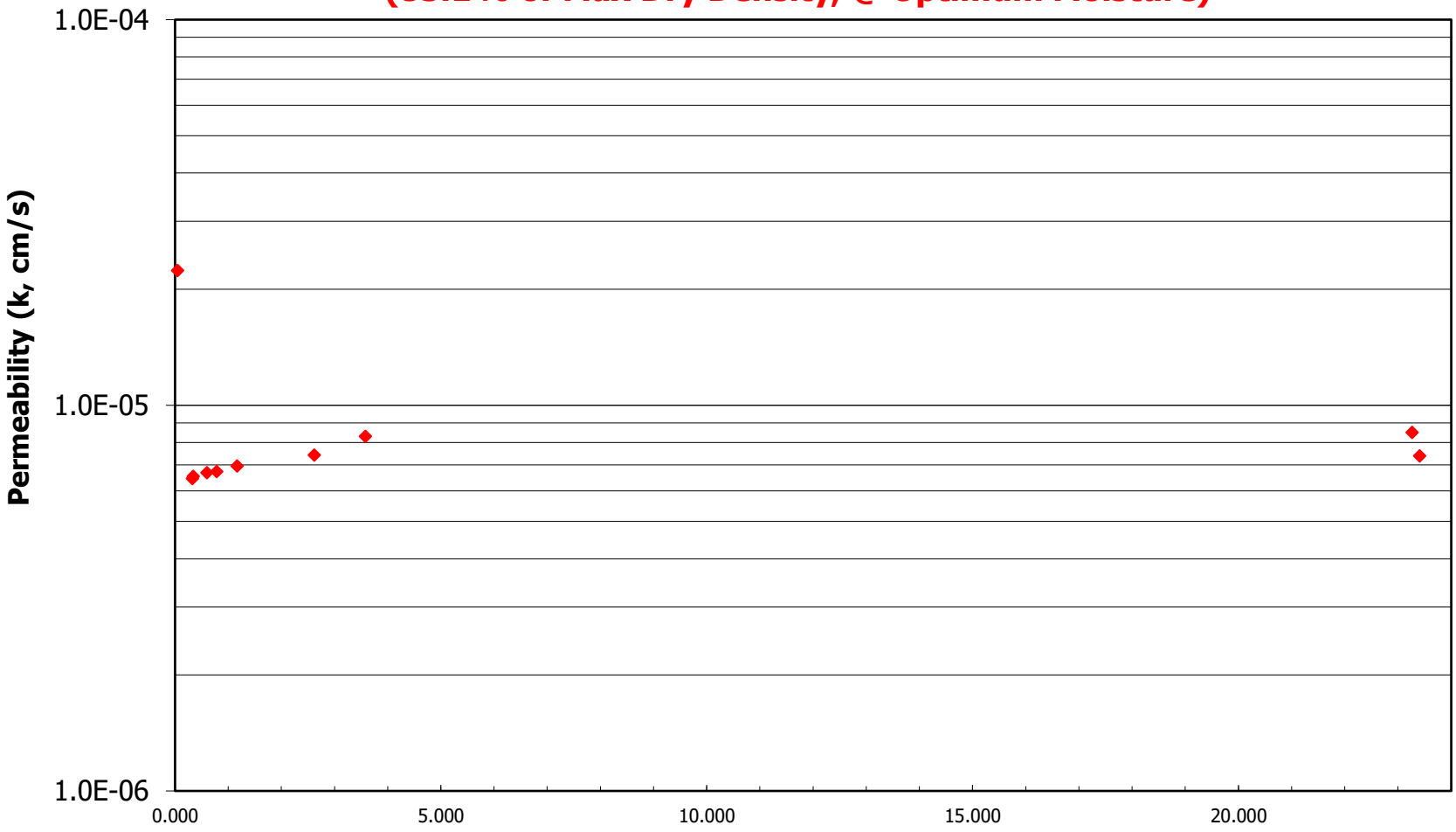
Length of sample	L	7.52	cm	2.960 in
Area of sample	A	29.50	cm^2	2.413 in
Area of standpipe	a	0.713	cm^2	0.375 in

Cell Pressure	85.00	psi		
Upper Cap Pressure	79.79	psi		
Lower Cap Pressure	80.00	psi		
Dry Density	93.9		% Remold @	85.1 %
% of Moisture	16.1 %		Water content ±	0 %
Gradiant	1.96		Remold Dry Density	93.9
Consolidation (psi)	5.00 psi		Remold % of Moisture	16.1 %
Consolidation (psf)	720 psf			

Date & Time	E.T . (s)	Reading Lower (cc)	Reading Upper (cc)	k(cm/s)
10/28/25 10:45 AM		11.000	49.300	
10/28/25 10:48 AM	180	12.000	48.000	2.2E-05
10/28/25 10:48 AM		12.000	48.000	
10/28/25 11:05 AM	1050	13.800	46.100	6.5E-06
10/28/25 11:05 AM		13.800	46.100	
10/28/25 11:07 AM	120	14.000	45.900	6.5E-06
10/28/25 11:07 AM		14.000	45.900	
10/28/25 11:21 AM	810	15.300	44.500	6.7E-06
10/28/25 11:21 AM		15.300	44.500	
10/28/25 11:32 AM	660	16.400	43.500	6.7E-06
10/28/25 11:32 AM		16.400	43.500	
10/28/25 11:55 AM	1380	18.500	41.400	7.0E-06
10/28/25 11:55 AM		18.500	41.400	
10/28/25 1:22 PM	5220	25.000	34.800	7.4E-06
10/28/25 1:22 PM		25.000	34.800	
10/28/25 2:20 PM	3480	28.500	31.600	8.3E-06
10/29/25 9:59 AM		19.600	49.600	
10/29/25 10:01 AM	120	19.800	49.300	8.5E-06
10/29/25 10:01 AM		19.800	49.300	
10/29/25 10:09 AM	510	20.700	48.400	7.4E-06
10/29/25 10:09 AM		20.700	48.400	
10/29/25 10:25 AM	930	22.200	46.800	7.4E-06
		Average k=	7.9E-06	

Flexwall Permeability Test

Mt. Taylor - 111360
EA-BSC09 @ 2' - 3'
Remolded to 93.9 @ 16.1%
(85.1% of Max Dry Density, @ Optimum Moisture)



Average Permeability k = 7.9E-06cm/s

Flexible Wall Permeability Test

Mt. Taylor - 111360

EA-BSC 12A @ 2'-3'

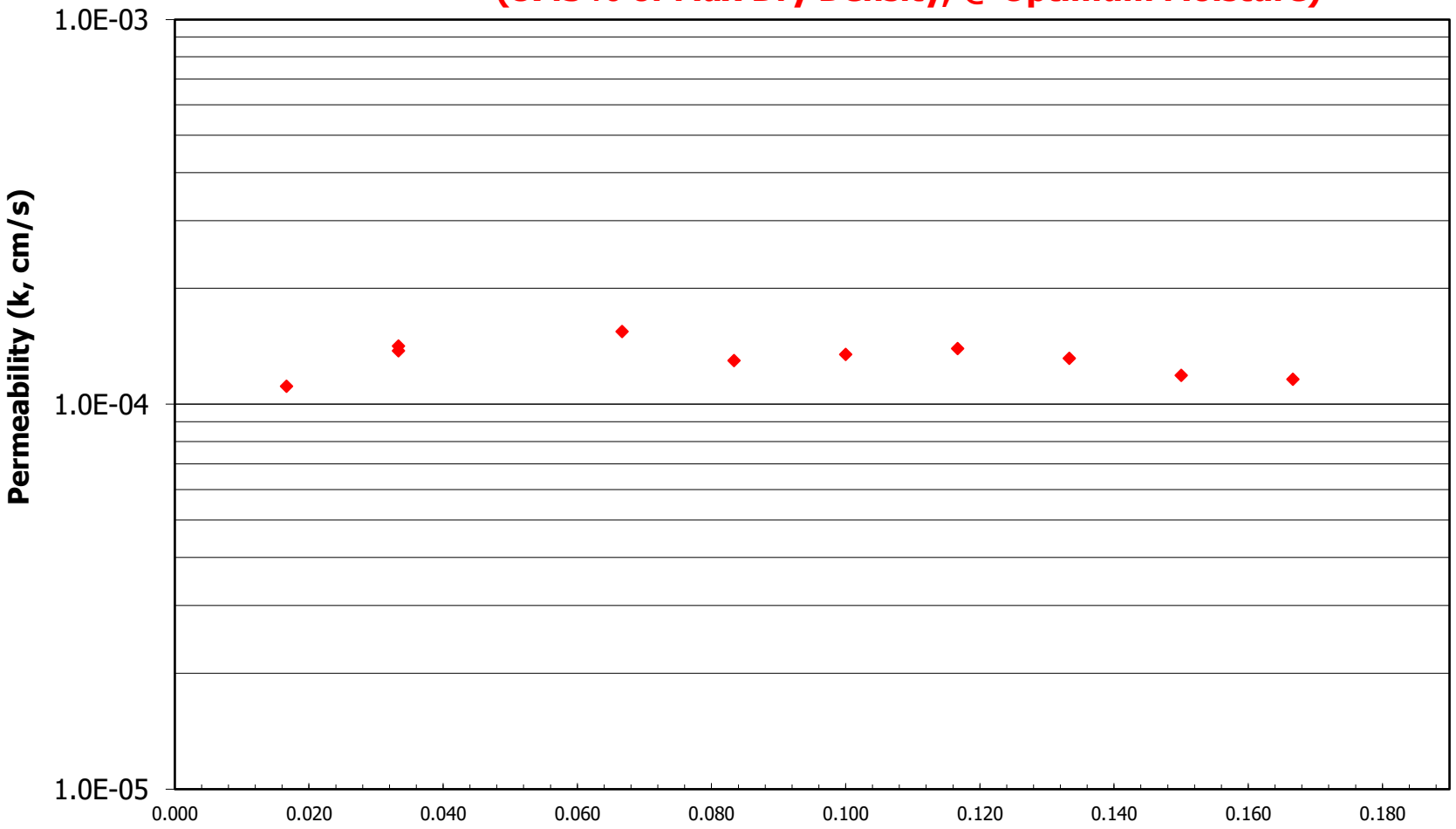
Length of sample	L	6.24	cm	2.456 in
Area of sample	A	29.50	cm^2	2.413 in
Area of standpipe	a	0.713	cm^2	0.375 in

Cell Pressure	90.00	psi			
Upper Cap Pressure	84.82	psi			
Lower Cap Pressure	85.00	psi			
Dry Density	95.4		% Remold @	87.3	%
% of Moisture	16.4	%	Water content ±	0	%
Gradiant	2.03		Remold Dry Density	95.4	
Consolidation (psi)	5.00	psi	Remold % of Moisture	16.4	%
Consolidation (psf)	720	psf			

Date & Time	E.T . (s)	Reading Lower (cc)	Reading Upper (cc)	k(cm/s)
10/28/25 10:58 AM		25.500	36.400	
10/28/25 10:59 AM	60	26.500	35.400	1.1E-04
10/28/25 10:59 AM		26.500	35.400	
10/28/25 11:00 AM	60	27.700	34.300	1.4E-04
10/28/25 11:00 AM		27.700	34.300	
10/28/25 11:01 AM	60	28.800	33.400	1.4E-04
10/28/25 11:01 AM		28.800	33.400	
10/28/25 11:02 AM	60	29.700	32.300	1.5E-04
10/28/25 11:02 AM		29.700	32.300	
10/28/25 11:03 AM	60	30.500	31.600	1.3E-04
10/28/25 11:03 AM		30.500	31.600	
10/28/25 11:04 AM	60	31.100	30.800	1.3E-04
10/28/25 11:04 AM		31.100	30.800	
10/28/25 11:05 AM	60	31.800	30.200	1.4E-04
10/28/25 11:05 AM		31.800	30.200	
10/28/25 11:06 AM	60	32.300	29.600	1.3E-04
10/28/25 11:06 AM		32.300	29.600	
10/28/25 11:07 AM	60	32.800	29.200	1.2E-04
10/28/25 11:07 AM		32.800	29.200	
10/28/25 11:08 AM	60	33.200	28.800	1.2E-04
10/28/25 11:08 AM		33.200	28.800	
10/28/25 11:09 AM	60	33.600	28.400	1.3E-04
		Average k=	1.2E-04	

Flexwall Permeability Test

Mt. Taylor - 111360
EA-BSC 12A @ 2'-3'
Remolded to 95.4 @ 16.4%
(87.3% of Max Dry Density, @ Optimum Moisture)



Average Permeability k = 1.2E-04cm/s

7.0 Soil Water Characteristic Curve

The moisture-retention curve (also known as the soil-water characteristic curve) was determined on 7 soil samples in accordance with ASTM D6836, "Standard Test Methods for Determination of the Soil Water Characteristic Curve for Soil and Rock by the Pressure Plate Method." This test establishes the relationship between the water content of a soil and the applied suction or negative matric potential (soil water potential).

To create a full-range curve, a combination of two methods was employed:

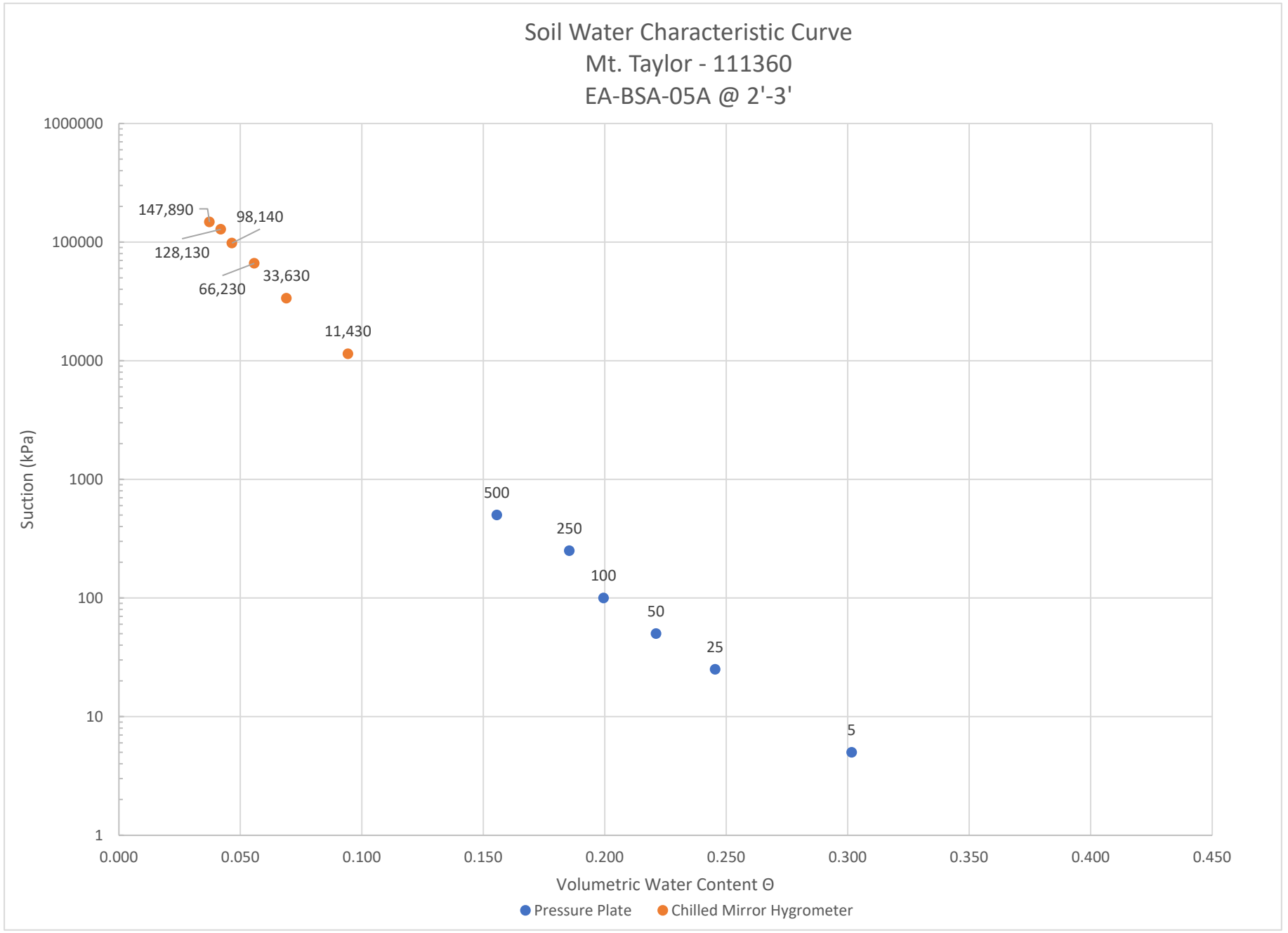
- Low Suction Range (Method C - Pressure Plate): Used to determine the water content at low suctions (0 kPa to 500 kPa).
- High Suction Range (Method D - Chilled Mirror Hygrometer): Used to determine the water content at high suctions (500 kPa to 250,000 kPa or more).

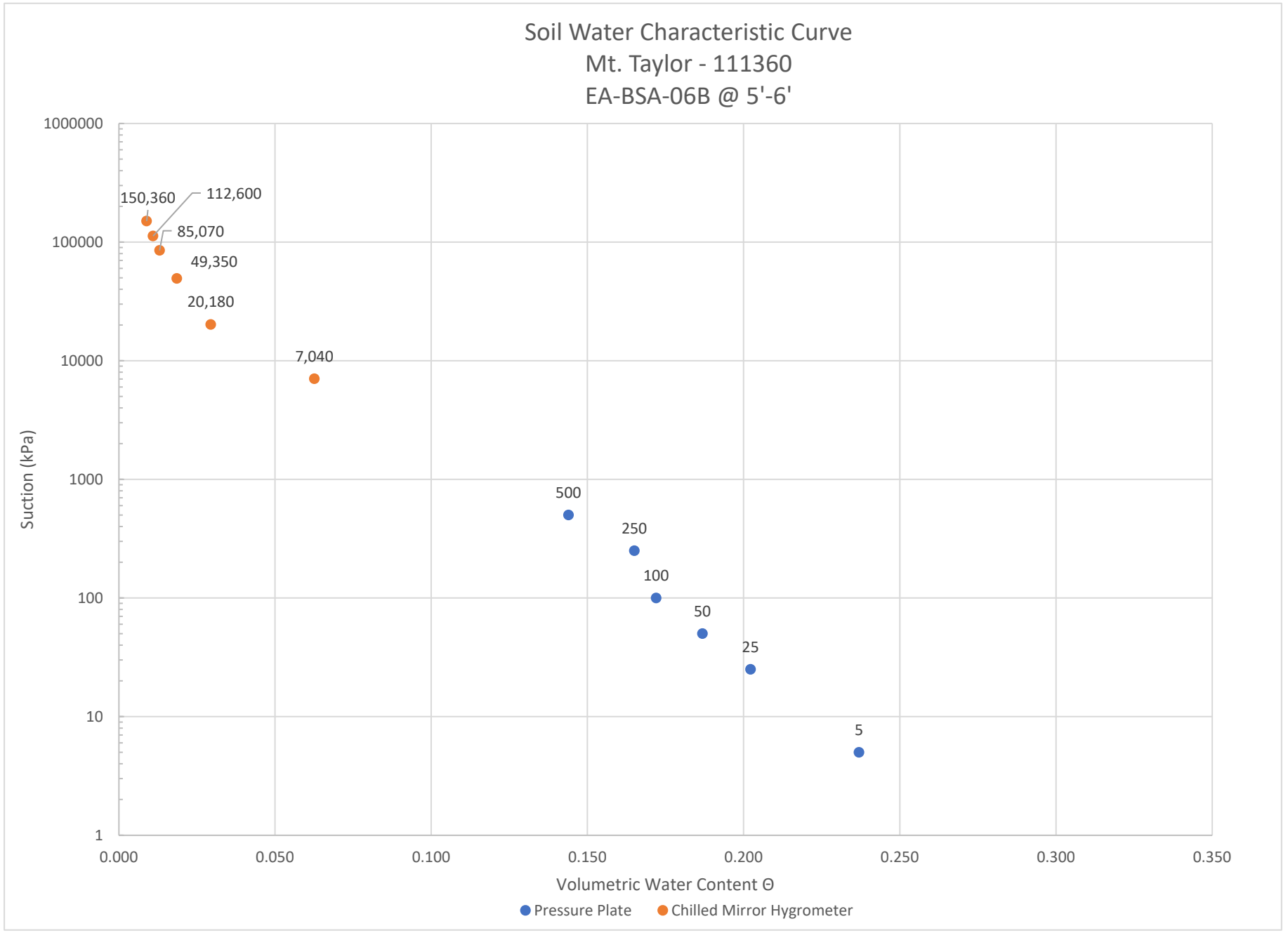
Combined Test Procedure

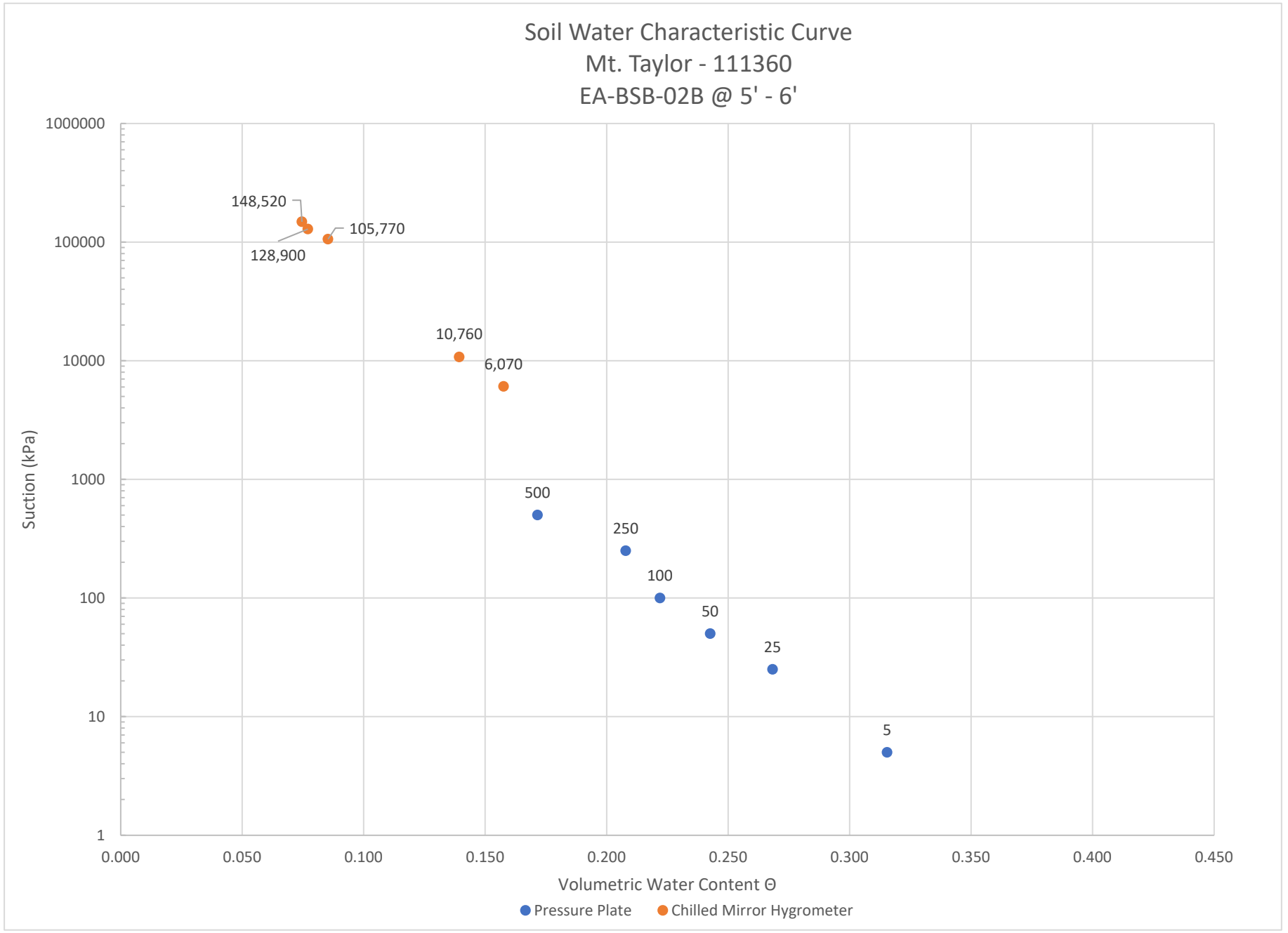
1. Sample Preparation (Method C): Representative soil specimens were prepared and placed on ceramic plates of appropriate air-entry values within a pressure chamber.
2. Saturation: The specimens were saturated by submerging them in water, allowing them to reach equilibrium.
3. Low Suction Application (Method C): The pressure chamber was subjected to a series of low, incremental air pressures (suctions), typically up to 1500 kPa. At each pressure step, the system was allowed to reach hydraulic equilibrium (i.e., water stopped flowing out of the samples). The water outflow was measured and recorded.
4. High Suction Application (Method D): After the final low-suction step, or on a separate subset of samples, the soil was tested using the Chilled Mirror Hygrometer technique.
    - A small, representative portion of the soil was placed in the hygrometer's sample chamber.
    - The instrument measured the relative humidity in equilibrium with the soil water potential (suction) above the sample.
    - This measurement was taken by chilling a mirror surface until dew condensation occurred. The measured dew point temperature was used to calculate the corresponding high soil suction.
5. Moisture Content Determination: For both methods, the water content corresponding to each suction step was determined, by determining the gravimetric moisture content of the tested specimen.

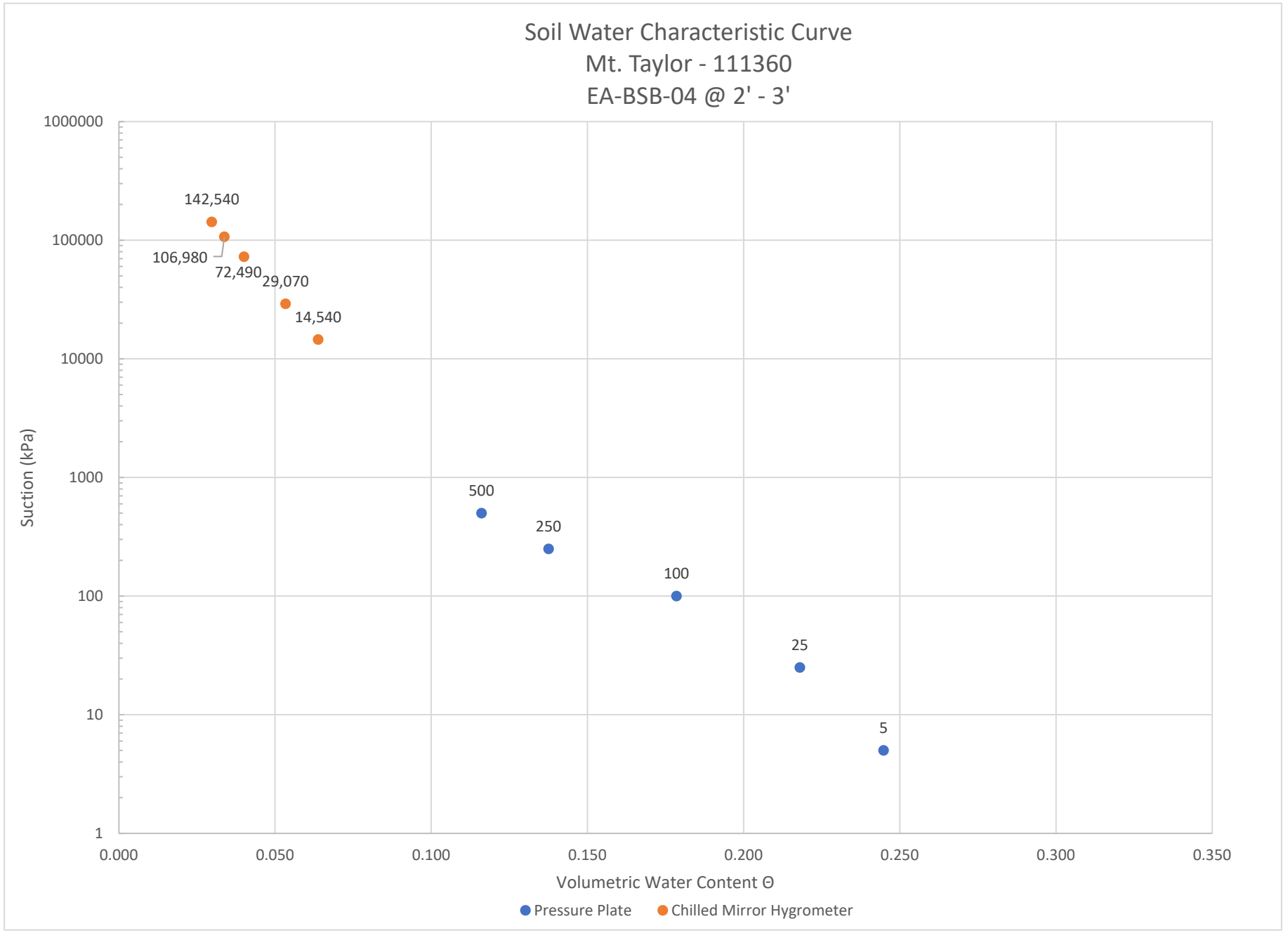
By combining the data from the Pressure Plate (low suction) and the Chilled Mirror Hygrometer (high suction), a complete moisture-retention curve was generated, spanning the full range of suction required for engineering analysis.

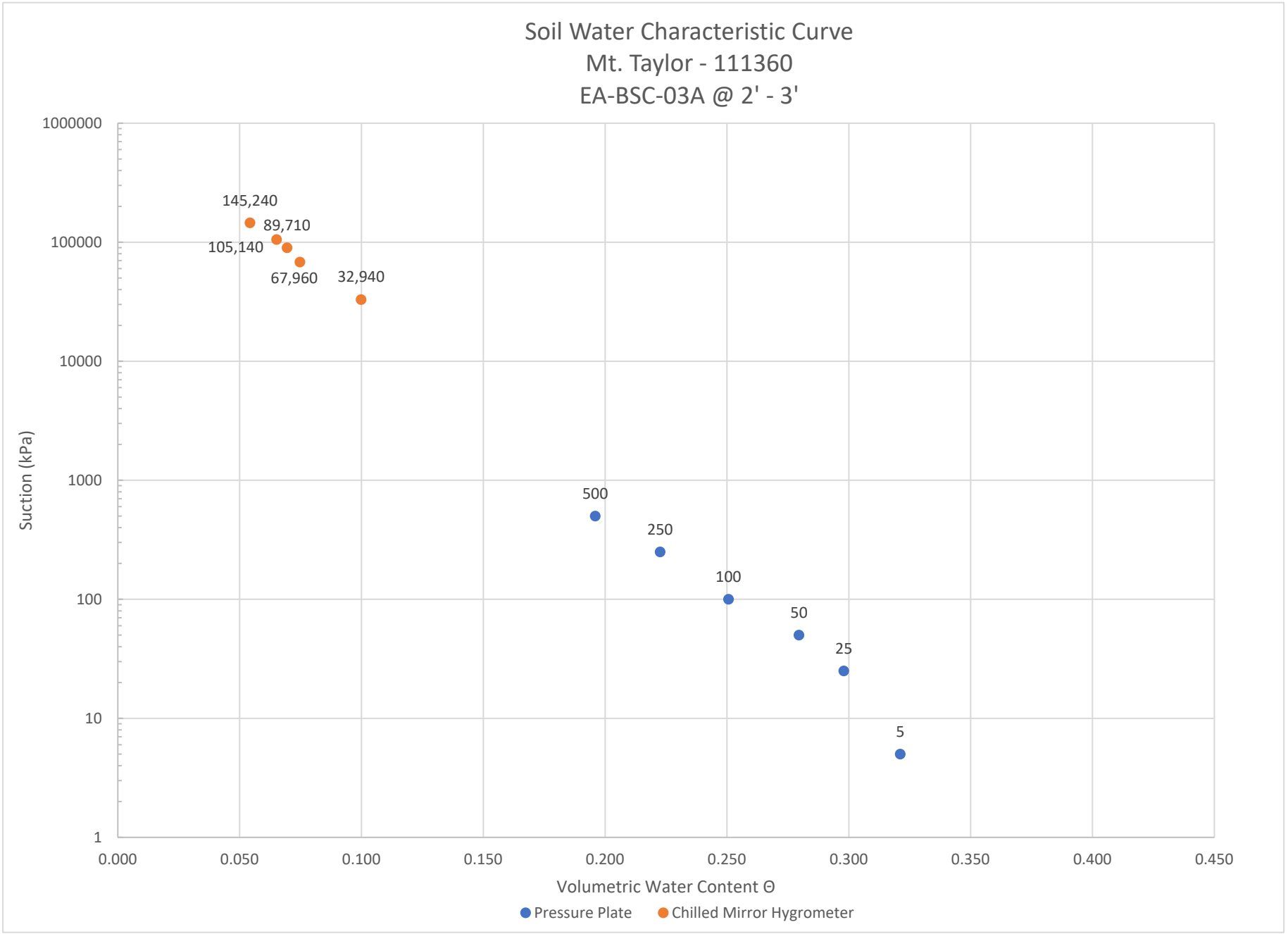
The results of the Soil Water Characteristic Curves are presented on the following pages.

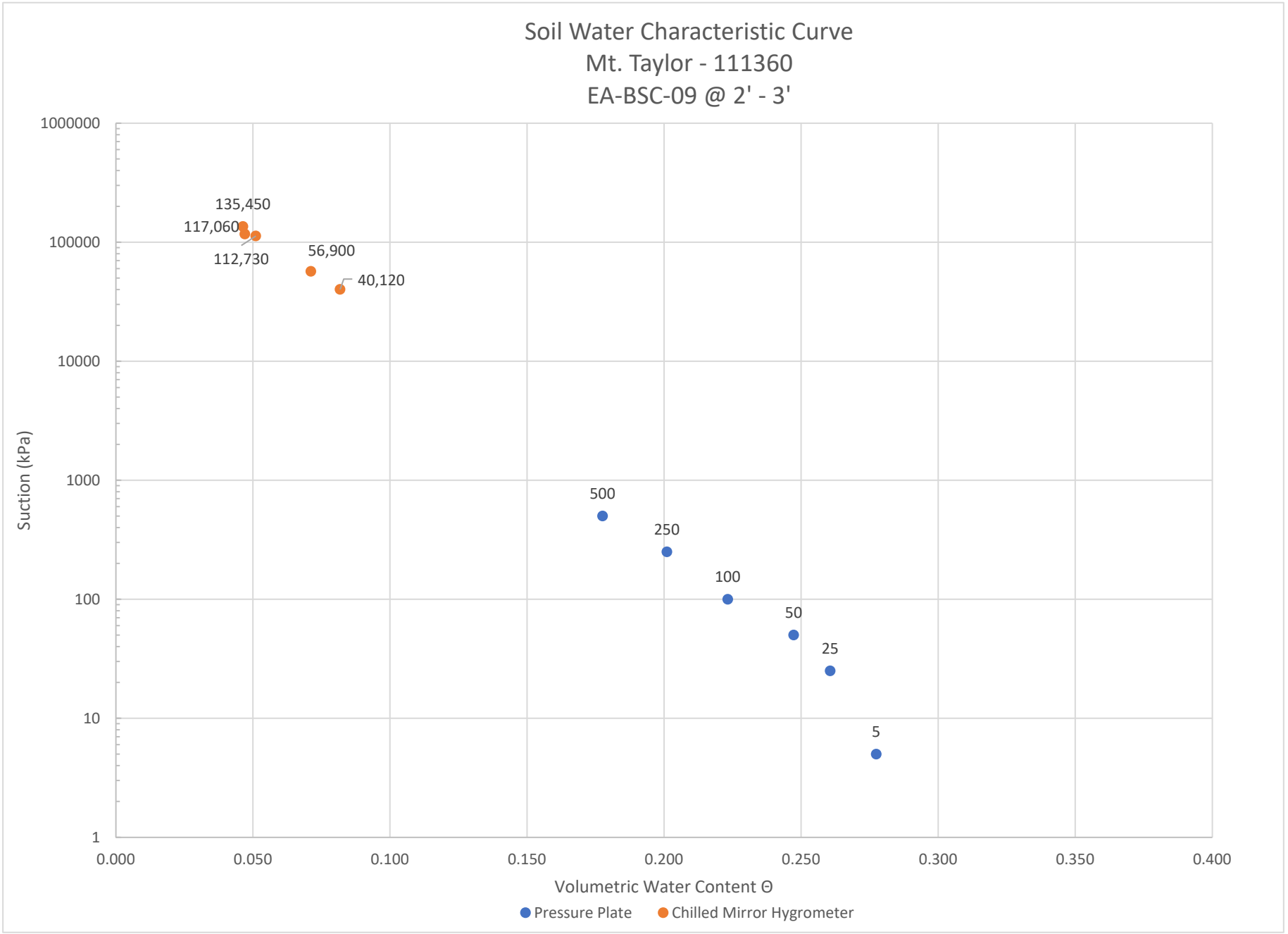

Soil Water Characteristic Curve
Mt. Taylor - 111360
EA-BSA-05A @ 2'-3'
Suction (kPa)
1000000
100000
10000
1000
100
10
1
147,890
98,140
128,130
33,630
66,230
11,430
500
250
100
50
25
5
0.000
0.050
0.100
0.150
0.200
0.250
0.300
0.350
0.400
0.450
Volumetric Water Content Θ
Pressure Plate
Chilled Mirror Hygrometer

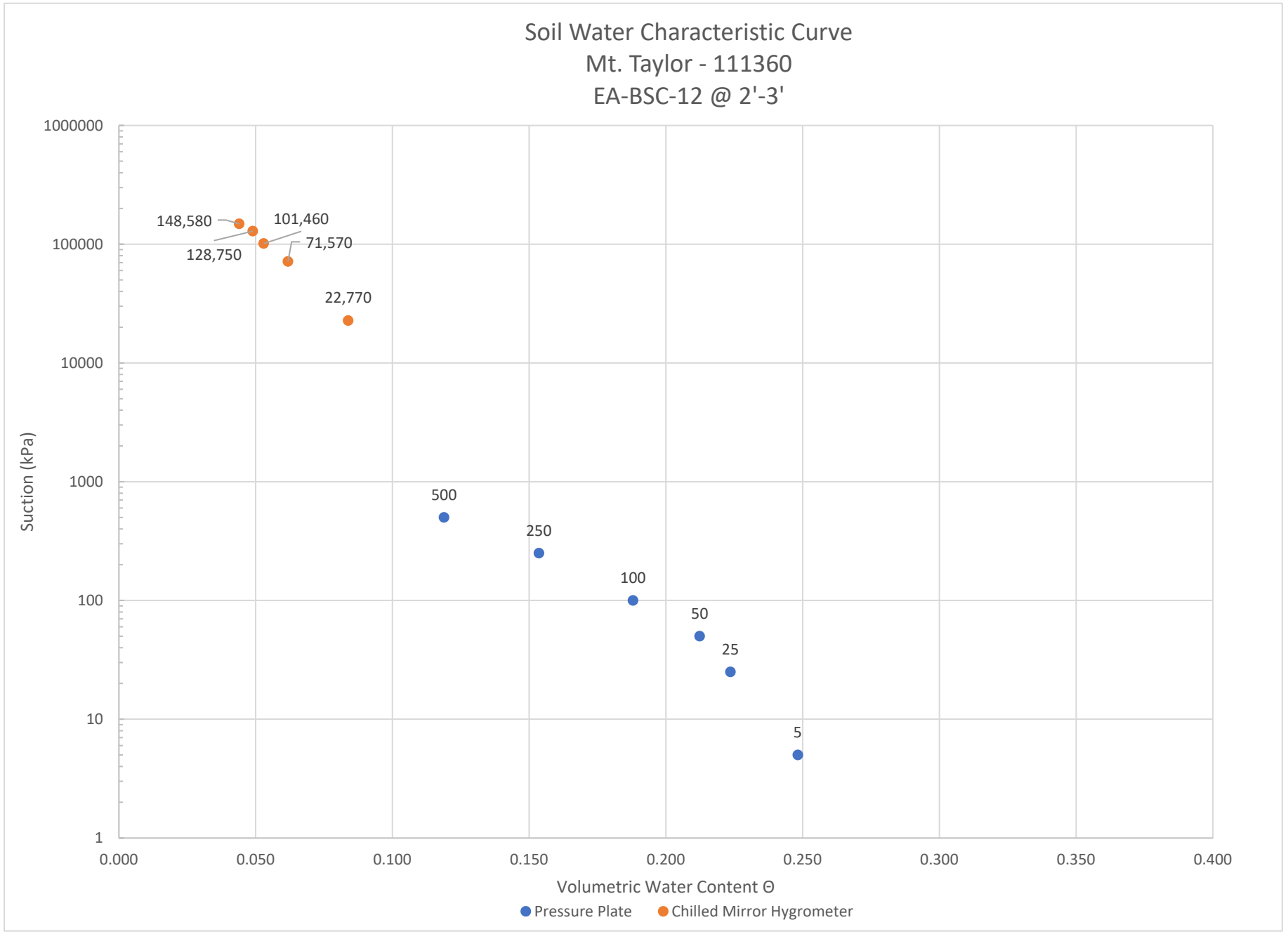

Soil Water Characteristic Curve
Mt. Taylor - 111360
EA-BSA-06B @ 5'-6'
Suction (kPa)
1000000
100000
10000
1000
100
10
1
150,360
112,600
85,070
49,350
20,180
7,040
500
250
100
50
25
5
0.000
0.050
0.100
0.150
0.200
0.250
0.300
0.350
Volumetric Water Content Θ
Pressure Plate
Chilled Mirror Hygrometer


Soil Water Characteristic Curve
Mt. Taylor - 111360
EA-BSB-02B @ 5' - 6'
Suction (kPa)
1000000
100000
10000
1000
100
10
1
148,520
105,770
128,900
10,760
6,070
500
250
100
50
25
5
0.000
0.050
0.100
0.150
0.200
0.250
0.300
0.350
0.400
0.450
Volumetric Water Content Θ
Pressure Plate
Chilled Mirror Hygrometer


Soil Water Characteristic Curve
Mt. Taylor - 111360
EA-BSB-04 @ 2' - 3'
Suction (kPa)
1000000
100000
10000
1000
100
10
1
142,540
106,980
72,490
29,070
14,540
500
250
100
25
5
0.000
0.050
0.100
0.150
0.200
0.250
0.300
0.350
Volumetric Water Content Θ
Pressure Plate
Chilled Mirror Hygrometer


Soil Water Characteristic Curve
Mt. Taylor - 111360
EA-BSC-03A @ 2' - 3'
Suction (kPa)
1000000
100000
10000
1000
100
10
1
145,240
89,710
105,140
67,960
32,940
500
250
100
50
25
5
0.000
0.050
0.100
0.150
0.200
0.250
0.300
0.350
0.400
0.450
Volumetric Water Content Θ
Pressure Plate
Chilled Mirror Hygrometer


Soil Water Characteristic Curve
Mt. Taylor - 111360
EA-BSC-09 @ 2' - 3'
Suction (kPa)
1000000
100000
10000
1000
100
10
1
0.000
0.050
0.100
0.150
0.200
0.250
0.300
0.350
0.400
Volumetric Water Content Θ
135,450
117,060
112,730
56,900
40,120
500
250
100
50
25
5
Pressure Plate
Chilled Mirror Hygrometer


Soil Water Characteristic Curve
Mt. Taylor - 111360
EA-BSC-12 @ 2'-3'
Suction (kPa)
1000000
100000
10000
1000
100
10
1
148,580
101,460
128,750
71,570
22,770
500
250
100
50
25
5
0.000
0.050
0.100
0.150
0.200
0.250
0.300
0.350
0.400
Volumetric Water Content Θ
Pressure Plate
Chilled Mirror Hygrometer

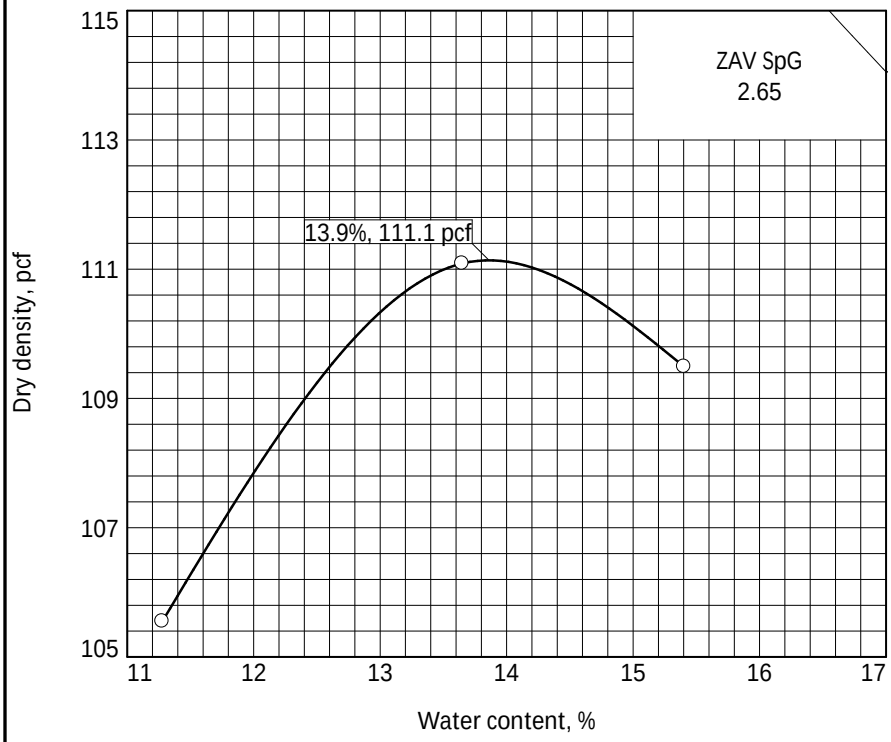
8.0 Standard Proctor Compaction

Standard Proctor Compaction tests were performed on 8 selected soil samples in accordance with ASTM D698, “Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort.”

- For each test, soil at a predetermined moisture content was placed in three equal layers into a cylindrical mold of specified dimensions. Each layer was compacted by 25 blows from a 5.5-pound (2.49 kg) hammer dropped from a height of 12 inches (305 mm) for Methods A and B of the standard. For Method C, a larger mold and 56 blows per layer were used. The specific method employed is noted in the results section.
- Following compaction, the wet unit weight of the soil in the mold was determined by measuring the mass of the compacted soil and the known volume of the mold.
- The moisture content of a representative portion of the compacted soil was determined, and the dry unit weight was subsequently calculated.
- This procedure was repeated for each soil sample with four or more different moisture contents to establish the moisture-density relationship (compaction curve) for the soil.

Graphs illustrating the moisture-density relationships (Proctor curves) for each tested soil sample are shown on the following pages.

COMPACTION TEST REPORT



Curve No.
2

Test Specification:
ASTM D 698-12 Method A Standard

Preparation Method: Moist
Hammer Wt.: 5.5 lb.
Hammer Drop: 12 in.
Hammer Type: Manual
Layers: three Blows/Layer: 25
Mold Size: 0.03333 cu. ft.

Test Performed on Material
Passing: #4 Sieve

NM: LL: 25 PI: 5
Sp.G. (Assumed): 2.650
%>#4: %<No.200:
USCS: AASHTO:
Date Sampled:
Date Received:
Date Tested: 3/07/2025
Tested By: SY

TESTING DATA	1	2	3	4	5	6
WM + WS	6161.5	6159.9	6026.9			
WM	4251.2	4251.2	4251.2			
WW + T #1	1309.6	1466.2	1581.9			
WD + T #1	1189.6	1338.5	1462.3			
TARE #1	410.5	402.9	401.8			
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	15.4	13.6	11.3			
DRY DENSITY	109.5	111.1	105.6			

TEST RESULTS

Maximum dry density = 111.1 pcf

Optimum moisture = 13.9 %

Material Description: Sand

Remarks:

Project No.: 111360 Client: Rio Grand Resources
Project: Mt.Taylor

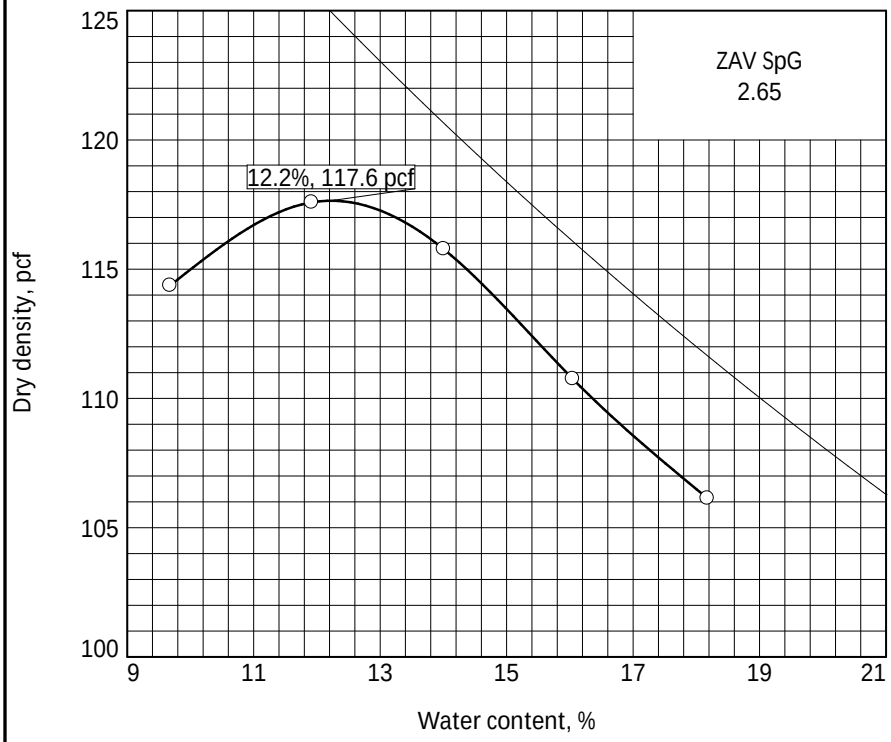
○ Source of Sample: EA-BSA05 Depth: 2' - 3' Sample Number: A

Checked by: KG
Title:

ENGINEERING ANALYTICS, INC.

Figure

COMPACTION TEST REPORT



Curve No.
3

Test Specification:
ASTM D 698-12 Method A Standard

Preparation Method	Moist
Hammer Wt.	5.5 lb.
Hammer Drop	12 in.
Hammer Type:	Manual
Layers	three
Blows/Layer	25
Mold Size	0.03333 cu. ft.

Test Performed on Material
Passing #4 Sieve

NM _____ LL NV PI NP
Sp.G. (Assumed): 2.650
%>#4 _____ %<No.200 _____
USCS _____ AASHTO _____
Date Sampled _____
Date Received _____
Date Tested 3/11/2025
Tested By SY

TESTING DATA	1	2	3	4	5	6
WM + WS	6241.2	6247.1	6194.7	6147.9	6147.9	
WM	4251.6	4251.6	4251.6	4251.6	4251.6	
WW + T #1	1459.3	1369.9	1341.9	1156.3	1297.7	
WD + T #1	1346.8	1250.9	1211.9	1040.2	1218.6	
TARE #1	402.9	401.2	401.7	401.5	401.8	
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	11.9	14.0	16.0	18.2	9.7	
DRY DENSITY	117.6	115.8	110.8	106.1	114.4	

TEST RESULTS

Maximum dry density = 117.6 pcf

Optimum moisture = 12.2 %

Material Description

Sand

Remarks:

Project No.: 111360 Client: Rio Grand Resources
Project: Mt.Taylor

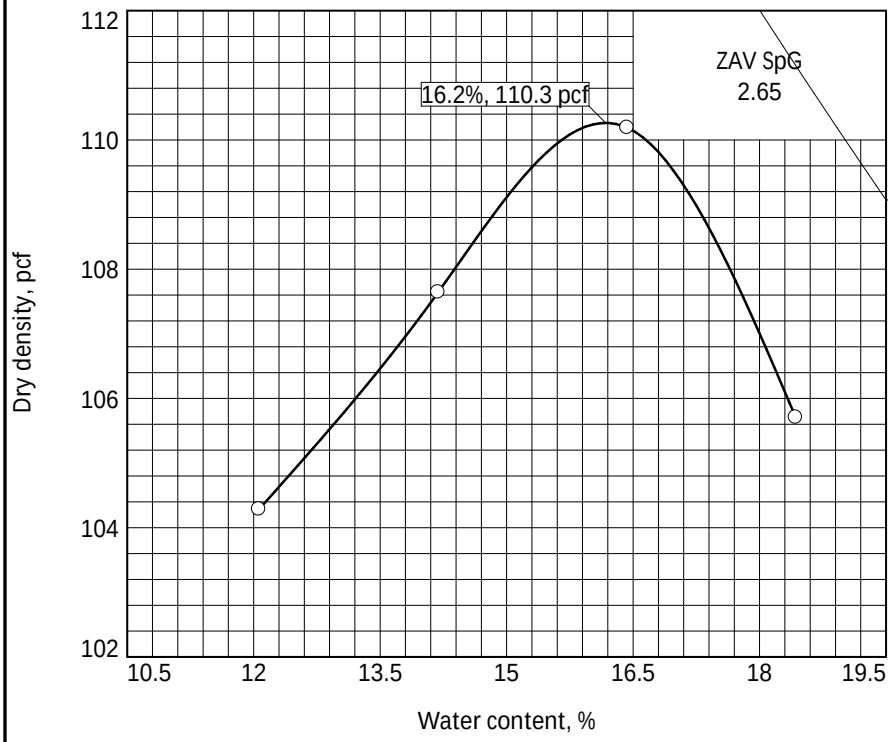
○ Source of Sample: EA-BSA06 Depth: 5' - 6' Sample Number: B

Checked by: KG
Title:

Figure

ENGINEERING ANALYTICS, INC.

COMPACTION TEST REPORT



Curve No.
1

Test Specification:
ASTM D 698-12 Method A Standard

Preparation Method: Moist
Hammer Wt.: 5.5 lb.
Hammer Drop: 12 in.
Hammer Type: Manual
Layers: three Blows/Layer: 25
Mold Size: 0.03333 cu. ft.

Test Performed on Material
Passing: #4 Sieve

NM: LL: 22 PI: 2
Sp.G. (Assumed): 2.650
%>#4: %<No.200:
USCS: AASHTO:
Date Sampled:
Date Received:
Date Tested: 3/11/2025
Tested By: SY

TESTING DATA	1	2	3	4	5	6
WM + WS	6018.4	6109.9	6191.2	6144.2		
WM	4251.6	4251.6	4251.6	4251.6		
WW + T #1	1413.6	1345.8	1353.8	1326.2		
WD + T #1	1304.8	1228.5	1223.3	1182.4		
TARE #1	402.9	401.8	429.1	402.1		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	12.1	14.2	16.4	18.4		
DRY DENSITY	104.3	107.6	110.2	105.7		

TEST RESULTS

Maximum dry density = 110.3 pcf

Optimum moisture = 16.2 %

Material Description

Silty Clay

Remarks:

Project No.: 111360 Client: Rio Grand Resources
Project: Mt.Taylor

○ Source of Sample: EA-BSB02 Depth: 5' - 6' Sample Number: B

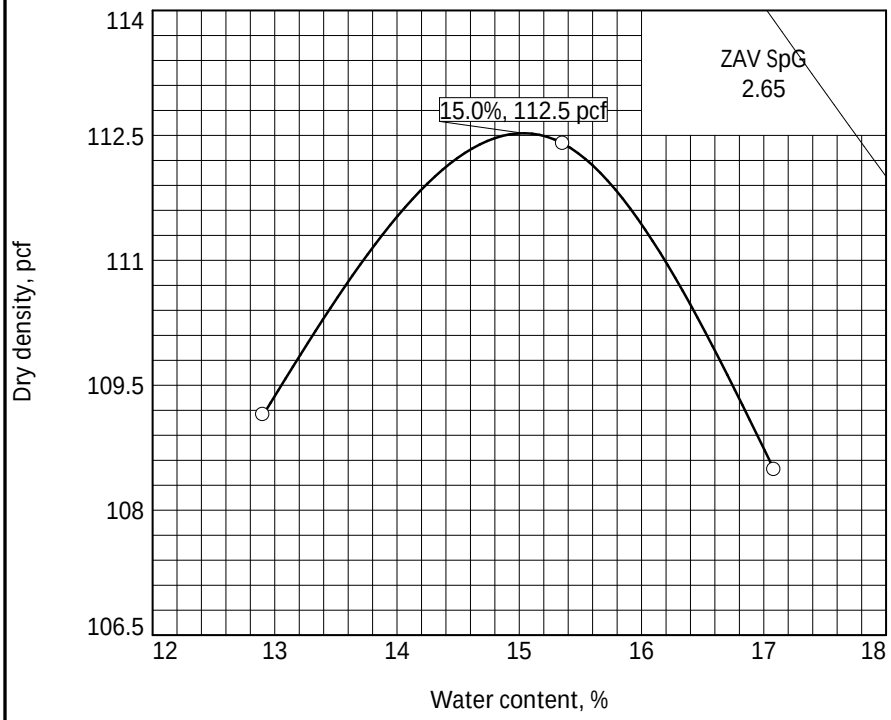
Checked by: KG
Title:

ENGINEERING ANALYTICS, INC.

Figure

COMPACTION TEST REPORT

Curve No.



Test Specification:
ASTM D 698-12 Method A Standard

Preparation Method: Moist
Hammer Wt.: 5.5 lb.
Hammer Drop: 12 in.
Hammer Type: Manual
Layers: three Blows/Layer: 25
Mold Size: 0.03333 cu. ft.
Test Performed on Material Passing #4 Sieve
NM _____ LL NV PI NP
Sp.G. (Assumed): 2.65
%>#4 _____ %<No.200 _____
USCS _____ AASHTO _____
Date Sampled _____
Date Received _____
Date Tested: 4/16/25
Tested By: SY

TESTING DATA	1	2	3	4	5	6
WM + WS	6114.4	6211.7	6171.7			
WM	4251.4	4251.4	4251.4			
WW + T #1	1015.2	1106.6	897.9			
WD + T #1	933.6	1009.1	810.6			
TARE #1	301.0	374.0	299.9			
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	12.9	15.4	17.1			
DRY DENSITY	109.1	112.4	108.5			

TEST RESULTS

Maximum dry density = 112.5 pcf

Optimum moisture = 15.0 %

Material Description: Sand

Remarks:

Project No.: 111360 Client: Rio Grand Resources
Project: Mt.Taylor

○ Source of Sample: EA-BSB04 Depth: 2' - 3' Sample Number: A

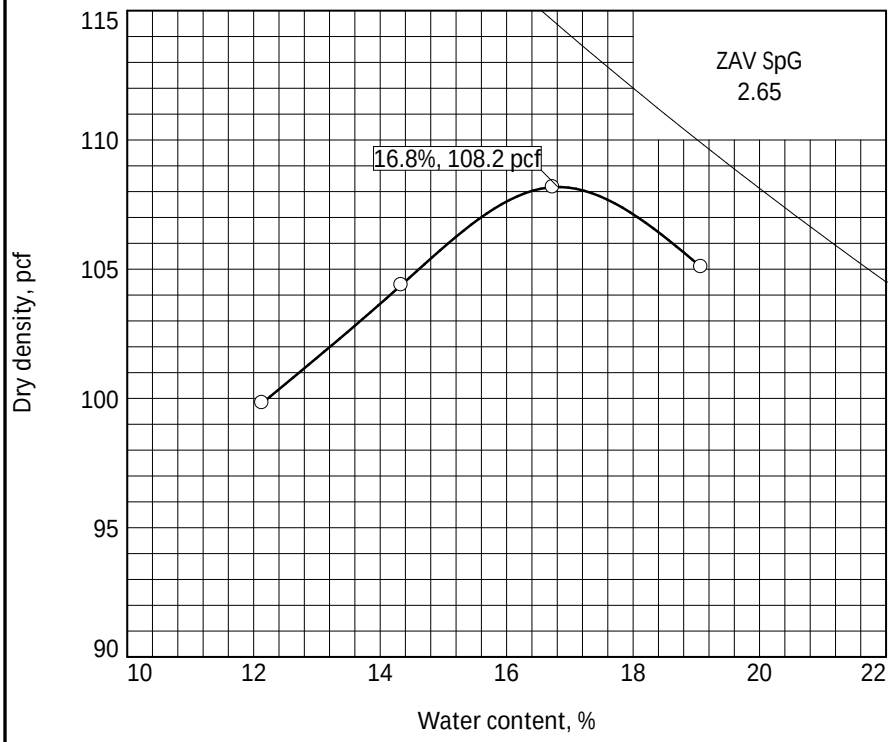
Checked by: AW
Title:

ENGINEERING ANALYTICS, INC.

Figure

COMPACTION TEST REPORT

Curve No.



Test Specification:
ASTM D 698-12 Method A Standard

Preparation Method
Hammer Wt. 5.5 lb.
Hammer Drop 12 in.
Hammer Type:
Layers three Blows/Layer 25
Mold Size 0.03333 cu. ft.

Test Performed on Material
Passing #4 Sieve

NM LL 29 PI 14
Sp.G. (D854): 2.65
%>#4 %<No.200
USCS AASHTO
Date Sampled
Date Received
Date Tested
Tested By

TESTING DATA	1	2	3	4	5	6
WM + WS	5943.1	6055.2	6159.8	6142.6		
WM	4250.8	4250.8	4250.8	4250.8		
WW + T #1	1096.2	1043.8	1092.9	1088.9		
WD + T #1	1022.0	963.8	996.6	973.7		
TARE #1	410.5	405.5	420.8	369.7		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	12.1	14.3	16.7	19.1		
DRY DENSITY	99.8	104.4	108.2	105.1		

TEST RESULTS

Maximum dry density = 108.2 pcf

Optimum moisture = 16.8 %

Material Description

Silty Clay

Remarks:

Project No.: 111360 Client: Rio Grand Resources
Project: Mt.Taylor

○ Source of Sample: EA-BSC03 Depth: 2' - 3' Sample Number: A

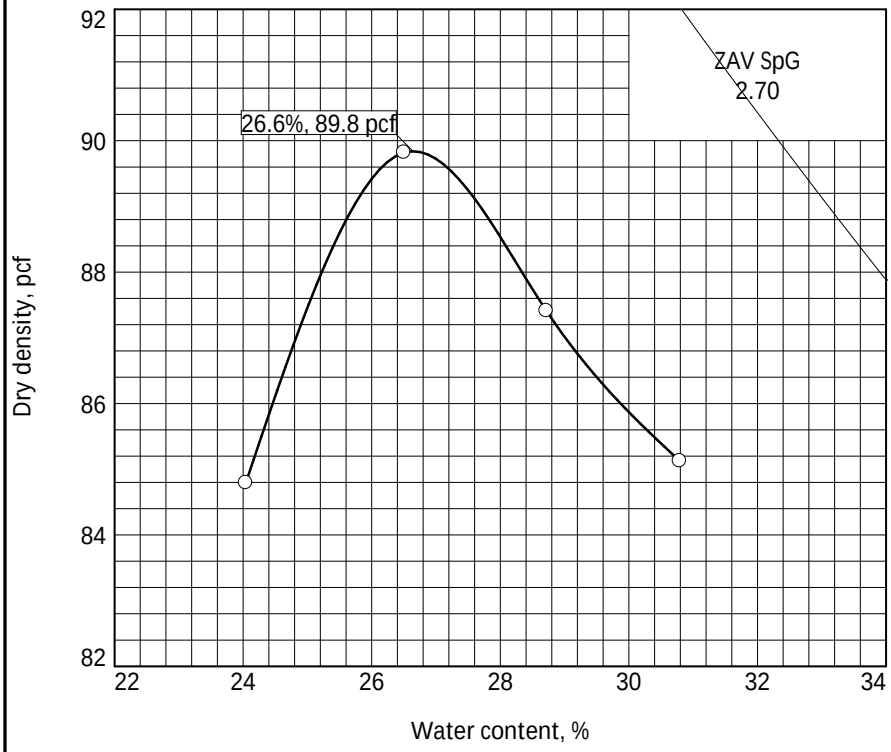
Checked by:
Title:

ENGINEERING ANALYTICS, INC.

Figure

COMPACTION TEST REPORT

Curve No.



Test Specification:
ASTM D 698-12 Method A Standard

Preparation Method: Moist
Hammer Wt.: 5.5 lb.
Hammer Drop: 12 in.
Hammer Type: Manual
Layers: three Blows/Layer: 25
Mold Size: 0.03333 cu. ft.

Test Performed on Material
Passing: #4 Sieve

NM: LL: PI:
Sp.G. (Assumed): 2.700
%>#4: %<No.200:
USCS: AASHTO:
Date Sampled:
Date Received:
Date Tested: 10/09/2025
Tested By: LR

TESTING DATA	1	2	3	4	5	6
WM + WS	5840.6	5968.3	5951.5	5933.7		
WM	4250.5	4250.5	4250.5	4250.5		
WW + T #1	706.1	886.9	883.8	827.1		
WD + T #1	647.1	785.5	779.2	727.3		
TARE #1	401.7	403.1	415.1	403.3		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	24.0	26.5	28.7	30.8		
DRY DENSITY	84.8	89.8	87.4	85.1		

TEST RESULTS

Maximum dry density = 89.8 pcf

Optimum moisture = 26.6 %

Material Description: Clay

Remarks:

Project No.: 111360 Client: Rio Grand Resources
Project: Mt.Taylor

○ Source of Sample: EA-BSC06/09 Combined

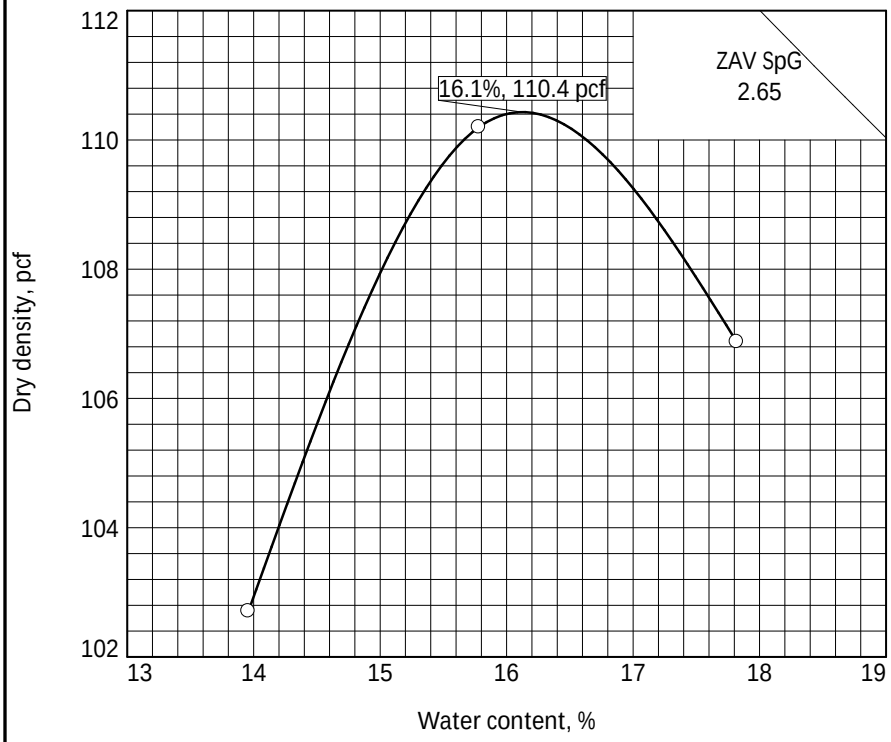
Checked by: KG
Title:

ENGINEERING ANALYTICS, INC.

Figure

COMPACTION TEST REPORT

Curve No.



Test Specification:
ASTM D 698-12 Method A Standard

Preparation Method: Moist
Hammer Wt.: 5.5 lb.
Hammer Drop: 12 in.
Hammer Type: Manual
Layers: three Blows/Layer: 25
Mold Size: 0.03333 cu. ft.

Test Performed on Material
Passing: #4 Sieve

NM: LL: 26 PI: 8
Sp.G. (Assumed): 2.65
%>#4: %<No.200:
USCS: AASHTO:
Date Sampled:
Date Received:
Date Tested: 4/16/2025
Tested By: SY

TESTING DATA	1	2	3	4	5	6
WM + WS	6020.3	6179.7	6154.5			
WM	4250.8	4250.8	4250.8			
WW + T #1	1243.0	1130.4	1178.8			
WD + T #1	1136.1	1027.5	1056.4			
TARE #1	370.5	375.5	369.7			
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	14.0	15.8	17.8			
DRY DENSITY	102.7	110.2	106.9			

TEST RESULTS

Maximum dry density = 110.4 pcf

Optimum moisture = 16.1 %

Material Description: Silty Clay

Remarks:

Project No.: 111360 Client: Rio Grand Resources
Project: Mt.Taylor

○ Source of Sample: EA-BSC09 Depth: 2' - 3' Sample Number: A

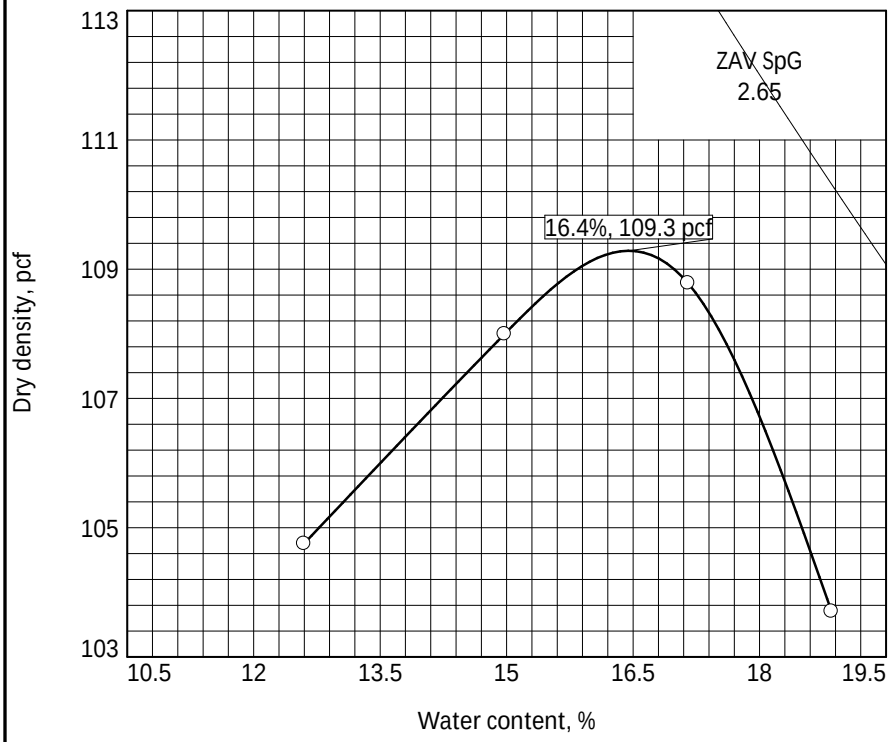
Checked by: KG
Title:

ENGINEERING ANALYTICS, INC.

Figure

COMPACTION TEST REPORT

Curve No.



Test Specification:
ASTM D 698-12 Method A Standard

Preparation Method: Moist
Hammer Wt.: 5.5 lb.
Hammer Drop: 12 in.
Hammer Type: Manual
Layers: three Blows/Layer: 25
Mold Size: 0.03333 cu. ft.

Test Performed on Material
Passing: #4 Sieve

NM: LL: NV PI: NP
Sp.G. (Assumed): 2.65
%>#4: %<No.200:
USCS: AASHTO:
Date Sampled:
Date Received:
Date Tested: 4/10/25
Tested By: SY

TESTING DATA	1	2	3	4	5	6
WM + WS	6033.2	6176.7	6127.2	6113.4		
WM	4250.0	4250.0	4250.0	4250.0		
WW + T #1	1060.2	1080.7	1199.7	864.2		
WD + T #1	986.7	981.3	1095.7	774.7		
TARE #1	402.9	402.0	400.9	299.8		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	12.6	17.2	15.0	18.9		
DRY DENSITY	104.8	108.8	108.0	103.7		

TEST RESULTS

Maximum dry density = 109.3 pcf

Optimum moisture = 16.4 %

Material Description: Sandy Clay

Remarks:

Project No.: 111360 Client: Rio Grand Resources
Project: Mt.Taylor

○ Source of Sample: EA-BSC12 Depth: 2' - 3' Sample Number: A

Checked by: AW
Title:

ENGINEERING ANALYTICS, INC.

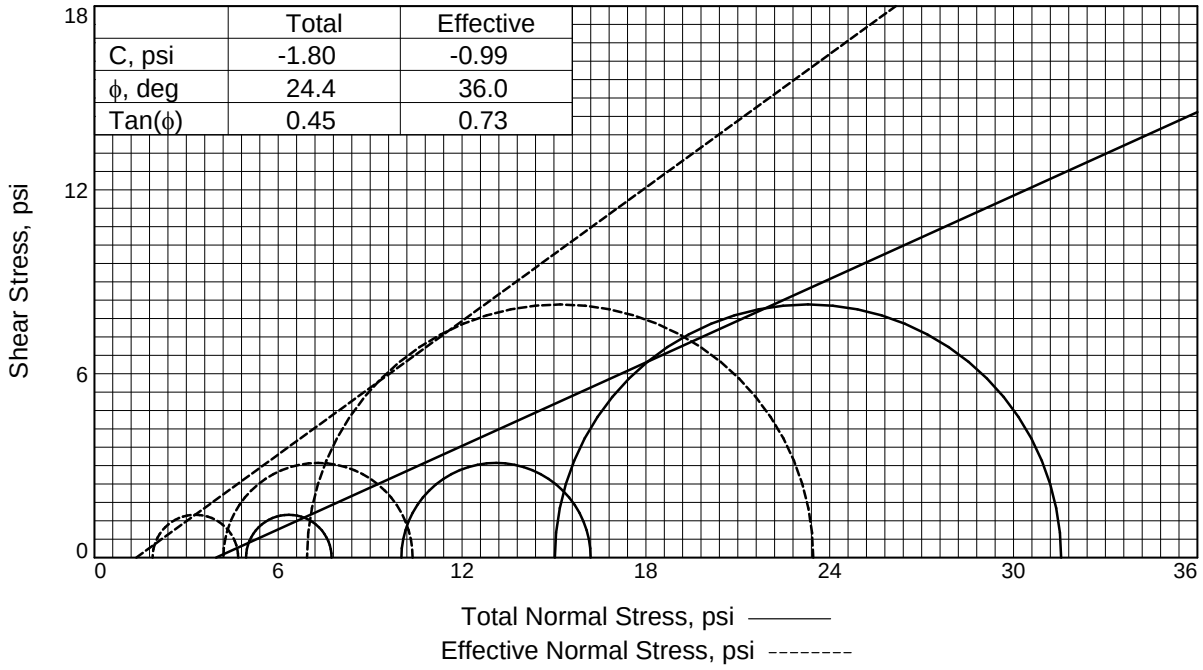
Figure

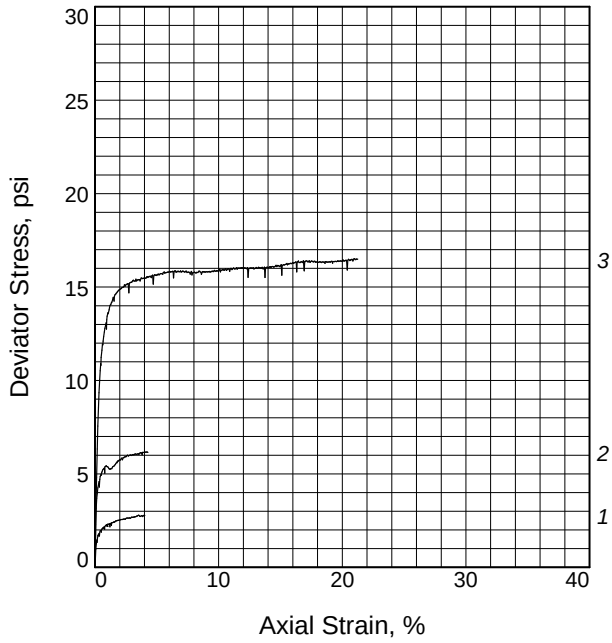
9.0 Consolidated Undrained Triaxial Shear

Consolidated undrained (CU) triaxial shear tests were performed on 1 soil samples in accordance with ASTM D4767, "Standard Test Method for Consolidated Undrained Triaxial Compression Test for Cohesive Soils."

- Soil samples were trimmed, encased in a rubber membrane, and installed in the triaxial test cell.
- An initial effective stress of 1-3 psi was applied to facilitate saturation.
- Specimens were saturated to ≥ 95%.
- Following saturation, samples tested using the three-load method were consolidated to the effective stress specified by the project engineer. Samples tested using the three-stage method were consolidated to the effective stresses designated prior to each stage of testing.
- During the consolidation phase, drainage was permitted, allowing for volume changes.
- After a 24-hour consolidation period, the triaxial load cell was engaged, drainage was closed, and axial loading was initiated.
- Axial load, deformation, and pore-water pressure were measured to determine total stresses and axial compression.
- Each sample was sheared, and axial strain was recorded.
- Strength envelopes (total stress Mohr circles) were developed based on the test data.
- Strength envelopes were determined using either the three-load or three-stage method, as specified by the project engineer.
    - The three-load method utilizes data from three distinct samples, each consolidated under a different effective stress.
    - The three-stage method utilizes one sample, which is consolidated to differing effective stresses for each stage of the test.

The results of the CU tests are presented on the following pages.





Sample No.		1	2	3
Initial	Water Content, %	26.2	26.2	26.2
	Dry Density, pcf	74.6	74.6	74.6
	Saturation, %	57.0	57.0	57.0
	Void Ratio	1.2186	1.2186	1.2186
	Diameter, in.	2.39	2.39	2.39
	Height, in.	5.20	5.20	5.20
At Test	Water Content, %	40.3	37.1	35.1
	Dry Density, pcf	78.8	82.2	84.4
	Saturation, %	97.3	97.1	96.9
	Void Ratio	1.0988	1.0136	0.9597
	Diameter, in.	2.34	2.34	2.36
	Height, in.	5.16	4.93	4.71
Strain rate, in./min.		0.005	0.005	0.005
Eff. Cell Pressure, psi		5.0	10.0	15.0
Fail. Stress, psi		2.8	6.2	16.5
Total Pore Pr., psi		83.0	85.8	88.1
Strain, %		3.5	4.2	20.9
Ult. Stress, psi				
Total Pore Pr., psi				
Strain, %				
$\bar{\sigma}_1$ Failure, psi		4.7	10.4	23.5
$\bar{\sigma}_3$ Failure, psi		1.9	4.2	6.9

Type of Test:
CU with Pore Pressures

Sample Type: Remolded

Description: Clay

Specific Gravity= 2.650

Remarks: While the test followed the ASTM D4767 Staged Method, the resulting data indicates the sample should be re-tested using the Three-Load Method for improved accuracy and reliability.

Figure _____

Client: Rio Grand Resources

Project: Mt.Taylor

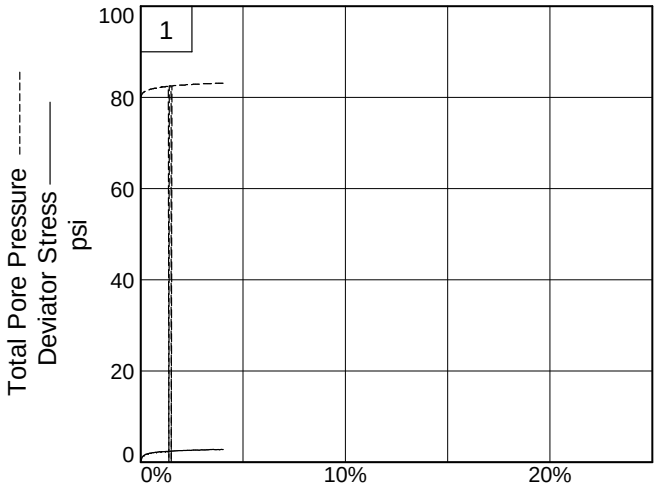
Source of Sample: EA-BSC06/09 Combined

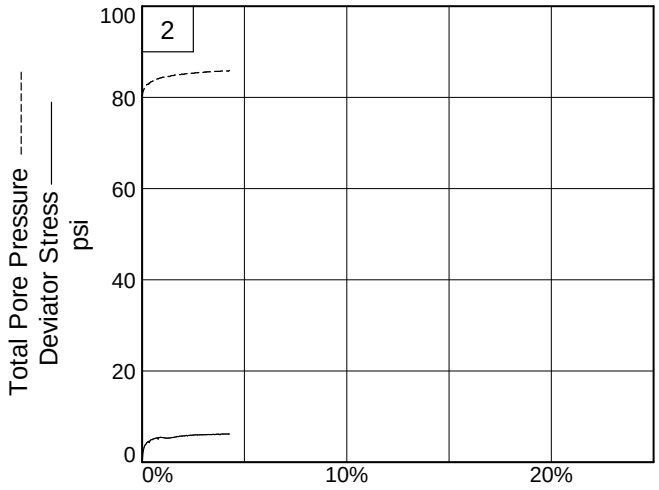
Proj. No.: 111360 **Date Sampled:**

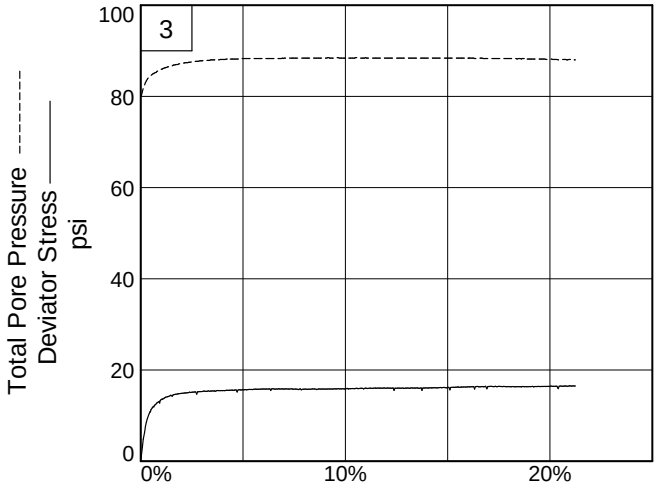
TRIAXIAL SHEAR TEST REPORT

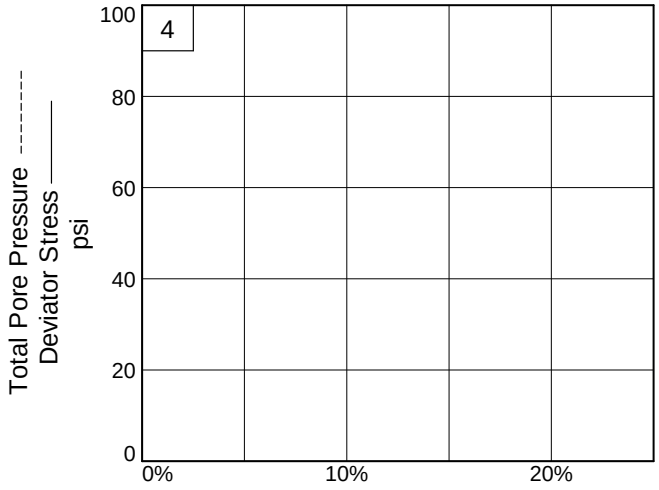
ENGINEERING ANALYTICS, INC.

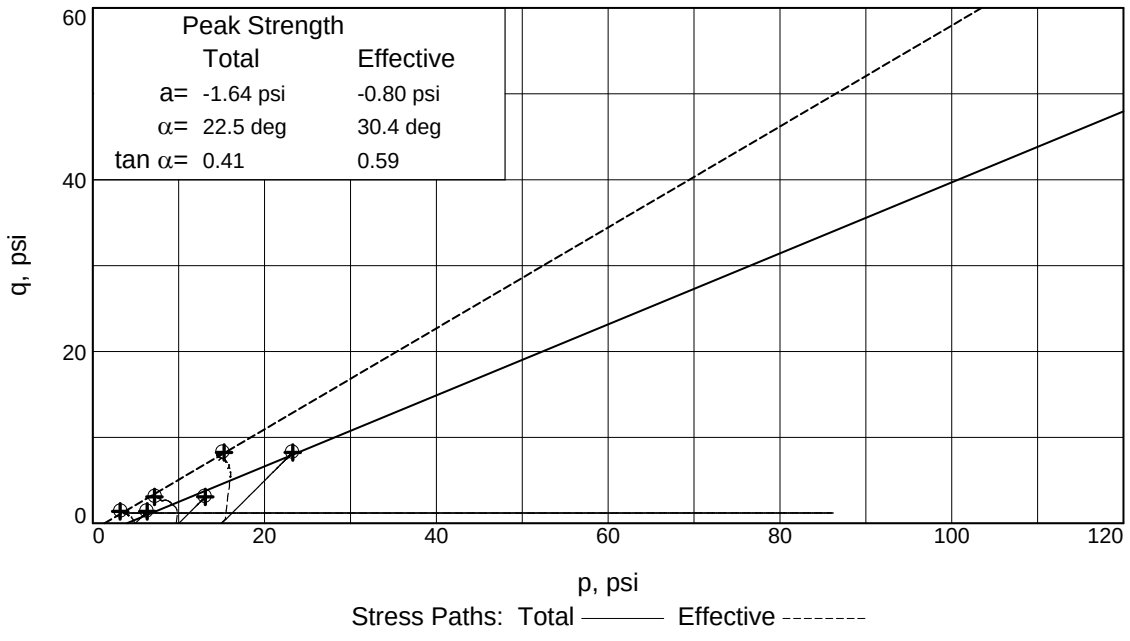
Tested By: AW **Checked By:** KG









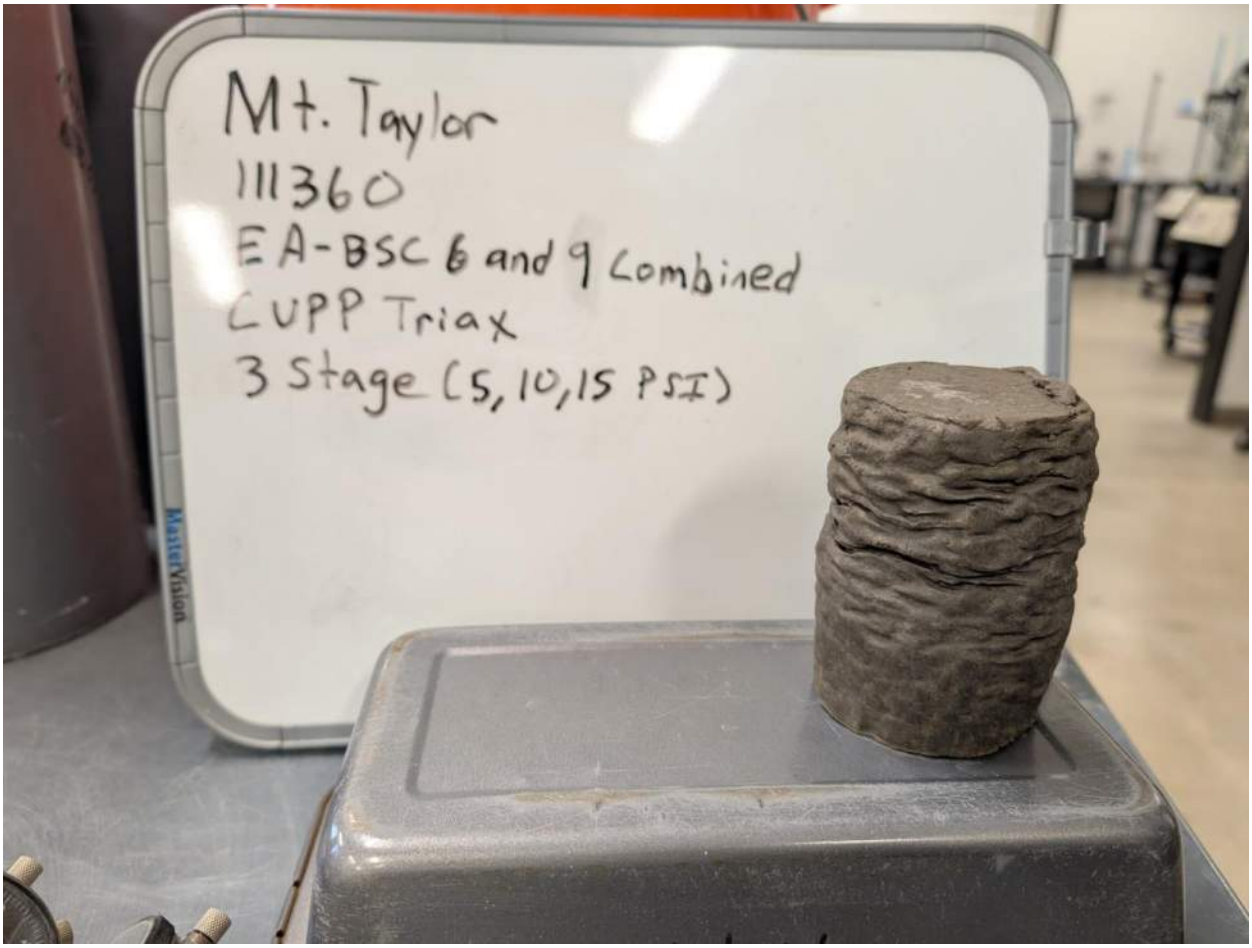


Client: Rio Grand Resources
Project: Mt.Taylor
Source of Sample: EA-BSC06/09 Combined
Project No.: 111360

Figure _____

ENGINEERING ANALYTICS, INC.

Tested By: AW **Checked By:** KG


Mt. Taylor
111360
EA-BSC 6 and 9 Combined
CUPP Triax
3 Stage (5, 10, 15 PSI)
MasterVision

APPENDIX C
Seismic Hazard Analysis – Mt. Taylor

Seismic Hazard Analysis

Mt. Taylor Mine

Existing Mine Permit No. C1002RE

Prepared for:

Rio Grande Resources

P.O. Box 1150

Grants, NM 87020

Prepared by:

Engineering Analytics, Inc.

1600 Specht Point Road, Suite 209
Fort Collins, Colorado 80525
(970) 488-3111
Fax (970) 488-3112

Project No. 111360

November 26, 2025

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B.2 USGS Description of Faults Meeting the NRC Minimum Criteria

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C.1 Deterministic EZ-Frisk Software Input

C.2 Deterministic Results

Appendix D Probabilistic Analyses

D.1 Summary of Probabilistic Characteristics

D.2 Probabilistic EZ-Frisk Software Input

D.3 Probabilistic Results

1.0 INTRODUCTION

Engineering Analytics, Inc. (EA) has prepared this report to present the results of a seismic hazard analysis conducted for the Mt. Taylor Uranium Mine (Facility). This seismic hazard analysis has been prepared to characterize the peak horizontal ground acceleration (PGA) for use in stability analyses for the Facility. The seismic hazard was determined for the 10,000-year return period.

The Mt Taylor Uranium Mine is located just northeast of the town of San Mateo in Cibola County, New Mexico. The site is shown on Figure 1-1. For the purposes of these analyses, EA used a central location with coordinates of 35.3409°N latitude and 107.6353°W longitude.

2.0 GEOLOGIC SETTING

2.1 Regional Physiographic and Tectonic Setting

The Facility is located within the Colorado Plateau physiographic province in northwestern New Mexico. The Colorado Plateau is a broad, roughly circular region of relative structural stability within a more structurally active region of disturbed mountain systems. Broad basins and uplifts, monoclines, and belts of anticlines and synclines are characteristic of the plateau (Kelley, 1979). Igneous intrusions have formed several mountains. However, most of the topographic relief in the Colorado Plateau is the result of erosion of deep canyons rather than upstanding mountain ranges (Thornbury, 1965). According to the New Mexico Bureau of Geology and Mineral Resources (2025):

> *The Colorado Plateau in New Mexico includes the San Juan Basin, a major source of oil, gas, coal, and uranium for our state. The northwest-trending Zuni Mountains form the southwestern margin of the San Juan Basin. Both the San Juan Basin and the Zuni Mountains are broad downwarps and upwarps that formed during regional-scale compression about 75 million years ago during the Laramide orogeny (e.g., Cather, 2004). The southeast margin of the Colorado Plateau is covered by <5 million year-old volcanic rocks that erupted along the Jemez lineament, a northeast-trending zone of weakness that likely developed about 1.6 billion years ago as the North American continent was forming.*

The site is located at the base of the Mt Taylor Volcanic Field. Mount Taylor is an extinct composite stratovolcano that is part of the greater Mount Taylor–Mesa Chivato volcanic field (Hunt, 1938; Crumpler, 1980a, b). According to the New Mexico Bureau of Geology and Mineral Resources (2025):

> *Mount Taylor volcano, a prominent landmark that can be seen on the skyline west of Albuquerque, is located about 15 miles northwest of the town of Grants, New Mexico. Mount Taylor Peak, at an elevation of 11,301 feet, stands approximately one mile above the Rio San Jose 12 miles to the south (Hunt, 1938). Mount Taylor volcano is part of a larger, northeast-trending volcanic field that includes Mesa Chivato, a broad plateau located northeast of the cone, and Grants Ridge (Keating and Valentine, 1998; WoldeGabriel et al., 1999), located southwest of the cone. Basalt that caps Mesa Chivato and other mesas surrounding Mount Taylor makes up about 80% of the volume of the volcanic field (Perry et al., 1990). The Mount Taylor volcanic field lies on the southern flank of the San Juan Basin on the Colorado Plateau and straddles the extensional transition zone between the Colorado Plateau and the Rio Grande rift. The Mount Taylor volcanic field is considered to be part of the Jemez Lineament, a zone of young (< 5 million years old) volcanism aligned along an ancient suture in the 1.7 to 1.6 billion year old Proterozoic basement (Mayo, 1958, Laughlin et al., 1976; Lipman and Moench, 1972; Perry et al., 1990).*

Seismicity in the Mt Taylor Volcanic Field is generally low and is linked to regional tectonic activity rather than active volcanism. This seismic activity is influenced by geological features such as the Jemez Lineament and the Rio Grande Rift (Goff et. al., 2021). The adjacent Rio Grande Rift physiographic province is characterized as having low to moderate seismic activity.

2.2 Site Geology

The geologic map by McCraw et. al. (2009) indicates that the Facility is underlain by Quaternary-aged stream and valley slope alluvium overlying the Cretaceous-aged Menefee Formation. The alluvium is described as unconsolidated to partly consolidated, well-sorted, fine-grained sand, silty sand, and clay with a thickness 1 to 3 meters (McCraw et. al., 2009). The Menefee Formation is described as interbedded shales, siltstones, fine to medium grained sandstones, mudstones, and thin coals that generally form low-relief topography or forms landslides around the margins of the basalt-capped La Jara Mesa. The top of the unit is not exposed, but a minimum thickness is at least 90 meters (McCraw et. al., 2009).

3.0 SEISMICITY

NRC NUREG-6372 recommends that seismic sources within 300 kilometers be characterized for a site. The publication states that the distance for detailed source characterization for a site that contains a fault within 50 kilometers of the site is 100 kilometers. Therefore, this seismic hazard analysis for the Facility included a review of historic earthquakes which have occurred within 300 kilometers of the Facility and detailed review of the earthquakes within 100 kilometers. This earthquake record, which contains earthquakes from 1568 to 2025, provides a general overview of the seismicity in the study area. Our final search and review of earthquake activity took place on August 27, 2025; therefore, any earthquakes occurring after this date are not included in the analysis.

Catalogs from the USGS NSHMP for 2023 for the Western United States (WUS) and Central and Eastern United States (CEUS) (Peterson et. al., 2023) were reviewed to compile information on the historic earthquakes. These catalogs, compiled by the USGS for their study, included removal of duplicate events as well as aftershocks and foreshocks related to the primary earthquake events in order to obtain a catalog of independent events (Mueller, 2019 and Llenos, 2023). EA used the catalogs declustered with Reasenberg (1985; r85). The database includes historic seismic events over the period from 1568 through 2022. The WUS catalog contained 40 earthquakes in the 300-kilometer study area and the CEUS catalog contained no earthquakes. The catalogs were supplemented with events occurring between January 2023 and August 2025 by searching the National Earthquake Information Center (NEIC) database, also maintained by the USGS. This supplemental search resulted in no additional earthquakes. The catalog searches were limited to events with moment magnitude (Mw) greater than or equal to 4.0. A total of 40 events are included in the record for the 300-kilometer search as shown on Figure 3-1 and tabulated in Appendix A.1.

The earthquakes generally have small magnitudes with only 5 of the earthquakes having a magnitude greater than 5.0. Figure 3-1 shows that many of the earthquakes occur in the more seismically active Rio Grande Rift area to the east of the Facility. The largest event is estimated in the WUS catalog to have an Mw of 5.9. This event occurred west of San Antonio, New Mexico on July 16, 1906. The epicenter is approximately 160 kilometers southeast of the Facility, within the Rio Grande Rift. The event closest to the Facility had an epicenter about 13 kilometers southwest of the Facility. This earthquake, which occurred on December 24, 1973, had an Mw of 4.08.

In addition to the evaluation of significant earthquakes (Mw>4) as described above, a search of low magnitude events (Mw>2.4) within 100 kilometers of the Facility was also conducted. These events are shown in Figure 3-2 and are tabulated in Appendix A.2. The figure shows that the earthquake activity within a 100-kilometer radius of the site is diffuse. The earthquake record contained 15 earthquakes from the WUS catalog and 9 earthquakes from the NEIC catalog, the majority of which are low magnitude. A review of the historic seismicity confirms that this area has seen fairly low seismic activity.

4.0 SEISMIC HAZARD ANALYSIS

Seismic hazard analyses are typically conducted using one of two methods: (1) deterministic analysis or (2) probabilistic analysis. A deterministic seismic hazard analysis (DSHA) estimates the maximum ground motion that could occur at a specific location considering specific earthquake sources. It does not take into account the likelihood of occurrence. A probabilistic seismic hazard analysis (PSHA) estimates the likelihood that various levels of ground motion will be exceeded at a specific location over a given time. Both analyses were conducted for this seismic study as discussed below. EA used the deterministic analyses to aid in the probabilistic analyses. The final recommended PGA for the Facility was derived using probabilistic analyses for the 10,000-year return period. The seismic sources and attenuation equations used for this seismic hazard analysis are also discussed below, followed by the results of the deterministic and probabilistic analyses.

4.1 Seismic Sources

4.1.1 Faults

The existence and location of faults with Quaternary displacement were primarily identified using the USGS Quaternary Fault and Fold database (USGS et. al., 2025). A "capable fault" is defined by the Nuclear Regulatory Commission (NRC) in 10 CFR Appendix A to Part 100 – Seismic and Geologic Siting Criteria for Nuclear Power Plants – as a fault that has exhibited one or more of the following characteristics:

1. *Movement at or near the ground surface at least once within the past 35,000 years or movement of a recurring nature within the past 500,000 years.*

2. *Macro-seismicity (magnitude 3.5 or greater) instrumentally determined with records of sufficient precision to demonstrate a direct relationship with the fault.*

3. *A structural relationship to a capable fault according to characteristics (1) or (2) above such that movement on one could be reasonably expected to be accompanied by movement on the other.*

The faults from the Quaternary fault and fold database within 300 kilometers of the Facility are shown on Figure 4-1. Capable faults must also meet the minimum criteria for fault length and distance from the Facility, as defined by NRC 10 CFR Appendix A to Part 100, and included in Table 4-1 in this report. A fault that is deemed capable by the criteria listed above, but does not meet the minimum criteria provided in Table 4-1, does not need to be considered in the seismic hazard analysis. For the detailed analysis, the faults within 100 kilometers of the Facility that met these criteria are shown on Figure 4-2. A tabulated list of the faults is included in Appendix B.1.

All faults meeting the requirements outlined in Table 4-1 were considered in this seismic study. This is a conservative approach because although the NRC defines a "capable fault" as one having *"movement at or near the ground surface at least once within the past 35,000 years or movement of a recurring nature within the past 500,000 years,"* including all identifiable faults with Quaternary displacement would include fault movement over the past 1.6 million years. This was done because sufficient information does not exist for many of the faults with

Quaternary displacement as to the timing of the last movement of the fault.

The USGS separates the faults with Quaternary displacement into classes. These classes are provided below, as described by USGS.

- For a Class A fault, geologic evidence demonstrates the existence of a Quaternary fault of tectonic origin, whether the fault is exposed by mapping or inferred from liquefaction or other deformational features.
- For a Class B fault, geologic evidence demonstrates the existence of Quaternary deformation, but either 1) the fault might not extend deeply enough to be a potential source of significant earthquakes, or 2) the currently available geologic evidence is too strong to confidently assign the feature to Class C but not strong enough to assign it to Class A.
- For a Class C fault, geologic evidence is insufficient to demonstrate 1) the existence of tectonic faulting, or 2) Quaternary slip or deformation associated with the feature.
- For a Class D fault, geologic evidence demonstrates that the feature is not a tectonic fault or feature; this category includes features such as joints, landslides, erosional or fluvial scarps, or other landforms resembling fault scarps but of demonstrable non-tectonic origin.

The faults with Quaternary displacement included in this analysis are either Class A or B. Descriptions from the USGS of the faults included in this analysis, are included in Appendix B.2.

4.1.2 Background Event

Earthquakes sometimes occur that are not associated with a known geologic structure. These events are termed "background events" or "floating earthquakes." Evaluation of background events allows for potential low to moderate earthquakes unassociated with tectonic structures to be considered in the seismic hazard of the Facility. The maximum magnitude for these background events within the Intermountain United States ranges between local magnitude (M_L) 6.0 and 6.5 (Woodward-Clyde, 1996). Larger earthquakes would be expected to leave a detectable surface expression, especially in arid to semiarid climates, with slow erosion rates and limited vegetation. In seismically less active areas such as the Colorado Plateau, the maximum magnitude associated with a background event is assumed to be 6.3, consistent with that used in seismic evaluations performed for uranium tailing sites in Green River (DOE 1991a, pg. 26), and Grand Junction (DOE 1991b, pg. 71).

4.1.2.1 Background Event in Deterministic Analyses

Background or floating earthquakes are typically evaluated deterministically by placing the largest earthquake that can be assumed to occur unassociated with a known fault, at a distance of 15 kilometers from the project location.

4.1.2.2 Background Event in Probabilistic Analyses

For probabilistic analyses, the hazard from background earthquakes is typically assessed using two approaches. The first approach uses areal source zones and assumes a uniformly distributed seismicity within the zone. The second approach uses gridded seismicity which

retains a degree of stationarity using 0.1-degree latitude and longitude grid spacing, as used by USGS for the NSHMP. Due to the fact that the historic seismic record within 100 km of the Facility contains a small number of earthquakes, determination of recurrence intervals for a site-specific areal source zone was not completed. EA used the 2014 gridded source zone for the CEUS and the 2014 shallow extensional gridded source zone for the WUS in our analyses.

4.2 Attenuation Relations

Attenuation of ground motions from the location of a seismic event to the site was calculated using attenuation relations. Due to the absence of abundant strong ground motion records, no specific attenuation relation exists solely for New Mexico. Therefore, we have used ground motion models (GMMs) appropriate for tectonically active crustal regions. The crustal GMMs that were used were developed as part of the NGA-West2 Project sponsored by the Pacific Earthquake Engineering Research (PEER) Center Lifelines Program. These models are also used by the USGS in developing the U.S. National Seismic Hazard Maps. EA used four of the five NGA-West2 GMMs in the analyses: Chiou and Youngs (2014), Campbell and Bozorgnia (2014), Abrahamson and others (2014), and Boore and others (2014). Idriss (2014) was not included due to its lack of a hanging wall model.

Three parameters (depth to V_s of 1000 m/s and 2,500 m/s and average V_s30) need to be specified in order to use the above attenuation equations. The three parameters are related to the shear wave velocity of the underlying soil and rock.

4.2.1 Depth to Shear Wave Velocity of 1,000 m/s

The National Earthquake Hazards Reduction Program (NEHRP, 2003) issued a publication which discusses site classification for seismic design. The publication listed the site classes and corresponding shear wave velocities. This information is summarized in Table 4-2.

The first parameter is the depth at which the shear wave velocity (V_s) of the soil reaches 1,000 meters per second (m/s) which is in the rock category as shown in Table 4-2. Based on previous subsurface investigation that EA has completed at the site along with the published site geology, this parameter was assumed to be 5 meters.

4.2.2 Depth to Shear Wave Velocity of 2,500 m/s

The next parameter is the depth at which shear wave velocity of the profile reaches 2,500 m/s (hard rock according to Table 4-2). EA was provided with a site geophysical scan for a draft pilot hole issued by Dames and Moore. The geophysical scan included a compressive wave velocity (V_p) profile. EA used the V_p profile in determining the depth to 2,500 m/s for the shear wave velocity. The V_p values needed to be converted to V_s values. EA used a common equation to convert the V_p values to V_s values.

$$Vs = Vp\sqrt{\frac{1-2\nu}{2(1-\nu)}}$$

where:

V_s = shear wave velocity
V_p = compression wave velocity
ν = Poisson's ratio

The geophysical scan also included information on Poisson's ratio. Using that information and empirical correlations published in Bowles (1982) that indicate Poisson's ratios ranging from 0.1 to 0.4 for rock, EA used a Poisson's ratio of 0.27 for the calculations, which is generally consistent with the surficial and bedrock materials. The profile indicates the approximate average depth to a shear wave velocity of 2,500 m/s is 0.79 kilometers below the ground surface.

4.2.3 Average Shear Wave Velocity for Upper 30 Meters

The next parameter to be specified is the average shear wave velocity of the upper 30 meters (V_s30) of the original ground surface. EA estimated an average V_p30 velocity for the profile and converted that to V_s30 using the above equation. The resulting V_s30 for the profiles 30 meters below the Facility was calculated to be 1,200 m/s. This value is in the rock category according to Table 4-2.

4.3 Deterministic Analysis

A deterministic analysis was completed for the Facility in order to determine which faults from the USGS Quaternary fault and fold database have the potential to produce PGAs of 0.05g or greater and would need further evaluation in a probabilistic model. A PGA of 0.05g is commonly used as a threshold value to streamline probabilistic hazard analysis by excluding sources unlikely to cause significant seismic shaking. PGA values around 0.05g are often seen as the threshold below which the ground shaking is considered negligible for most engineering purposes. In deterministic analyses, the ground motions from the maximum credible earthquake (MCE) associated with capable faults are attenuated to the site.

The seismic sources considered for the deterministic analysis include the previously described faults listed in Appendix B.1. The MCE associated with each fault was calculated based on correlations between fault surface rupture length and earthquake magnitude as presented by Wells and Coppersmith (1994). The ground motions from the MCE associated with the faults were attenuated to the Facility using the attenuation relations described in Section 4.2. Typically, ground motions of median plus one standard deviation are reported in deterministic analyses. The PGA was calculated using EZ-FRISK Version: 8.11 (Risk Engineering, 2024). Input and the complete deterministic spectra from the EZ-FRISK analysis are included in Appendix C.1 and C.2, respectively. The inputs and results of the deterministic analyses are also summarized in a table in the beginning of Appendix C.2.

4.4 Probabilistic Analysis

A probabilistic analysis was performed for the Facility in order to evaluate the amount of risk associated with larger PGAs calculated by the deterministic analysis. In probabilistic analyses, ground motions and the associated probability of exceedance are estimated for background seismicity and for earthquakes on specific faults in order to evaluate the amount of risk associated with the PGA.

For the purpose of the seismic hazard evaluation, a 10,000-year return period is adopted for evaluating long-term stability. For the probabilistic analysis, faults that are included in the USGS Quaternary fault and fold database and have the potential to produce PGAs of 0.05g or greater (based on deterministic methods) were selected for further evaluation in the probabilistic model. These criteria resulted in the inclusion of the following 9 faults:

1. Intrabasin faults on the Llano de Albuquerque (2121);
2. Jemez-San Ysidro fault (Jemez and San Ysidro sections) (2029ab);
3. Jemez-San Ysidro fault (Calabacillas section) (2029c);
4. Mesa Prieta faults (1985);
5. Nacimiento fault (northern and southern sections) (2002ab);
6. Sand Hill fault zone (2039);
7. Santa Fe fault (2123);
8. unnamed faults near Albuquerque Volcanoes (2049);
9. unnamed faults of El Malpais lava field (2146);

As discussed above, EA also included the 2014 CEUS gridded source and the 2014 shallow extensional WUS gridded source in our analyses. The gridded seismicity retains a degree of stationarity using 0.1-degree latitude and longitude grid spacing, as used by USGS for the NSHMP.

The USGS descriptions included in Appendix B.2 were used to determine fault characteristics where possible. Uncertainties in the fault characteristics are incorporated into the probabilistic analysis by representing the possible scenarios with a weight value. Maximum magnitudes for the faults were estimated based upon the empirical relationship developed by Wells and Coppersmith (1994) for surface rupture length, with an uncertainty of 0.3 corresponding to the standard error in the Wells and Coppersmith (1994) relationship. The recurrence relationships for the faults were modeled using maximum magnitude recurrence models. Slip rates are used to characterize rates of fault activity. However, very limited data was available regarding slip rates, and the USGS Fault and Fold Database categorizes all the considered faults as simply having a slip-rate less than 0.2 mm per year. Slip rates were therefore modeled as being 0.02 mm per year, similar to rates of activity assigned to many faults of questionable Quaternary activity in the Rio Grande Rift area east of the Colorado Plateau (Wong et. al., 2004).

The EZ Frisk probabilistic input is included in Appendix D.2. Table 4-3 shows the seismic source contribution to the total mean hazard at a return period of 10,000 years (1E-4 annual percent exceedance). The total hazard curve is shown in Figure 4-3 and the source contribution is shown in Figure 4-4. The complete results of the probabilistic analyses are included in Appendix D.3.

5.0 RESULTS AND CONCLUSIONS

EA conducted deterministic and probabilistic analyses for the 10,000-year return period seismic events to support stability analyses for the Facility.

The deterministic analysis showed that the random earthquake produced the highest PGA for the Facility. EA determined that the random earthquake with an MCE of magnitude of 6.3, located 15.1 km from the site, produced a mean PGA of 0.09g. Additionally, the Mesa Prieta faults are the closest faults to the site (~47 kilometers) and EA determined a maximum credible earthquake (MCE) of magnitude 6.3 for this fault based on the Wells and Coppersmith (1994) relationship. The deterministic PGA determined for the Busted Boiler Fault was 0.03g.

The probabilistic analyses show that the hazard is controlled by the gridded seismicity. For the probabilistic analysis, EA calculated a mean PGA of 0.21g for the 10,000-year return period. These values should be used in slope stability and other technical analyses as appropriate for the site.

To confirm the validity of these values, EA ran a cross check using a USGS screening-level methodology. The USGS maintains a *"USGS Earthquake Hazard Toolbox"* that has web applications for computing hazards for the USGS National Seismic Hazard Models. EA used the 2023 model (accessed in November 2025) as a screening tool for this site, which calculated PGA of 0.37g for the 10,000-year return period. It is likely that the majority of the difference between the USGS and the site-specific PGA is a result of using different attenuation relationships. The USGS applied some attenuation relations developed for the CEUS. However, using attenuation relations that are specific to normal extensional faulting is appropriate for this area.

6.0 LIMITATIONS

The opinions and recommendations in this report are based on a reasonable degree of certainty. This report has been prepared based upon review of the reference documents, geological analyses, and our experience. The conclusions presented represent our best judgment based on the information available. Should additional information become available we should be allowed to review that information and modify our conclusions accordingly.

7.0 REFERENCES

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TABLES

Table 4-1 Minimum Criteria for Faults Considered in Seismic Investigation (NRC 10 CFR Appendix A to Part 100)

Distance from Facility (mi) (km)	**Minimum length of fault to be considered (mi) (km)**
0 – 20 (0-32)	1 (1.6)
20 – 50 (32.2-80.5)	5 (8.0)
50 – 100 (80.5-160.9)	10 (16.1)
100 – 150 (160.9-241.4)	20 (32.2)
150 – 200 (241.4-321.9)	40 (64.4)

Note: The numbers listed in parentheses are in kilometers.

Table 4-2 National Earthquake Hazards Reduction Program (NEHRP) Site Class Definitions

Soil Profile Type	**Average Shear Wave Velocity to 30-meter Depth (V_s)**
A – Hard Rock	> 1500 m/s
B – Rock	$760 < v_s < 1500$ m/s
C – Very Dense Soil and Soft Rock	$360 < v_s < 760$ m/s
D – Stiff Soil Profile	$180 < v_s < 360$ m/s
E – Soft Soil Profile	< 180 m/s

Table 4-3 Hazard Contribution to Total Mean Hazard for 10,000-year Return Period, Probabilistic Analysis

Source Name	USGS Fault ID Number	Distance from Facility (km)	Peak Ground Acceleration (10,000-year return period)
USGS 2014 CEUS Gridded	---	---	0.03
USGS 2014 WUS Shallow Extensional Gridded	---	---	0.21
Total Hazard[1]	---	---	0.21

Note: 1) The total hazard PGA is the PGA for a specific return period considering the sources all together. Refer to Figure 4-3 for a visual explanation of individual source PGAs and the total hazard for the Facility.

FIGURES

Project No. 111360

October 2025

Location used for Analysis

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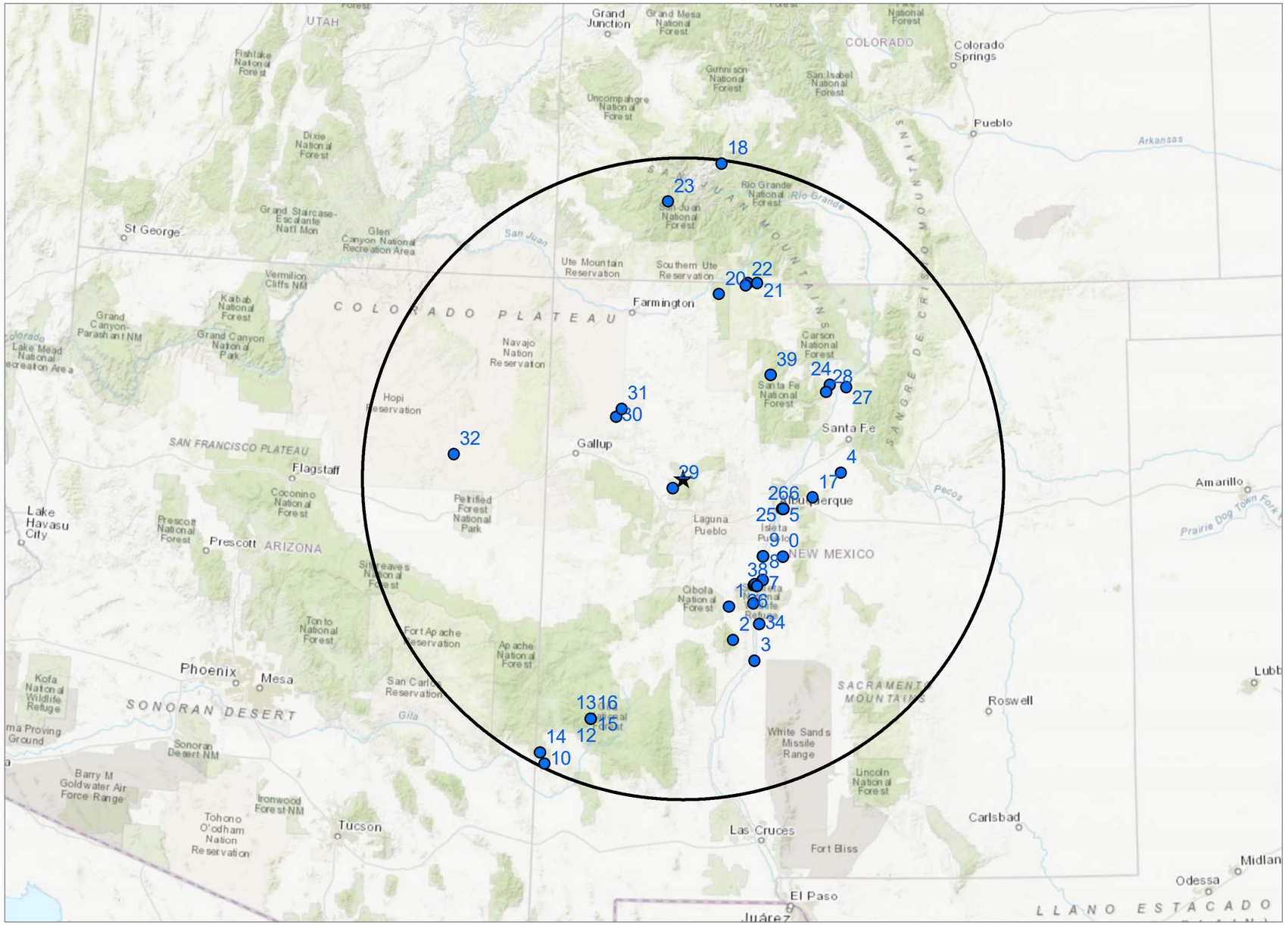
FIGURE 1-1
PROJECT LOCATION
SEISMIC HAZARD ANALYSIS
MT TAYLOR MINE
CIBOLA COUNTY, NEW MEXICO



LEGEND

- WUS Earthquakes
- Mt Taylor Mine
- 300 Kilometers

Note: Earthquake number cooresponds to Appendix A.1 list of earthquakes

0 50 100 200 Kilometers

P:\111360 Mt. Taylor Hydrologic Support\2.0 EA Technical Info\2.8 Disposal Cell Expansion\2.8.11 Seismic Hazard Analysis\GIS\Figures\Fig 3-1 Earthquakes 300km.mxd Date Saved: October, 10, 2025

Project No: 111360

October 2025

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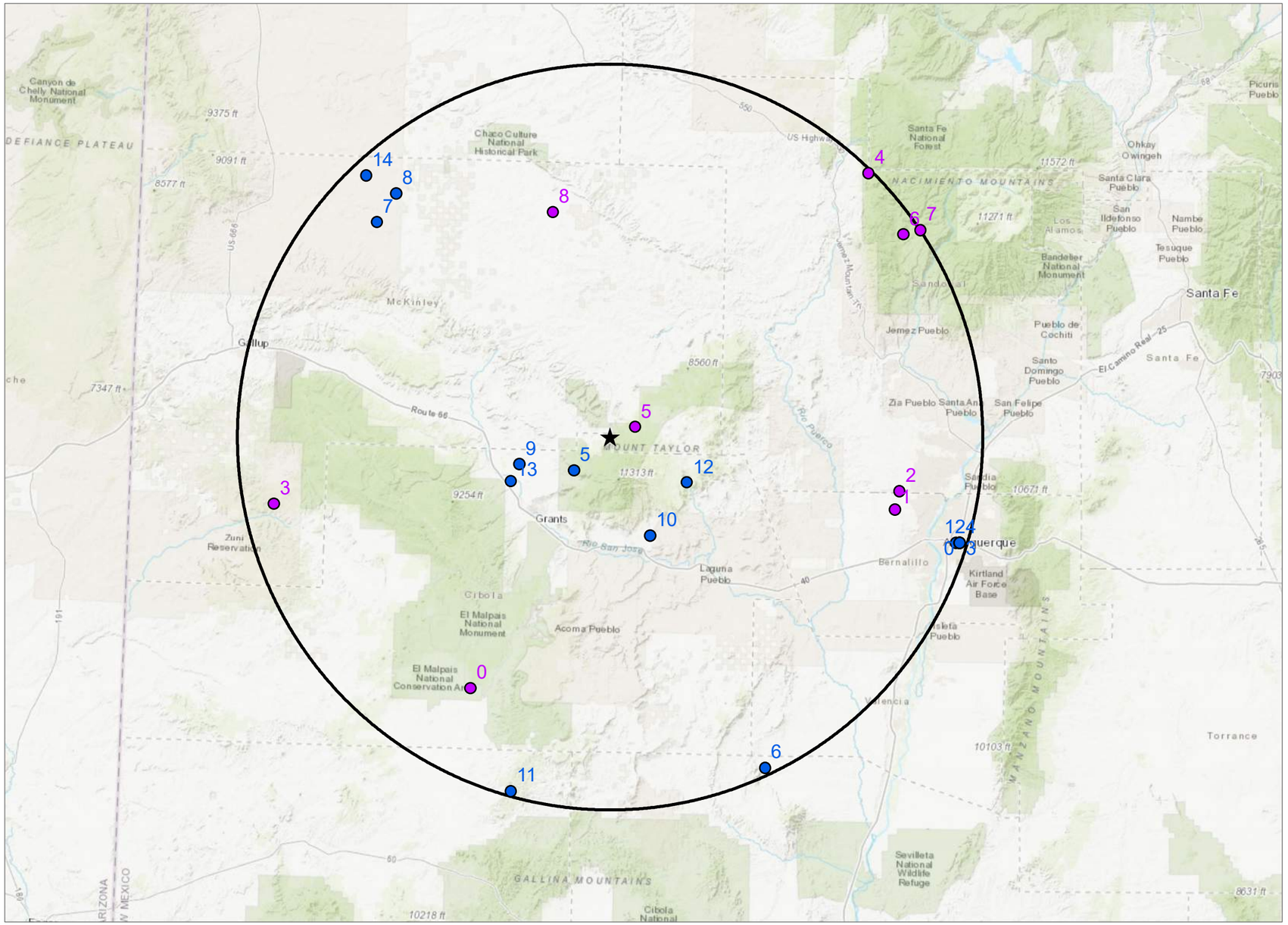
FIGURE 3-1
HISTORIC EARTHQUAKES WITH MAGNITUDE GREATER THAN 4.0 WITHIN 300 KILOMETERS OF THE FACILITY
SEISMIC HAZARD ANALYSIS
MT TAYLOR MINE
CIBOLA COUNTY, NEW MEXICO



LEGEND

- WUS Earthquakes
- NEIC Earthquakes
- ★ Mt Taylor
- 300 Kilometers

Note: Earthquake number cooresponds to Appendix A.2 list of earthquakes

0 12.5 25 50
Kilometers

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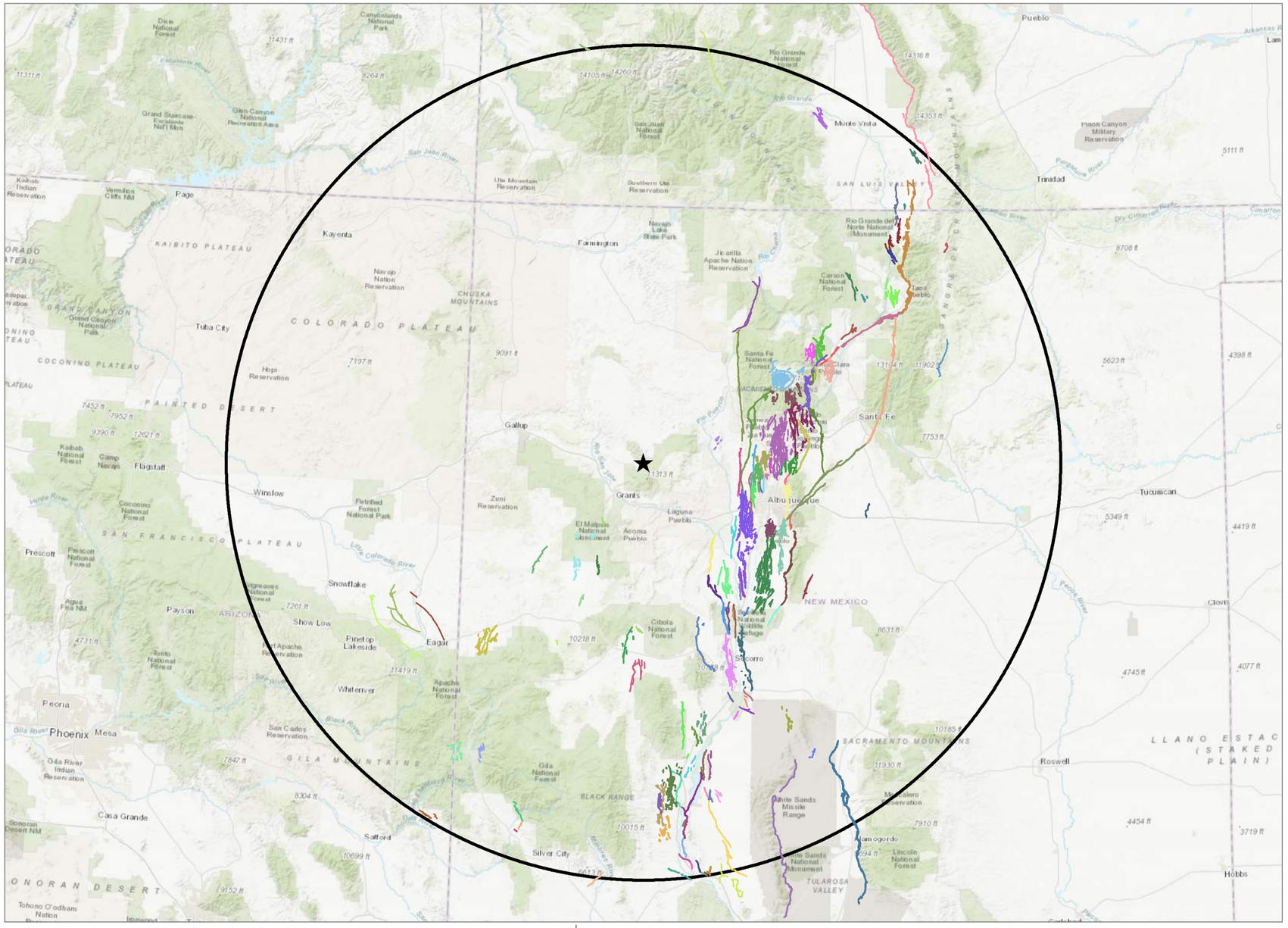
Project No: 111360

October 2025

Engineering Analytics, Inc.

FIGURE 3-2
HISTORIC EARTHQUAKES WITH MAGNITUDE GREATER THAN 2.4 WITHIN 100 KILOMETERS OF THE FACILITY
SEISMIC HAZARD ANALYSIS
MT TAYLOR MINE
CIBOLA COUNTY, NEW MEXICO



LEGEND

★ Mt Taylor Mine

Quaternary Faults

300 Kilometers

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Project No. 111360

October 2025

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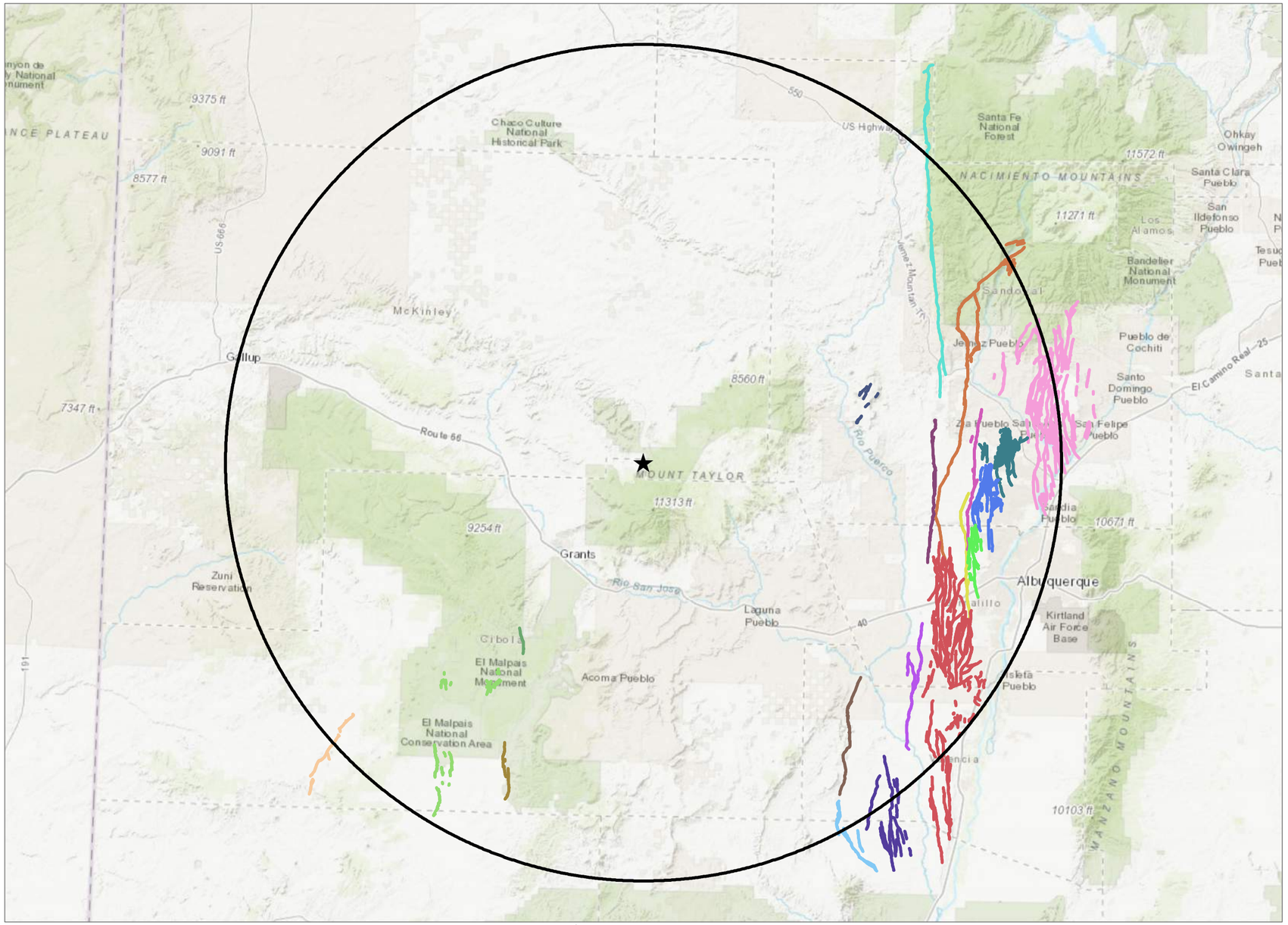
FIGURE 4-1
FAULTS WITH QUATERNARY DISPLACEMENT WITHIN 300 KILOMETERS OF THE FACILITY
SEISMIC HAZARD ANALYSIS
MT TAYLOR MINE
CIBOLA COUNTY, NEW MEXICO



LEGEND

- Mt Taylor Mine
- 100 Kilometers

Fault Name

- Cat Mesa fault
- Cebollita Mesa fault
- Continental Divide fault
- County Dump fault
- Coyote Springs fault
- Intrabasin faults on the Llano de Albuquerque
- Jemez-San Ysidro fault
- Mesa Prieta faults
- Nacimiento fault
- San Felipe fault zone
- Sand Hill fault zone
- Santa Fe fault
- Zia fault
- unnamed fault of Bonita Canyon
- unnamed faults near Albuquerque Volcanoes
- unnamed faults near Picuda Peak
- unnamed faults near Star Heights
- unnamed faults of El Malpais lava field
- unnamed intrabasin faults west of the Rio Puerco

Note: Fault characteristics provided in Appendix B

P:\111360 Mt. Taylor Hydrologic Support\2.0_EA Technical Info\2.8 Disposal Cell Expansion\2.8.11 Seismic Hazard Analysis\GIS\Figures\Fig 4-2 Quaternary Faults 100km.mxd Date Saved: October, 10, 2025

Project No. 111360

October 2025

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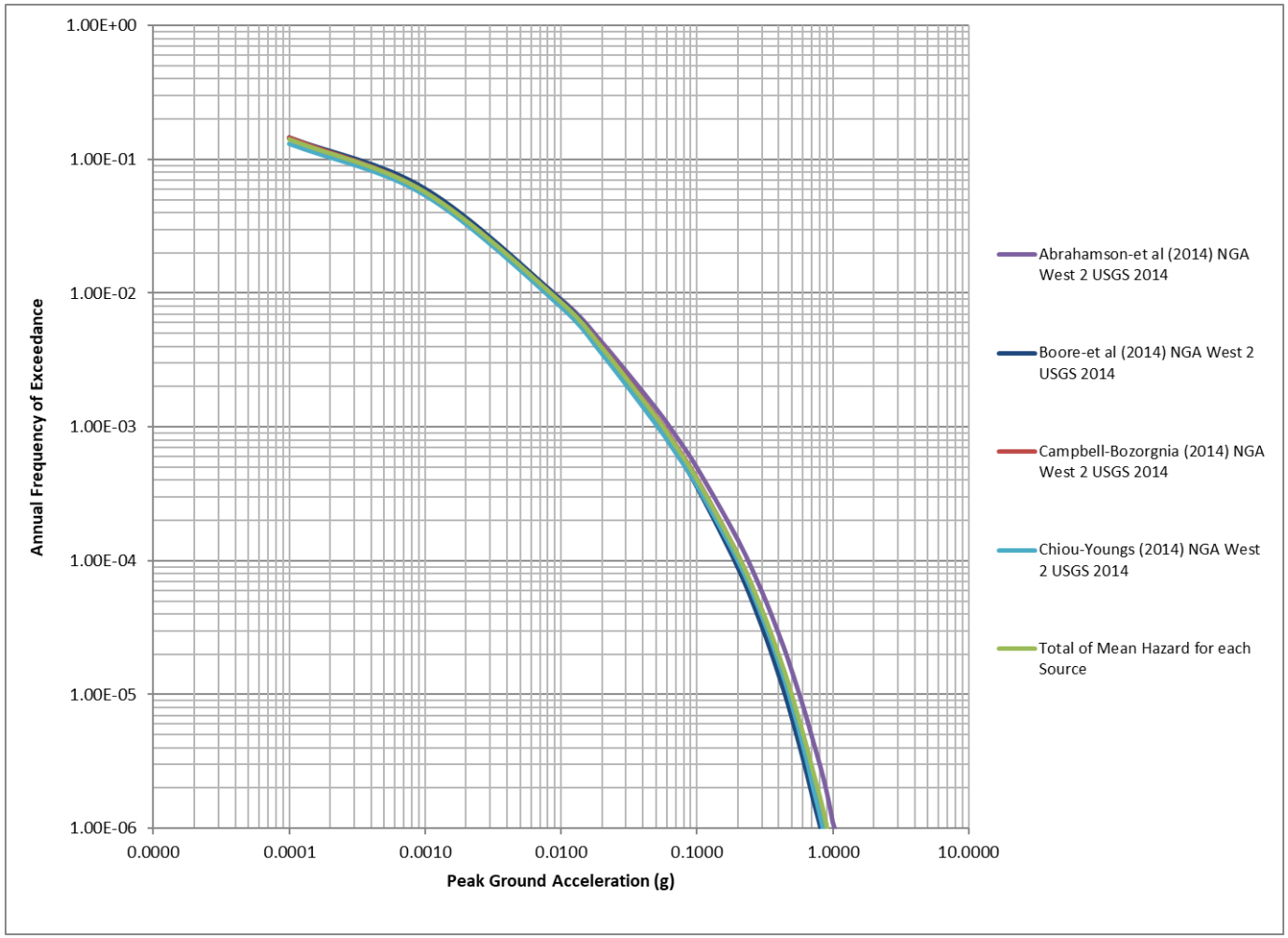
FIGURE 4-2
FAULTS WITH QUATERNARY DISPLACEMENT THAT MEET NRC MINIMUM CRITERIA WITHIN 100 KILOMETERS OF THE FACILITY
SEISMIC HAZARD ANALYSIS
MT TAYLOR MINE
CIBOLA COUNTY, NEW MEXICO



Project No. 111360

October 2025

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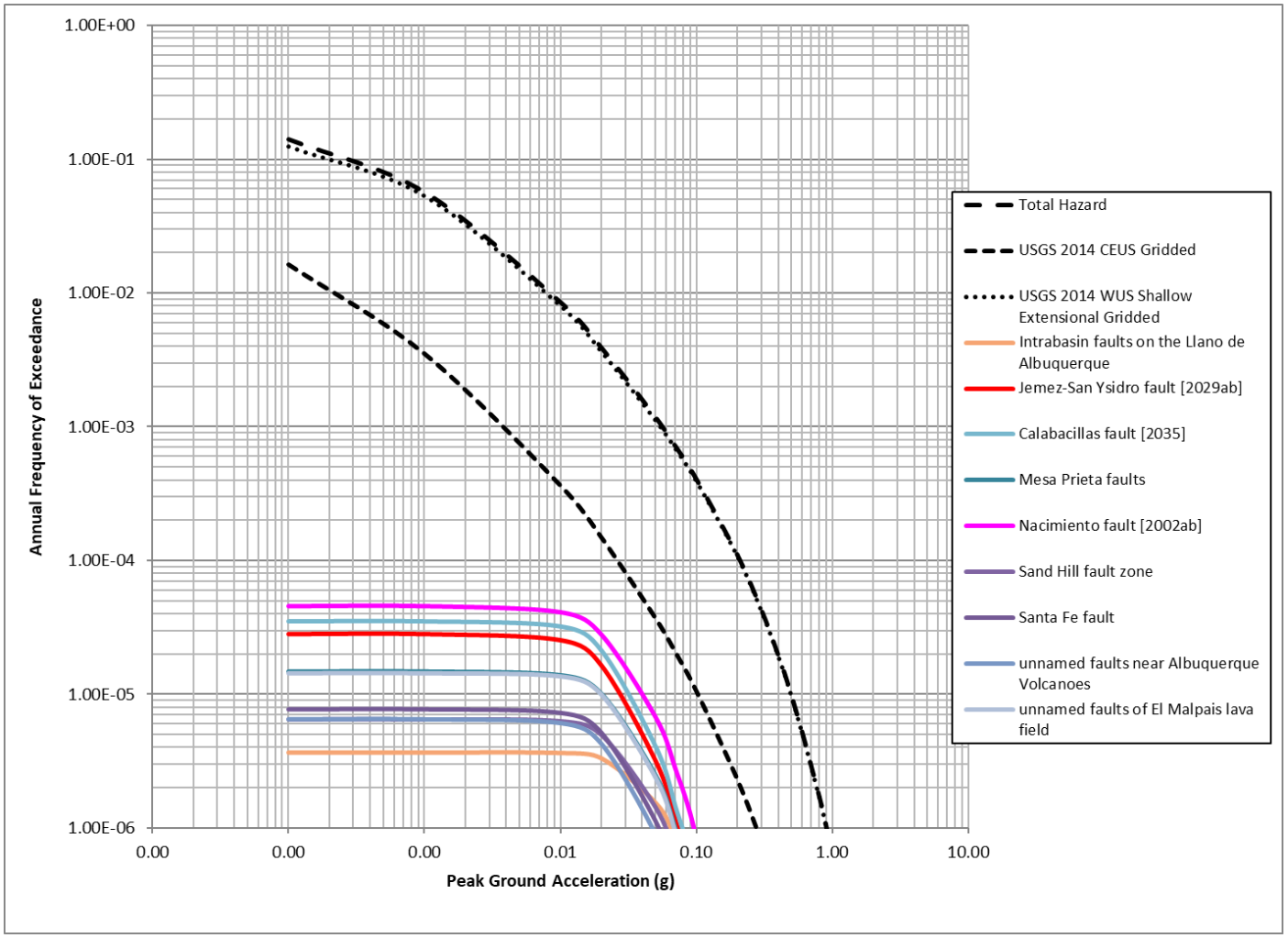
FIGURE 4-3
TOTAL SEISMIC HAZARD CURVE
SEISMIC HAZARD ANALYSIS
MT TAYLOR MINE
CIBOLA COUNTY, NEW MEXICO



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October 2025

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FIGURE 4-4
SOURCE CONTRIBUTION TO TOTAL SEISMIC HAZARD
SEISMIC HAZARD ANALYSIS
MT TAYLOR MINE
CIBOLA COUNTY, NEW MEXICO

APPENDIX A
EARTHQUAKE EVENTS NEAR THE FACILITY

APPENDIX A.1
EARTHQUAKE EVENTS WITH MAGNITUDE GREATER THAN OR EQUAL TO 4.0 OCCURRING WITHIN 300 KILOMETERS OF THE FACILITY

Appendix A.1 Earthquake Events with Magnitude Greater than or equal to 4.0 occurring within 300 kilometers of Mt Taylor

Catalog: Western United States (WUS) Magnitude greater than or equal to 4.0

Figure 3-2 ID	Magnitude (Mw)	Longitude (degree, west)	Latitude (degree, north)	Depth (km)	Year	Month	Day	Hour	Minute	Second
0	5.2	-106.6	34.7	0	1893	9	7	0	0	0
1	5.8	-107.14	34.27	0	1906	7	12	12	15	0
2	5.9	-107.09	33.99	0	1906	7	16	19	0	0
3	5.8	-106.87	33.82	0	1906	11	15	12	15	0
4	4.7	-106.01	35.41	0	1918	5	28	11	30	0
5	5	-106.6	35.1	0	1930	12	3	21	36	0
6	5	-106.6	35.1	0	1931	2	5	4	48	0
7	5	-106.8	34.5	0	1935	2	21	1	25	0
8	5	-106.8	34.7	0	1935	12	16	18	0	0
9	5	-106.8	34.7	0	1935	12	20	10	30	0
10	4.1	-108.95	32.91	0	1938	9	17	17	20	0
11	4.9	-108.5	33.3	0	1938	9	17	17	20	17
12	4.3	-108.5	33.3	0	1938	11	2	8	59	58
13	4.6	-108.5	33.3	0	1938	11	27	0	12	39
14	5.5	-109	33	0	1939	2	26	23	27	0
15	4.6	-108.5	33.3	0	1939	6	4	1	19	10

APPENDIX A.2
EARTHQUAKE EVENTS WITH MAGNITUDE GREATER THAN OR EQUAL TO 2.4 OCCURRING WITHIN 100 KILOMETERS OF THE FACILITY

Appendix A.2 Earthquake Events with Magnitude Greater than or equal to 2.4 occurring within 100 kilometers of Mt Taylor

Catalog: Western United States (WUS) Magnitude greater than or equal to 2.4

Figure 3-2 ID	Magnitude (Mw)	Longitude (degree, west)	Latitude (degree, north)	Depth (km)	Year	Month	Day	Hour	Minute	Second
0	5	-106.6	35.1	0	1930	12	3	21	36	0
1	5	-106.6	35.1	0	1931	2	5	4	48	0
2	4.5	-106.61	35.1	0	1970	11	28	7	40	12
3	3.5	-106.6	35.1	0	1971	1	4	7	39	7
4	4.7	-106.6	35.1	0	1971	1	4	7	39	7
5	4.08	-107.739	35.258	18	1973	12	24	2	20	15
6	3.4	-107.16	34.55	0	1975	3	7	17	36	9
7	4.68	-108.341	35.844	25	1976	1	5	6	23	33
8	4.28	-108.286	35.915	22	1977	3	5	3	0	55
9	2.18	-107.9	35.27	0	1981	8	14	2	6	57
10	2.68	-107.51	35.105	5	2004	11	24	10	16	38
11	3.44	-107.9	34.48	5	2009	9	23	13	3	14
12	3.5	-107.405	35.235	5	2016	10	20	13	28	2
13	2.48	-107.924	35.228	5	2019	8	10	4	16	45
14	2.78	-108.377	35.956	5	2021	7	4	2	18	36

Catalog: National Earthquake Information Center (NEIC) Magnitude greater than or equal to 2.4

Figure 3-2 ID	Magnitude	Longitude (degree, west)	Latitude (degree, north)	Depth (km)	Year	Month	Day	Hour	Minute	Second	Magnitude Type
0	2.6	-108.026	34.7261	7.989	2025	5	8	10	59	54	ml
1	3.2	-106.7918	35.1777	5.000	2024	9	10	15	36	1	ml
2	3.5	-106.7783	35.2227	6.244	2024	9	10	14	11	46	ml

APPENDIX B
FAULTS WITH QUATERNARY DISPLACEMENT NEAR THE FACILITY

APPENDIX B.1
LIST OF FAULTS WITHIN 100 KILOMETERS OF THE FACILITY THAT MEET NRC MINIMUM CRITERIA

Appendix B.1 List of Faults within 100 Kilometers of the Site

Name of Faults	ID Number	Age of Most Recent Prehistoric Deformation (ya)[1]	Slip-rate (mm/yr)	Fault Length (Km)	Fault Type	Distance from site to surface trace of fault (km)
Cat Mesa fault	2122	<750,000	<0.2	20	Normal	75.9
Cebollita Mesa fault	2140	<15,000	<0.2	13	Normal	74.8
Continental Divide fault	2145	<1,600,000	<0.2	17	Normal	91.8
County Dump fault	2038	<130,000	<0.2	35	Normal	76.5
Coyote Springs fault	2114	<15,000	<0.2	17	Normal	93.4
Intrabasin faults on the Llano de Albuquerque	2121	<750,000	<0.2	101	Normal	66.7
Jemez-San Ysidro fault (Jemez section)	2029a	<1,600,000	<0.2	28	Normal	77.3
Jemez-San Ysidro fault (San Ysidro section)	2029b	<750,000	<0.2	34	Normal	77.3
Jemez-San Ysidro fault (Calabacillas section)	2029c	<15,000	<0.2	34	Normal	70.5
Mesa Prieta faults	1985	<1,600,000	<0.2	12	Normal	47.1
Nacimiento fault (northern section)	2002a	<1,600,000	<0.2	36	Normal	72.3
Nacimiento fault (southern section)	2002b	<750,000	<0.2	45	Normal	72.3
San Felipe fault zone (Santa Ana section)	2030a	<1,600,000	<0.2	44	Normal	93.2
San Felipe fault zone (Algodones section)	2030b	<1,600,000	<0.2	45	Normal	93.3
Sand Hill fault zone	2039	<1,600,000	<0.2	36	Normal	62.2
Santa Fe fault	2123	<1,600,000	<0.2	30	Normal	67.8
unnamed fault of Bonita Canyon	2144	<1,600,000	<0.2	9	Normal	49.3
unnamed faults near Albuquerque Volcanoes	2049	<750,000	<0.2	34	Normal	73.6
unnamed faults near Picuda Peak	2041	<1,600,000	<0.2	16	Normal	78.8
unnamed faults near Star Heights	2048	<750,000	<0.2	18	Normal	78.6
unnamed faults of El Malpais lava field	2146	<1,600,000	<0.2	26	Normal	60.5
unnamed intrabasin faults west of the Rio Puerco	2115	<750,000	<0.2	22	Normal	87.3
Zia fault	2046	<15,000	<0.2	32	Normal	73.7

[1]ya = years ago

APPENDIX B.2
USGS DESCRIPTION OF FAULTS MEETING THE NRC MINIMUM CRITERIA

U.S. Geological Survey - Earthquake Hazards Program

Quaternary Fault and Fold Database of the United States

As of January 12, 2017, the USGS maintains a limited number of metadata fields that characterize the Quaternary faults and folds of the United States. For the most up-to-date information, please refer to the interactive fault map.

Cat Mesa fault (Class A) No. 2122

Last Review Date: 2016-04-11

Compiled in cooperation with the New Mexico Bureau of Geology & Mineral Resources

citation for this record: **Personius, S.F., and Jochems, A.P., compilers, 2016, Fault number 2122, Cat Mesa fault, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults, accessed 08/27/2025 11:16 AM.**

Synopsis	The active trace of the Cat Mesa fault extends from south of New Mexico State Highway 6 (west of Los Lunas) northward along the eastern edge of Cat Mesa. At about its midpoint, the Cat Mesa fault splits into two north-trending splays that offset Upper Santa Fe Group sediment and die out near the western edge of the Llano de Albuquerque. The Cat Mesa fault(s) offsets and exposes the late Pliocene Cat Mesa basalt flow along the eastern edge of Cat Mesa. The Cat Mesa basalt flow is interbedded with the upper part of the upper Santa Fe Group, the Ceja Formation, 6–10 m below the Llano de Albuquerque, and is offset about 30 m near the middle of the fault. Early and middle Pleistocene surficial deposits are offset about 17 m (net) across the two fault strands near the northern end of the fault zone. The Cat Mesa fault lies to the west of the late Pleistocene basalts of the Cat Hills, but the Cat Mesa basalt flow may have originated from the volcanic fault and dike system that fed the younger Cat Hills basalt field.
Name comments	The Cat Mesa fault was originally mapped by Kelley (1954 #1222; 1977 #1106) and in more detail by Kelley and Kudo (1978 #1307). Minor modifications were made by Machette (1978 #1223; 1982 #1401), Machette and

	McGimsey (1983 #1024), Maldonado and Atencio (1998 #1778), and Maldonado (2003 #7453). **Fault ID:** Fault no. 3 of Machette (1982 #1401), fault no. 2 of Machette and McGimsey (1983 #1024).
County(s) and State(s)	VALENCIA COUNTY, NEW MEXICO BERNALILLO COUNTY, NEW MEXICO
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:24,000 scale. *Comments:* Fault traces from 1:24,000-scale geologic mapping in the Dalies NW and Rio Puerco 7.5-minute quadrangles (Maldonado and Atencio, 1998 #1778; Maldonado, 2003 #7453) combined with accurate placement of exposed traces using photogrammetric methods. <P>
Geologic setting	The Cat Mesa fault is an intrabasin fault near the western margin of the central Albuquerque-Belen basin. The Cat Mesa fault lies to the west of and does not offset the late Pleistocene basalts of the Cat Hills, but Kelley and Kudo (1978 #1307, fig. 20) inferred that the Cat Mesa basalt flow underlies and probably originated from the fault and dike system that fed the younger Cat Hills basalt field. Thus, the fault may be related to volcanic activity in the vicinity of the Cat Hills volcanic field. <P>
Length (km)	20 km.
Average strike	N0°E
Sense of movement	Normal
Dip Direction	E; W *Comments:* Maldonado and Atencio (1998 #1778) measured a dip of 80° toward the east-northeast where the Cat Mesa fault cuts sediment of the Ceja Formation. <P>

Paleoseismology studies	<P>
Geomorphic expression	The Cat Mesa fault is well expressed where the resistant Cat Mesa basalt flow is exposed in the fault zone. Elsewhere, the fault strands are marked by broad swales on the largely sand-covered Llano de Albuquerque. Machette and McGimsey (1983 #1024) estimated that the Cat Mesa basalt flow is offset about 30 m near the middle of the fault. They also estimated a total of 17 m of offset in early and middle Pleistocene deposits across the two fault strands near the northern end of the fault zone. <P>
Age of faulted surficial deposits	The Cat Mesa fault offsets the Cat Mesa basalt flow, dated at 3.0±0.1 Ma by ⁴⁰Ar/³⁹Ar (Maldonado and Atencio, 1998 #1778). The Cat Mesa basalt flow is interbedded with the upper part of the upper Santa Fe Group, the Pliocene-early Pleistocene Ceja Formation (Machette, 1978 #1223; Maldonado and Atencio, 1998 #1778; Maldonado, 2003 #7453), 6–10 m below the Llano de Albuquerque (Kelley and Kudo, 1978 #1307). The two fault strands near the northern end of the fault zone offset the early Pleistocene (?) Llano de Albuquerque (Machette and McGimsey, 1983 #1024).
Historic earthquake	
Most recent prehistoric deformation	middle and late Quaternary (<750 ka) *Comments:* Machette and McGimsey (1983 #1024) documented offset of the early Pleistocene (?) Llano de Albuquerque. They also speculated that if the Cat Mesa fault is related to structures controlling the basalts of the Cat Hills volcanic field, then there may be late Pleistocene movement on the Cat Mesa fault. <P>
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* No detailed studies of fault offset or timing are available; low slip-rate category assigned based on evidence that the 3 Ma Cat Mesa basalt is offset about 30 m (Machette and McGimsey, 1983 #1024; Personius and others, 1999 #6930).

Date and Compiler(s)	2016 Stephen F. Personius, U.S. Geological Survey Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources
References	#1222 Kelley, V.C., 1954, Tectonic map of a part of the upper Rio Grande area, New Mexico: U.S. Geological Survey Oil and Gas Investigations Map OM-157, 1 sheet, scale 1:190,080. #1106 Kelley, V.C., 1977, Geology of Albuquerque basin, New Mexico: New Mexico Bureau of Mines and Mineral Resources Memoir 33, 60 p., 2 pls. #1307 Kelley, V.C., and Kudo, A.M., 1978, Volcanoes and related basalts of Albuquerque basin, New Mexico: New Mexico Bureau of Mines and Mineral Resources Circular 156, 29 p., 2 pls. #1401 Machette, M.N., 1982, Quaternary and Pliocene faults in the La Jencia and southern part of the Albuquerque-Belen basins, New Mexico—Evidence of fault history from fault-scarp morphology and Quaternary geology, in Grambling, J.A., and Wells, S.G., eds., Albuquerque Country II: New Mexico Geological Society, 33rd Field Conference, November 4-6, 1982, Guidebook, p. 161-169. #1024 Machette, M.N., and McGimsey, R.G., 1983, Map of Quaternary and Pliocene faults in the Socorro and western part of the Fort Sumner 1° x 2° quadrangles, central New Mexico: U.S. Geological Survey Miscellaneous Field Studies Map MF-1465-A, 12 p. pamphlet, 1 sheet, scale 1:250,000. #1223 Machette, M.N., compiler, 1978, Preliminary geologic map of the Socorro 1° by 2° quadrangle, central New Mexico: U.S. Geological Survey Open-File Report 78-607, 1 sheet, scale 1:250,000. #7453 Maldonado, F., 2003, Geologic map of the Rio Puerco quadrangle, Bernalillo and Valencia Counties, New Mexico: U.S. Geological Survey Miscellaneous Field Studies Map MF-2397, scale 1:24,000. #1778 Maldonado, F., and Atencio, A., 1998, Preliminary geologic map of the Dalies northwest quadrangle, Bernalillo County, New Mexico: U.S. Geological Survey Open-File Report 97-741, 1 sheet, scale 1:24000. #6930 Personius, S.F., Machette, M.N., and Kelson, K.I., 1999, Quaternary faults in the Albuquerque area—An update, in Pazzaglia, F.J., and Lucas, S.G., eds., Albuquerque geology: New Mexico Geological Society 50th Annual Field Conference, Guidebook, September 22–25, p. 189–200.

U.S. Geological Survey - Earthquake Hazards Program

Quaternary Fault and Fold Database of the United States

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Cebollita Mesa fault (Class A) No. 2140

Last Review Date: 2016-04-22

Compiled in cooperation with the New Mexico Bureau of Geology & Mineral Resources

citation for this record: **Machette, M.N., and Jochems, A.P., compilers, 2016, Fault number 2140, Cebollita Mesa fault, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults, accessed 08/27/2025 11:18 AM.**

Synopsis	The Cebollita Mesa fault has seemingly young (<15 ka) movement, which is anomalous in the sense that there are few mapped Quaternary faults in this region, and in the Colorado Plateaus Province in general. However, field studies have shown that the fault has been recurrently active in the late Quaternary. Single-event scarps on the fault are about 2–2.5 m high, whereas older, late (?) Pleistocene, alluvium has compound (multiple-event) scarps as much as 8 m high. No dating has been conducted to refine the timing of last movement, slip rate, or recurrence interval for this down-to-the-west normal fault.
Name comments	This Quaternary fault was named by Levish and others (1992 #1715) for Cebollita Mesa, a Pliocene basalt-covered mesa located about 8 km east and northeast of the fault. The fault was first shown by Machette (1978 #1223) on the geologic map of the Socorro 1° x 2° quadrangle, but was overlooked by Machette and McGimsey (1983 #1024) in their later fault compilation. Maxwell (1986 #1720) made the first detailed geologic map that showed the fault, whereas Levish (1992 #1715) characterized its late Quaternary history as part of a dam hazards study. The fault is mapped for about 13 km across the toe slope of dissected Cretaceous bedrock hills. It extends from the north side

	of Bonine Canyon on the south, north past Head Windmill and New Mexico State Highway 117. About 1 km north of the highway, the fault disappears beneath a young basalt flow.
County(s) and State(s)	CIBOLA COUNTY, NEW MEXICO
Physiographic province(s)	COLORADO PLATEAUS
Reliability of location	Good Compiled at 1:24,000 scale. *Comments:* Trace from approximately 1:100,000-scale geologic map of Levish and others (1992 #1715) and 1:62,500-scale geologic map of Maxwell (1986 #1720) combined with accurate placement using photogrammetric methods. <P>
Geologic setting	The fault offsets the toe slope of dissected Cretaceous bedrock hills west of Cebollita Mesa. To the north, the fault disappears beneath a late Holocene basalt flow, but may continue further as suggested by as much as 300 m of down-to-the-west displacement on two normal faults imaged by shallow seismic-reflection profiling (Kelly and Reynolds, 1989 #1738). The Cebollita Mesa fault is subparallel to (but west of) similarly oriented normal faults that Maxwell (1986 #1720) maps as cutting Pliocene basalts of Cebollita Mesa. <P>
Length (km)	13 km.
Average strike	N4°E
Sense of movement	Normal *Comments:* As mapped by Maxwell (1986 #1720) and seen in natural exposures by Levish and others (1992 #1715). <P>
Dip Direction	W

	Comments: Although not mentioned by Levish and others (1992 #1715), the faults exposed in natural exposure have high-angle (near vertical) dips near the surface (Dan Levish, oral commun., 1988). <P>
Paleoseismology studies	<P>
Geomorphic expression	The fault forms a north-trending, left-stepping series of three en echelon scarps. Levish and others (1992 #1715) measured four scarp profiles: one (P-1) on the northern strand and three (P-2 to P-4) on the southern half of the southern strand. These profiles document single-event scarps of about 2.2–2.5 m height (1.9–2.0 m surface offset) and compound (multiple-event) scarps of about 6.0–8.5 m height (5.2–7.5 m surface offset). All four of the profiled scarps have modest maximum scarp-slope angles of 10–16°, but they are formed on relatively fine-grained, easily eroded sediment. Analysis of this data by Levish and others (1992 #1715) suggested that the younger scarps are late Pleistocene or Holocene in age, whereas as the larger scarps have morphology indicative of late Pleistocene movement. The scarp data suggests that the morphometric data from the younger scarps (P-3 and P-4) are similar to the Drum Mountains scarps (early Holocene) and the Bonneville shoreline (~17.5–18 ka). Conversely, the compound scarps have nearly identical maximum scarp-slope angles as the single-event scarps, suggesting that the steepness of all the scarps is controlled by the younger (<15 ka) event. <P>
Age of faulted surficial deposits	Maxwell (1986 #1720) mapped the faults as offsetting fine-grained Quaternary alluvium derived from Cretaceous sedimentary rock to the east. The smaller scarps are formed on alluvium of the lowest fluvial terrace, whereas the compound scarps are on alluvium that forms the next highest fluvial terrace. These deposits are likely to be latest or late Pleistocene in age (<130 ka). Levish and others (1992 #1715) reported that the scarps are locally muted (buried) by eolian sand. No studies or detailed mapping have been conducted to refine the age of the Quaternary sediment that are offset by the fault. To the north of New Mexico State Highway 117, the fault disappears beneath the McCartys basalt flow, which is estimated to be of late Holocene age, 2.4–3.9 ka (Laughlin and others, 1994 #7439; Maxwell, 1986 # 1720; Dunbar and Phillips, 2004 #7424).
Historic earthquake	
Most recent prehistoric deformation	latest Quaternary (<15 ka) *Comments:* Timing of most recent surface faulting based on scarp-morphology data (Levish and others, 1992

	#1715) that is consistent with the continuity of the scarps, and expression on the lowest of the fluvial terraces of local streams that cross the scarps. <P>
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* It appears that the slip rate probably falls in the less than 0.2 mm/yr category because the 1.9–2.0 m of offset from the most recent event was the result of strain accumulation over 15–120 k.y.
Date and Compiler(s)	2016 Michael N. Machette, U.S. Geological Survey, Retired Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources

References	#7424 Dunbar, N.W., and Phillips, F.M., 2004, Cosmogenic ³⁶Cl ages of lava flows in the Zuni-Bandera volcanic field, north-central New Mexico, U.S.A., in Cather, S.M., McIntosh, W.C., and Kelley, S.A., eds., Tectonics, geochronology, and volcanism in the Southern Rocky Mountains and Rio Grande Rift: New Mexico Bureau of Geology and Mineral Resources Bulletin 160, p. 309–317. #1738 Kelly, T.E., and Reynolds, C.B., 1989, Structural geology of the Malpais Valley, San Rafael, New Mexico, in Anderson, O.J., Lucas, S.G., Love, D.W., and Cather, S.M., eds., Southern Colorado Plateau: New Mexico Geological Society, 40th Field Conference, September 28-October 1, 1989, Guidebook, p. 119-121. #7439 Laughlin, A.W., Poths, J., Healey, H.A., Reneau, S., and WoldeGabriel, G., 1994, Dating of Quaternary basalts using the cosmogenic ³He and ¹⁴C methods with implications for excess ⁴⁰Ar: Geology, v. 22, p. 135–138. #1715 Levish, D.R., Vetter, U.R., Ake, J.P., and Piety, L.A., 1992, Seismotectonic study for Black Rock Dam, Bureau of Indian Affairs, Pueblo of Zuni, New Mexico: Bureau of Reclamation Seismotectonic Report 92-3, 62 p. #1024 Machette, M.N., and McGimsey, R.G., 1983, Map of Quaternary and Pliocene faults in the Socorro and western part of the Fort Sumner 1° x 2° quadrangles, central New Mexico: U.S. Geological Survey Miscellaneous Field Studies Map MF-1465-A, 12 p. pamphlet, 1 sheet, scale 1:250,000. #1223 Machette, M.N., compiler, 1978, Preliminary geologic map of the Socorro 1° by 2° quadrangle, central New Mexico: U.S. Geological Survey Open-File Report 78-607, 1 sheet, scale 1:250,000. #1720 Maxwell, C.H., 1986, Geologic map of El Malpais Lava Field and surrounding areas, Cibola County, New Mexico: U.S. Geological Survey Miscellaneous Investigations Map I-1595, 1 sheet, scale 1:62,500.

U.S. Geological Survey - Earthquake Hazards Program

Quaternary Fault and Fold Database of the United States

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Continental Divide fault (Class B) No. 2145

Last Review Date: 2016-04-22

Compiled in cooperation with the New Mexico Bureau of Geology & Mineral Resources

citation for this record: **Machette, M.N., and Jochems, A.P., compilers, 2016, Fault number 2145, Continental Divide fault, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults, accessed 08/27/2025 11:19 AM.**

Synopsis	Little is known about this northeast-trending suspect fault; it reportedly forms a low but prominent scarp on Quaternary basalts of the North Plains lava field. The trend of the feature is parallel to a string of eruptive basalt cones that occupy the center of the field, which suggests that movement on the fault may be controlled by volcanism and deeper-seated crustal structures. No detailed studies have been conducted to determine the timing of movement or amount of offset of the basalt. Some authors have suggested that the scarp may be the result of volcanic processes, but its association with a mapped bedrock fault supports an interpretation of a tectonic origin.
Name comments	This suspect fault extends along the Continental Divide from about 3 km south of New Mexico State Highway 36 to 5 km north of Peñasco Lakes. Although unnamed by Anderson (1986 #1281), who first mapped it, Levish and others (1992 #1715) named it for its near coincidence with the Continental Divide.

County(s) and State(s)	CIBOLA COUNTY, NEW MEXICO
Physiographic province(s)	COLORADO PLATEAUS
Reliability of location	Good Compiled at 1:24,000 scale. *Comments:* Trace from 1:100,000-scale geologic map of the Fence Lake quadrangle compiled by Anderson (1986 #1281) and 1:24,000-scale geologic map of the Techado 7.5' quadrangle (Arkell, 1984 #7422) combined with accurate placement using photogrammetric methods. <P>
Geologic setting	This northeast-trending feature appears to offset the southern part of the North Plains lava field and is parallel to eruptive basalt cones that occupy the center of the field. These cones mark the southwestern trace of the Jemez lineament, which is one of many northeast-trending crustal structures that control the location of young volcanism within and outside of the northern Rio Grande rift in New Mexico. The southern end of the feature is mapped as cutting the Miocene (?) Fence Lake Formation (Anderson, 1986 #1281). If this association is not a spatial coincidence, it would support a tectonic origin. <P>
Length (km)	17 km.
Average strike	N20°E
Sense of movement	Normal *Comments:* As reported by Anderson (1986 #1281). <P>
Dip Direction	SE *Comments:* Although no dips are reported, the general direction is inferred from a southeast-facing escarpment. <P>

Paleoseismology studies	<P>
Geomorphic expression	Fault forms a scarp of 2–3 m height (Orin Anderson, written commun., 1997) on basalts of the North Plains lava field. Levish and others (1992 #1715) argued that the scalloped appearance of the escarpment suggests it is a volcanic flow margin and not a fault. <P>
Age of faulted surficial deposits	This feature appears to offset Quaternary basalts according to Anderson (1986 #1281). The Jaralosa Draw lobe (flow), which extends west from the North Plains lava field and has also been called the Fence Lake flow, has a K-Ar age of 1.38±0.29 Ma (Laughlin and West, 1976 #7420). Other basalt flows in the North Plains field have returned Ar-Ar ages of approximately 0.6-0.7 Ma (Laughlin and others, 1993 #7421), consistent with the seemingly young appearance of cinder cones such as at Chimney Hill.
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* Timing poorly controlled. Based on presence of scarp on early to perhaps middle Quaternary basalt. <P>
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Low slip rate estimated from presence of scarp of 2–3 m height (Orin Anderson, written commun., 1997) on early to perhaps middle Quaternary basalt.
Date and Compiler(s)	2016 Michael N. Machette, U.S. Geological Survey, Retired Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources

References	#1281 Anderson, O.J., compiler, 1986, Geologic map of Fence Lake, New Mexico 1:100,000 metric sheet: New Mexico Bureau of Mines and Mineral Resources Open-File Report 220, 4 p. pamphlet, 4 sheets, scale 1:100,000. #7422 Arkell, B., 1984, Geology and coal resources of the Techado quadrangle, Catron and Cibola Counties, New Mexico: New Mexico Bureau of Mines and Mineral Resources Open-File Report 221, 21 p., 2 pl., scale 1:24,000. #7420 Laughlin, A.W., and West, F.G., 1976, The Zuni Mountains, New Mexico, as a potential dry hot rock geothermal energy site: U.S. Energy Research and Development Administration, Los Alamos Scientific Laboratories Informal Report LA-3197-MS, 13 p. #7421 Laughlin, A.W., Perry, F.V., Damon, P.E., Shafiqullah, M., WoldeGabriel, G., McIntosh, W., Harrington, C.D., Wells, S.G., and Drakos, P.G., 1993, Geochronology of Mount Taylor, Cebollita Mesa, and Zuni-Bandera volcanic fields, Cibola County, New Mexico: New Mexico Geology, v. 16, no. 4, p. 81–92. #1715 Levish, D.R., Vetter, U.R., Ake, J.P., and Piety, L.A., 1992, Seismotectonic study for Black Rock Dam, Bureau of Indian Affairs, Pueblo of Zuni, New Mexico: Bureau of Reclamation Seismotectonic Report 92-3, 62 p.

U.S. Geological Survey - Earthquake Hazards Program

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County Dump fault (Class A) No. 2038

Last Review Date: 2015-02-19

Compiled in cooperation with the New Mexico Bureau of Geology & Mineral Resources

citation for this record: **Haller, K.M., Personius, S.F., Olig, S.S., and McCalpin, J.P., compilers, 2015, Fault number 2038, County Dump fault, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults, accessed 08/27/2025 11:19 AM.**

Synopsis	The County Dump fault is a down-to-the-east, north-trending normal fault located in the northern part of the Albuquerque-Belen basin. The fault offsets deposits of the upper Santa Fe Group, well-developed calcic soils of the Llano de Albuquerque, and about 155-ka basalt of the Albuquerque Volcanoes volcanic field. Repeated surface-faulting in the past 1 m.y. is expressed as a subdued, 24-m-high, up to 800-m-wide fault scarp across the Llano de Albuquerque and was first recognized during early geologic work in the region. An exposure of the fault at the now abandoned Bernalillo County landfill (dump) has been described in two detailed studies addressing the history of surface rupture. The most recent study used thermoluminescence (TL) ages and detailed soils analyses to constrain the time of the most recent surface-faulting event on the County Dump fault at 24 ka.
Name comments	The County Dump fault was originally mapped and named by Lambert (1968 #1396) for a down-to-the-east normal fault exposed at the now abandoned Bernalillo County landfill site, located about 1.5 km north of Interstate 40. Kelley (1977 #1106) renamed this structure the Nine Mile fault and included a down-to-the west fault south of Interstate 40 that was originally mapped by Lambert (1968 #1396). Machette (1982 #1401) used the name

	"Bernalillo County Dump fault" for this structure, but most workers since Kelley (1977 #1106) have used either "County Dump fault" (Machette, 1978 #1402; Hawley and Haase, 1992 #1304) or "Nine Mile fault zone" (Hawley and Whitworth, 1996 #1303) when referring to this structure. Cather and others (1997 #1763) called the northern end of the County Dump fault the "Centipede fault" in the Sky Village SE quadrangle. Herein we use the name "County Dump fault" as originally named by Lambert (1968 #1396) for the entire fault zone, because the "Nine mile fault" as mapped by Kelley (1977 #1106) and Hawley and Whitworth (1996 #1303) contains faults with both down-to-the-east and down-to-the-west displacements. **Fault ID:** Fault no. 2 of Machette (1982 #1401), fault no. 1 of Machette and McGimsey (1983 #1024).
County(s) and State(s)	SANDOVAL COUNTY, NEW MEXICO BERNALILLO COUNTY, NEW MEXICO
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:100,000 scale. *Comments:* The trace of the County Dump fault is from Lambert (1968 #1396), Machette (1978 #1402), Cather and others (1997 #1763), air photo mapping by S.F. Personius (unpublished data, 1997), and high-resolution aeromagnetic data (U.S. Geological Survey and SIAL Geosciences Inc., 1997 #1722; Grauch and Millegan, 1998 #1721). <P>
Geologic setting	The County Dump fault is one of several north-trending intrabasin faults in the northern part of the Albuquerque-Belen basin. The fault also forms the western margin of a broad graben that confines some basalt flows of the Albuquerque Volcanoes volcanic field. The spatial association of the fault with the volcanic field may suggest a possible relationship with magmatic activity. <P>
Length (km)	35 km.
Average strike	N5°E

Sense of movement	Normal
Dip	75°–85° E. *Comments:* Dip measurements are from near-surface fault exposures at the abandoned Bernalillo County landfill site (Lambert, 1968 #1396; Machette, 1978 #1402; McCalpin, 1997 #1767). <P>
Paleoseismology studies	The fault is well exposed in the northwest corner of the now abandoned Bernallilo County landfill. Here, the exposed County Dump fault offsets sands and gravels assigned to the Upper Buff or Ceja members of the Santa Fe Formation (Bryan and McCann, 1937 #1288; Kelley, 1977 #1106), which are now included in the Sierra Ladrones Formation of the upper Santa Fe Group (Hawley and others, 1991 #1302). The upper part of these rocks may be early Pleistocene in age. The fault also cuts the Llano de Albuquerque, an extensive Pleistocene surface formed on the Santa Fe Group. <P> Site 2038-1. Results from an early study of the natural exposure suggest that buried soils on colluvial deposits as young as 20–120 ka were deposited in response to large offsets (Machette, 1978 #1402). <P> Site 2038-2. The exposure at Bernalillo County landfill was re-excavated to address why previous estimates of displacement were so large and whether artificial exposures of the section might better reveal small scarp-derived colluvial deposits resulting from smaller displacement events. Six backhoe trenches that exposed the hanging wall deposits to a depth of 19–21 m below the surface were excavated for this study (McCalpin, 1997 #1767; McCalpin and others, 2006 #693). Interpretation of the exposures suggest that perhaps as many as 14 earthquakes occurred on the County Dump fault since the abandonment of the Llano de Albuquerque at 1.8-0.8 Ma (Connell and others, 2013 #7235); the timing of surface ruptures were constrained by thermoluminescence (TL) ages and quantitative analysis of soil properties developed on colluvial deposits deposited adjacent to the County Dump fault. Based on a number of assumptions, the mean vertical displacement in the past 14 events at this location is 1.2±0.6 m; it is not known if mean displacement at this location is a representative average for the fault or not (McCalpin and others, 2006 #693). <P>
Geomorphic expression	The County Dump fault is discontinuously exposed in upper Santa Fe Group sediment along the eastern Llano de Albuquerque. A broad, sand-covered, 24-m-high fault scarp, which is 800 m wide with maximum scarp-slope angle of 3.5° (McCalpin and others, 2006 #6931), marks the trace of the fault where it crosses the Llano de Albuquerque north of the Bernalillo County landfill exposure. The scarp is asymmetrical; the upper (erosional) part between the fault and scarp crest comprises only 25 percent of total scarp width. This asymmetry is used to substantiate the

	interpretation that large amount of deposition has occurred on the hanging wall since active fluvial deposition on the Llano de Albuquerque ceased. Further north, the County Dump fault skirts the western margin of the Albuquerque Volcanoes volcanic field, and extends northward as a broad escarpment on upper Santa Fe Group sediment and eroded remnants of the Llano de Albuquerque. South of the Bernalillo County dump exposure, the fault is exposed in upper Santa Fe Group sediment before ending a few kilometers south of Interstate Highway 40. <P>
Age of faulted surficial deposits	At the surface, the County Dump fault is in sands and gravels assigned to the Upper Buff or Ceja members of the Santa Fe Formation (Bryan and McCann, 1937 #1288; Kelley, 1977 #1106), which are now included in the Sierra Ladrones Formation of the upper Santa Fe Group (Hawley and others, 1991 #1302). Fault scarps are on the Llano de Albuquerque (1.8 Ma based on 40Ar/39Ar dating, Connell and others, 2013 #7235), an extensive early Pleistocene surface formed at the top of the Santa Fe Group and basalts dated at about155 ka of the Albuquerque Volcanoes volcanic field (Geissman and others, 1990 #1297; Peate and others, 1996 #1411).
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) *Comments:* McCalpin and others (2006 #6931) report evidence of a possible 24-ka earthquake that only produced warping of near-surface sand deposits. In addition, thermoluminescence (TL) ages suggest that the additional surface-rupturing earthquakes occurred at 39 ka and 59 ka. Therefore, two and possibly three earthquakes have occurred in the late Quaternary. Machette (1978 #1402) suggested a similar time of 20 ka for the latest significant earthquake on the County Dump fault based on regional rate of pedogenic calcium carbonate accumulation. <P>
Recurrence interval	41 k.y. (<300 ka) *Comments:* McCalpin and others (2006 #6931) used thermoluminescence (TL) ages and quantitative soils analysis to estimate the timing of 14 earthquakes. Six thermoluminescence (TL) samples ranging from 4 ka (at the surface) to greater than 293 ka (8.3 m below the surface) constrain the age of the uppermost colluvial wedges; the age of older soils (8.3–17.3 m below the surface) was estimated based on accumulation rate of pedogenic calcium carbonate of 0.26 g CaCO³ per thousand years, based on data from the upper part of the section. Recurrence intervals range from 4 to 202 k.y. and average 40.8 k.y.; a better constrained average of 29.5±11 k.y. is

	indicated if the longest and shortest intervals are not considered. The three most recent faulting events can be reconstructed from relationships in the highest trench and yielded ages of about 24 ka (0.4 m vertical displacement), 40–45 ka (0.35 m vertical displacement), and 75–80 ka (< 3.5 m vertical displacement). The earlier investigation by Machette (1978 #1402) provided average recurrence intervals of 90–190 ka because fewer faulting events were identified.
Slip-rate category	Less than 0.2 mm/yr *Comments:* Low slip-rate category assigned based on vertical-displacement rates from trenching at site 2038-2 described in McCalpin and others (2006 #6931), who suggest the vertical-displacement rate has not been constant over the past 1.6 m.y. However, the long-term and short-term (from the past two earthquakes) vertical-displacement rates are similar. Vertical-displacement rate for the County Dump fault at the Bernalillo County landfill can be constrained by the 24 m of far-field surface offset and the estimated 1–1.6 Ma age of the Llano de Albuquerque, resulting in a possible range in vertical-displacement rate of 0.015–0.024 mm/yr (McCalpin and others, 2006 #6931). The vertical-displacement rate would be lower and better constrained if the age for the Llano based on Connell and others (2013 #7235) were considered. McCalpin and others (2006 #6931) present a similar short-term vertical rate of 0.018 mm/yr based on cumulative offset in the past two earthquakes of 0.75 m.
Date and Compiler(s)	2015 Kathleen M. Haller, U.S. Geological Survey Stephen F. Personius, U.S. Geological Survey Susan S. Olig, URS Corporation James P. McCalpin, GEO-HAZ Consulting, Inc.
References	#1288 Bryan, K., and McCann, F.T., 1937, The Ceja del Rio Puerco—A border feature of the Basin and Range province in New Mexico, Part I, Stratigraphy and structure: Journal of Geology, v. 45, p. 801-828. #1763 Cather, S.M., Connell, S.D., Heynekamp, M.R., and Goodwin, L.B., 1997, Geology of the Arroyo de las Calabacillas [Sky Village SE] 7.5-minute quadrangle, Sandoval County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Open-File Geologic Map 9, 8 p. pamphlet, 1 sheet, scale 1:24,000. #7235 Connell, S.D., Smith, G.A., Geissman, J.W., and McIntosh, W.C., 2013, Climatic controls on nonmarine depositional sequences in the Albuquerque Basin, Rio Grande rift, north-central New Mexico, in Hudson, M.R., and Grauch, V.J.S., eds., New perspectives on Rio Grande rift basins—From tectonics to groundwater: Geological Society of America Special Paper 494, p. 383–425, doi:10.1130/2013.2494(15) #1297 Geissman, J.W., Brown, L., Turrin, B.D., McFadden, L.D., and Harlan, S.S., 1990, Brunhes chron excursion/polarity episode recorded during the late Pleistocene, Albuquerque Volcanoes,

New Mexico, USA: Geophysical Journal International, v. 102, p. 73-88.

#1721 Grauch, V.J.S., and Millegan, P.S., 1998, Mapping intrabasinal faults from high-resolution aeromagnetic data: The Leading Edge, v. 17, p. 53-55.

#1304 Hawley, J.W., and Haase, C.S., compilers, 1992, Hydrogeologic framework of the northern Albuquerque basin: New Mexico Bureau of Mines and Mineral Resources Open-File Report 387, 1 pl., scale 1:100,000.

#1303 Hawley, J.W., and Whitworth, T.M., compilers, 1996, Hydrogeology of potential recharge areas for the basin- and valley-fill aquifer systems, and hydrogeochemical modeling of proposed artificial recharge of the upper Santa Fe aquifer, northern Albuquerque basin, New Mexico: New Mexico Bureau of Mines and Mineral Resources Open-File Report 402-D, 575 p.

#1302 Hawley, J.W., Love, D.W., Betancourt, J.L., Turner, R.M., and Tharnstrom, S., 1991, Quaternary and Neogene landscape evolution—A transect across the Colorado Plateau and Basin and Range provinces in west-central and central New Mexico, in Julian, B., and Zidek, J., eds., Field guide to geologic excursions in New Mexico and adjacent areas of Texas and Colorado: New Mexico Bureau of Mines and Mineral Resources Bulletin 137, p. 105-148.

#1106 Kelley, V.C., 1977, Geology of Albuquerque basin, New Mexico: New Mexico Bureau of Mines and Mineral Resources Memoir 33, 60 p., 2 pls.

#1396 Lambert, P.W., 1968, Quaternary stratigraphy of the Albuquerque area, New Mexico: Albuquerque, University of New Mexico, unpublished Ph.D. dissertation, 329 p., 3 pl., scale 1:48,000.

#1402 Machette, M.N., 1978, Dating Quaternary faults in the southwestern United States by using buried calcic paleosols: U.S. Geological Survey Journal of Research, v. 6, no. 3, p. 369-381.

#1401 Machette, M.N., 1982, Quaternary and Pliocene faults in the La Jencia and southern part of the Albuquerque-Belen basins, New Mexico—Evidence of fault history from fault-scarp morphology and Quaternary geology, in Grambling, J.A., and Wells, S.G., eds., Albuquerque Country II: New Mexico Geological Society, 33rd Field Conference, November 4-6, 1982, Guidebook, p. 161-169.

#1767 McCalpin, J.P., 1997, Paleoseismicity of Quaternary faults near Albuquerque, New Mexico: Technical report to U.S. Geological Survey, under Contract 1434-HQ-96-GR-02751, 18 p.

#6931 McCalpin, J.P., Olig, S.S., Harrison, J.B.J., and Berger, G.W., 2006, Quaternary faulting and soil formation on the County Dump fault, Albuquerque, New Mexico: New Mexico Bureau of Geology and Mineral Resources Circular 212, 36 p.

#1411 Peate, D.W., Chen, J.H., Wasserburg, G.J., Papanastassiou, D.A., and Geissman, J.W., 1996, 238U-230Th dating of a geomagnetic excursion in Quaternary basalts of the Albuquerque Volcanoes Field, New Mexico (USA): Geophysical Research Letters, v. 23, p. 2271-2274.

#1722 U.S. Geological Survey, and SIAL Geosciences, Inc., 1997, Description of digital aeromagnetic data collected north and west of Albuquerque, New Mexico: U.S. Geological Survey Open-File Report 97-286, 40 p.

U.S. Geological Survey - Earthquake Hazards Program

Quaternary Fault and Fold Database of the United States

As of January 12, 2017, the USGS maintains a limited number of metadata fields that characterize the Quaternary faults and folds of the United States. For the most up-to-date information, please refer to the interactive fault map.

Coyote Springs fault (Class A) No. 2114

Last Review Date: 2016-03-30

Compiled in cooperation with the New Mexico Bureau of Geology & Mineral Resources

citation for this record: **Personius, S.F., and Jochems, A.P., compilers, 2016, Fault number 2114, Coyote Springs fault, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults, accessed 08/27/2025 11:20 AM.**

Synopsis	The Coyote Springs fault (and the Santa Fe [2123] and Loma Pelada [2113] faults to the north and south, respectively) form the active southwestern margin of the Rio Grande rift. Specifically, the Coyote Springs fault forms the southwestern margin of the Belen sub-basin of the Albuquerque basin. Offsets of 12–15 m in lower and middle Pleistocene deposits and 1–3 m in upper Pleistocene deposits indicate recurrent Quaternary movement along the Coyote Springs fault. At its southern end, clear evidence of Quaternary faulting dies out at Mariano Draw, and at its northern end, fault scarps die out about 5 km north of Arroyo Monte Largo.
Name comments	Originally named the Coyote fault by Kelley (1977 #1106), this fault was renamed the Coyote Springs fault by Machette (1982 #1401) and Machette and McGimsey (1983 #1024), after Coyote Spring, which is located near the southwest corner of the Comanche Ranch 7.5-minute quadrangle. The fault is still referred to as the Coyote fault in places (e.g., Grauch and Connell, 2013 #7268), but it should not be confused with the Coyote fault [2128] that forms the western boundary of the Manzanita Mountains on the southeast side of the Belen sub-basin (Personius and others, 1999 #6930). Thus, we retain the name Coyote Springs fault. The fault extends from the southern end of the

	Santa Fe fault [2123] to the northern end of the Loma Pelada fault [2113] along the northeastern margin of the Sierra Ladrones. **Fault ID:** Fault no. 6 of Machette (1982 #1401), fault no. 5 of Machette and McGimsey (1983 #1024).
County(s) and State(s)	VALENCIA COUNTY, NEW MEXICO SOCORRO COUNTY, NEW MEXICO
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:250,000 scale. *Comments:* Fault traces from Machette and McGimsey (1983 #1024) at1:250,00 scale on topographic base map. <P>
Geologic setting	The Coyote Springs fault forms the active southwestern margin of the Belen sub-basin of the Albuquerque basin in the Rio Grande rift (Grauch and Connell, 2013 #7268), with the apparent deactivation of the Comanche fault to the west (Kelley, 1977 #1106). Seismic reflection and 3D geophysical studies support Kelley's assumption that a shallow shelf or bench (Monte Largo bench) underlies the piedmont area between the Coyote Springs and Comanche faults (Russell and Snelson, 1994 #1186; Grauch and Connell, 2013 #7268). <P>
Length (km)	17 km.
Average strike	N21°W
Sense of movement	Normal
Dip	15–17° E. *Comments:* Near the surface the fault probably has a relatively high angle (60°) dip. However, Russell and Snelson (1994 #1186) reported a very shallow dip of 15–17° E for the fault at about 5 km depth based on seismic reflection data. There is some controversy about the listric (shallow curving) nature of faults in the Albuquerque basin. <P>

Paleoseismology studies	<P>
Geomorphic expression	Prominent, but discontinuous (eroded) fault scarps are present on surficial deposits along the central part of the Coyote Springs fault, whereas the youngest scarps are found at the southern end of the fault. Machette (1982) and Machette and McGimsey (1983 #1024) measured offsets of 12–15 m in lower and middle Pleistocene deposits, and 1–3 m in upper Pleistocene deposits. Morphometric studies of the small scarps suggested possible early Holocene or latest Pleistocene ruptures (Machette and McGimsey, 1983 #1024). <P>
Age of faulted surficial deposits	The Coyote Springs fault offsets alluvial-fan deposits of early and middle Pleistocene age as much as 12–15 m along its northern part, and middle and late Pleistocene age along its southern part (Machette and McGimsey, 1983 #1024; Read and others, 2007 #7473).
Historic earthquake	
Most recent prehistoric deformation	latest Quaternary (<15 ka) *Comments:* Fault scarp morphology studies by Machette and McGimsey (1983 #1024) indicate possible latest Pleistocene or early Holocene movement on the southern part of the Coyote Springs fault north of Mariano Draw. <P>
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Low slip-rate category assigned based on fault scarp data from Machette (1982 #1401) and Machette and McGimsey (1983 #1024) which indicates offsets of 1–3 m in late Pleistocene (10–150 ka) alluvium and as much as 12–15 m in middle to early Quaternary deposits.

Date and Compiler(s)	2016 Stephen F. Personius, U.S. Geological Survey Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources
References	#7268 Grauch, V.J.S., and Connell, S.D., 2013, New perspectives on the geometry of the Albuquerque basin, Rio Grande rift, New Mexico: Insights from geophysical models of rift-fill thickness, in Hudson, M.R., and Grauch, V.J.S., eds., New perspectives on Rio Grande rift basins—From tectonics to groundwater: Geological Society of America Special Paper 494, p. 427–462, doi:10.1130/2013.2494(16). #1106 Kelley, V.C., 1977, Geology of Albuquerque basin, New Mexico: New Mexico Bureau of Mines and Mineral Resources Memoir 33, 60 p., 2 pls. #1401 Machette, M.N., 1982, Quaternary and Pliocene faults in the La Jencia and southern part of the Albuquerque-Belen basins, New Mexico—Evidence of fault history from fault-scarp morphology and Quaternary geology, in Grambling, J.A., and Wells, S.G., eds., Albuquerque Country II: New Mexico Geological Society, 33rd Field Conference, November 4-6, 1982, Guidebook, p. 161-169. #1024 Machette, M.N., and McGimsey, R.G., 1983, Map of Quaternary and Pliocene faults in the Socorro and western part of the Fort Sumner 1° x 2° quadrangles, central New Mexico: U.S. Geological Survey Miscellaneous Field Studies Map MF-1465-A, 12 p. pamphlet, 1 sheet, scale 1:250,000. #6930 Personius, S.F., Machette, M.N., and Kelson, K.I., 1999, Quaternary faults in the Albuquerque area—An update, in Pazzaglia, F.J., and Lucas, S.G., eds., Albuquerque geology: New Mexico Geological Society 50th Annual Field Conference, Guidebook, September 22–25, p. 189–200. #7473 Read, A.S., Cather, S.M., Chamberlin, R.M., Connell, S.D., Hook, S.C., and Karlstrom, K.E., 2007, Preliminary geologic map of the Ladron Peak quadrangle, Socorro County, New Mexico: New Mexico Bureau of Geology and Mineral Resources Open-File Geologic Map 142, scale 1:24,000. #1186 Russell, L.R., and Snelson, S., 1994, Structure and tectonics of the Albuquerque basin segment of the Rio Grande rift—Insights from reflection seismic data, in Keller, G.R., and Cather, S.M., eds., Basins of the Rio Grande rift—Structure, stratigraphy, and tectonic setting: Geological Society of America Special Paper 291, p. 83–112.

U.S. Geological Survey - Earthquake Hazards Program

Quaternary Fault and Fold Database of the United States

As of January 12, 2017, the USGS maintains a limited number of metadata fields that characterize the Quaternary faults and folds of the United States. For the most up-to-date information, please refer to the interactive fault map.

Intrabasin faults on the Llano de Albuquerque (Class A) No. 2121

Last Review Date: 2016-05-24

Compiled in cooperation with the New Mexico Bureau of Geology & Mineral Resources

citation for this record: **Jochems, A.P., and Personius, S.F., compilers, 2016, Fault number 2121, Intrabasin faults on the Llano de Albuquerque, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults, accessed 08/27/2025 11:20 AM.**

Synopsis	These faults are mostly expressed by short faults that offset the early Pleistocene Llano de Albuquerque geomorphic surface. They are collected together as a group for the express purpose of description. Most of these intrabasin faults are partly to nearly completely covered by eolian sand, but on air photographs these features are marked by linear scarps, aligned drainages, and in some cases aligned ephemeral ponds. Quaternary displacement is unknown for most of these faults, but a few have scarps up to 3–12 m high. Some of these faults may be related to volcanic activity, such as those associated with the Wind Mesa and Los Lunas volcanic centers.
Name comments	This group of north-trending normal faults forms a series of horsts and grabens on the Llano de Albuquerque, west of Albuquerque. A thick cover of eolian sand covers most of the Llano de Albuquerque, which has led to varying orientations and configurations of mapped faults in this area (Kelley, 1977 #1106; Kelley and Kudo, 1978 #1307; Machette, 1982 #1401; Machette and McGimsey, 1983 #1024; Hawley and Haase, 1992 #1304; Wong and others, 1995 #1155; Hawley and Whitworth, 1996 #1303; Shroba and others, 2003 #7459; Thompson and others, 2009 #7460). Named faults include several strands of the West Mesa and Cat Mesa [2122] fault zones (Wong and others,

	1995 #1155; Hawley and Whitworth, 1996 #1303), the Atrisco fault (Hawley and Haase, 1992 #1304), and the Lost Horizon and Wind Mesa faults (Connell, 2008 #7454). We exclude all but the Cat Mesa fault [2122] as specific fault names until more detailed mapping and fault studies are conducted.
County(s) and State(s)	SANDOVAL COUNTY, NEW MEXICO SOCORRO COUNTY, NEW MEXICO BERNALILLO COUNTY, NEW MEXICO VALENCIA COUNTY, NEW MEXICO
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:24,000 scale. *Comments:* Fault traces compiled from 1:24,000-scale mapping of Love and others (1998 #7457), Maldonado and Atencio (1998 #1777, 1998 #1778), Love (1999 #7456), Maldonado, 2003 (#7453), Rawling (2003 #7458), Shroba and others (2003 #7459), McCraw and others (2006 #7255), and Thompson and others (2009 #7460). Additional traces from unpublished 1:24,000-scale mapping of Isleta 7.5-minute quadrangle by Love and others and 1:50,000-scale mapping of Albuquerque metropolitan area by Connell (2008 #7454). All traces compiled digitally and accurately placed using photogrammetric methods. Original fault traces digitized from Machette and McGimsey (1983 #1024) with supplemental geophysical data from Grauch and Millegan (1998 #1721) and U.S. Geological Survey and SIAL Geosciences Inc. (1997 #1722). The area is covered by thick sequences of eolian sand, so most fault strands are subdued and others may be obscured. <P>
Geologic setting	This group of intrabasin faults forms a broad zone within the Albuquerque-Belen basin of the Rio Grande rift. <P>
Length (km)	101 km.
Average strike	N3°E
Sense of movement	Normal
Dip Direction	E; W

Paleoseismology studies	<P>
Geomorphic expression	These faults are marked by subdued, discontinuously exposed, mostly sand covered scarps on the Llano de Albuquerque. East of El Rincon (an erosional embayment into the Llano), these structures form an anastomosing group of horsts and grabens that are marked by linear scarps, aligned drainages, and aligned ephemeral ponds (Shroba and others, 2003 #7459; Connell, 2008 #7454; Thompson and others, 2009 #7460). Some of the down-to-the-west faults have linear ponds along their bases, apparently caused by damming of the prevailing east-southeast-flowing drainages. Machette and McGimsey (1983 #1024) measured offsets of 3–12 m on some of these faults on the Llano de Albuquerque. Included in this dataset are buried faults delineated from high-resolution aeromagnetic data (U.S. Geological Survey and SIAL Geosciences Inc., 1997 #1722; Grauch and Millegan, 1998 #1721; Grauch, 1999 #7241). Most of these faults are buried only by a thin (less than 10 m) cover of eolian sediment and probably cut deposits and soils associated with Llano de Albuquerque (Shroba and others, 2003 #7459; Thompson and others, 2009 #7460). However, it is possible that some do not cut post-Pliocene strata. <P>
Age of faulted surficial deposits	These faults offset the early Pleistocene Llano de Albuquerque. This diachronous surface overlies deposits spanning the interval from approximately 1.8–0.8 Ma (Connell and others, 2000 #7455; Connell and others, 2013 #7235).
Historic earthquake	
Most recent prehistoric deformation	middle and late Quaternary (<750 ka) *Comments:* Some of these faults offset the early Pleistocene Llano de Albuquerque surface as much as 12 m (Machette and McGimsey, 1983 #1024); these data indicate a recurrent history of faulting that in some cases probably extended at least into the middle Pleistocene following abandonment of the Llano de Albuquerque surface. <P>
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr

	Comments: Low slip-rate category assigned based on offsets of 3–12 m of the early Pleistocene (~1.8-0.8 Ma) Llano de Albuquerque (Machette and McGimsey, 1983 #1024; Connell and others, 2013 #7235).
Date and Compiler(s)	2016 Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources Stephen F. Personius, U.S. Geological Survey
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#1777 Maldonado, F., and Atencio, A., 1998, Preliminary geologic map of the Wind Mesa quadrangle, Bernalillo County, New Mexico: U.S. Geological Survey Open-File Report 97-740, 1 sheet, scale 1:24,000.

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#7460 Thompson, R.A., Shroba, R.R., Menges, C., Schmidt, D.L., Personius, S.F., and Brandt, T.R., 2009, Geologic map of the Volcanoes quadrangle, Bernalillo and Sandoval Counties, New Mexico: U.S. Geological Survey Scientific Investigations Map SIM-3083, scale 1:24,000.

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U.S. Geological Survey - Earthquake Hazards Program

Quaternary Fault and Fold Database of the United States

As of January 12, 2017, the USGS maintains a limited number of metadata fields that characterize the Quaternary faults and folds of the United States. For the most up-to-date information, please refer to the interactive fault map.

Jemez-San Ysidro fault, Calabacillas section (Class A) No. 2029c

Last Review Date: 2015-02-20

Compiled in cooperation with the New Mexico Bureau of Geology & Mineral Resources

citation for this record: **Koning, D.J., Haller, K.M., and Jochems, A.P., compilers, 2015, Fault number 2029c, Jemez-San Ysidro fault, Calabacillas section, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults, accessed 08/27/2025 11:21 AM.**

Synopsis	**General:** The Jemez-San Ysidro fault is a steeply east-dipping normal fault that, in part, forms the active western margin of the Rio Grande rift south of the Valles caldera. The fault is divided into sections on the basis of a 45° change in fault strike at the latitude of Cañones and evidence for young (Holocene) rupture along its southern section. The northern, northeast-striking section of the fault (Jemez section) is aligned with northeast-striking faults within the collapsed center of the Valles caldera and the Embudo fault, and is coincident with the Jemez Lineament. The central fault (San Ysidro section) merges with the southern fault (Calabacillas section) about 7 km south of the town of San Ysidro. **Sections:** This fault has 3 sections. The Jemez-San Ysidro fault consists of a northeast-striking fault (the Jemez fault of Goff and Kron, 1980 #1099), and north-striking faults along the northwestern margin of the Albuquerque basin (the Jemez and San Ysidro faults of Woodward, 1987 #1130). The boundary between the northern (Jemez) and central (San Ysidro) sections is placed at the 45° change in fault strike near Cañones. The boundary between the central and southern (Calabacillas) sections is near Arroyo Piedra Parada, 7 km south of San Ysidro. These sections

	are distinguished primarily on the basis of younger demonstrated displacement on the Calabacillas section, a prominent down-to-the-east normal fault that offsets the west side of the Llano de Albuquerque along the western margin of the Rio Grande rift.
Name comments	**General:** The Jemez-San Ysidro fault extends from the latitude of the Albuquerque Volcanoes north to the southern rim of the Valles caldera near Highway 4. As used herein, the Jemez-San Ysidro fault includes the northeast-striking faults referred to as the Jemez fault zone by Goff and Kron (1980 #1099) and Goff and others (1981 #1182), the north-striking Sierrita fault of Woodward and DuChene (1975 #1131), Aldrich (1986 #1084), and Woodward (1987 #1130); the north-striking San Ysidro fault of Woodward and Ruetschilling (1976 #1133), Hawley and Galusha (1978 #1103), and Woodward (1987 #1130); and the north-striking Calabacillas fault of Bryan and McCann (1937 #1288, fig. 4), Wright (1946 #1427) and Cather and others (1997 #1763). All of these faults are grouped together herein because of lateral continuity (Wong and others, 1995 #1155; Koning and others, 1998 #7375). **Section:** Part of the Calabacillas fault was originally mapped by Bryan and McCann (1937 #1288, fig. 4), and later described in detail by Wright (1946 #1427) in the Volcano Ranch 7.5 minute quadrangle. The fault was mapped and named in the Sky Village SE (now Arroyo de las Calabacillas) quadrangle by Cather and others (1997 #1763). Wright (1946 #1427, p. 426-428), Kelley and others (1976 #1380), and Kelley (1977 #1106) included the Calabacillas fault with the Sand Hill fault zone [2039], which is located 1–2 km to the west. However, detailed mapping indicates that the Calabacillas fault does not intersect the Sand Hill fault zone [2039] at the surface, but rather trends northeastward to the north and southeastward to the south of the exposures described by Wright (1946 #1427). At its northern end, the Calabacillas fault appears to join with the San Ysidro section near Arroyo Piedra Parada (Woodward and Ruetschilling, 1976 #1133; Koning and others, 1998 #7375). Connell (2008 #7454) and Grauch and Connell (2013 #7268) use the name San Ysidro fault for the entire fault zone south of the Rio Jemez, including all of what herein is named the Calabacillas section.
County(s) and State(s)	BERNALILLO COUNTY, NEW MEXICO SANDOVAL COUNTY, NEW MEXICO
Physiographic province(s)	BASIN AND RANGE COLORADO PLATEAUS
Reliability of location	Good Compiled at 1:24,000 scale.

	Comments: The location of the fault is compiled from 1:24,000-scale mapping of the Cerro Conejo (previously Sky Village NE) quadrangle (Koning and others, 1998 #7375), the Arroyo de las Calabacillas (previously Sky Village SE) quadrangle (Cather and others, 1997 #1763), and the Volcanoes (previously Volcano Ranch) quadrangle (Thompson and others, 2009 #7460). The fault location is also evident in high-resolution aeromagnetic data (U.S. Geological Survey and SIAL Geosciences Inc., 1997 #1722; Grauch and Millegan, 1998 #1721) <P>
Geologic setting	The Jemez-San Ysidro fault forms the northwestern margin of the Albuquerque basin, although the amount of Quaternary vertical separation is less than that along other rift-margin faults. Aldrich (1986 #1084) stated that the fault was the western margin of the Rio Grande rift during the Oligocene, and that activity later stepped eastward to the Pajarito fault zone [2008]. Wong and others (1995 #1155) and House and Hartse (1995 #1160) identified seismicity aligned along the northern part of the fault. <P>
Length (km)	This section is 34 km of a total fault length of 92 km.
Average strike	N2°W (for section) versus N14°E (for whole fault)
Sense of movement	Normal
Dip	60° E to near vertical *Comments:* Dip measurement from Wright (1946 #1427, plate 8). McCalpin and others (2011 #7183) depict an exposure of the near-vertical main fault in a trench near the southern end of the fault. <P>
Paleoseismology studies	Site 2029-1. Two trenches were excavated 3 km north of the southern end of the fault (McCalpin and others, 2011 #7183). In the eastern trench, across a 5.3-m-high antithetic scarp, details of faulting are overprinted by stage IV soil carbonate that engulfs 4.5 m of exposed section, which bottoms in the Pliocene–Pleistocene (?) Santa Fe Group. McCalpin and others (2011 #7183) could distinguish five major depositional units, but the section was not sampled for dating. The western 60-m-long trench crosses a 27-m-high down-to-the-east fault scarp. The trench exposes Santa Fe Group only in the bottom of the exposed footwall. The interpretation of four prehistorical surface-faulting earthquakes is derived from observed vertical displacement of correlated buried soils and the six infrared-stimulated luminescence (IRSL) dates that are in correct stratigraphic order, substantiated by two fine-silt thermoluminescence (TL) ages, ranging from 14 ka to 219 ka. The IRSL dates were used to constrain the mean rate

	of secondary-carbonate accumulation in the soils to estimate the timing of the four surface ruptures interpreted at the site. <P>
Geomorphic expression	The Calabacillas fault forms broad, dissected fault scarps across the Llano de Albuquerque and is exposed in upper Santa Fe Group sediments at several locations where it crosses the Ceja del Rio Puerco. The northeast-trending part of the fault zone was mapped by Kelley and others (1976 #1380), Kelley (1977 #1106), Cather and others (1997 #1763), and Koning and others (1998 #7375); this northeast-striking part is marked by scattered displaced pediment remnants across the dissected surface of the Llano de Albuquerque. Wright (1946 #1427) reports 45-m-high scarps on the Llano; McCalpin and others (2011 #7183) describe the broad fault scarps as being 10–30 m high and having surface angles typically less than 5 degrees. <P>
Age of faulted surficial deposits	Kelley (1977 #1106) described minor offsets of pediment remnants on the northeast-trending section of the fault north of the Ceja del Rio Puerco exposures. The ages of these offset deposits are unknown, but they concluded that most are probably early and middle (?) Pleistocene in age. McCalpin and others (2011 #7183) reported displacement of buried soils dated to the middle and late Pleistocene.
Historic earthquake	
Most recent prehistoric deformation	latest Quaternary (<15 ka) *Comments:* Based on trenching near the southern end of the fault, the most recent surface rupture occurred 14 k.y. ago (McCalpin and others, 2011 #7183). This age is assigned to the entire length of the fault, which is supported by the nine post-Llano de Albuquerque fault-scarp-derived colluvial and soil deposits adjacent to this structure described by Machette (1978 #1402) and Machette and others (1997 #1403). <P>
Recurrence interval	9–20 k.y. (<55ka) *Comments:* Based on six infrared-stimulated luminescence (IRSL) dates and one soil calcium-carbonate date, the timing of the most recent four surface-faulting events on the southern part of the fault is 14 ka, 23 ka, 35 ka, and 55 ka (McCalpin and others, 2011 #7183). The last four surface-rupturing earthquakes are not evenly spaced in time and individual recurrence intervals are between 9 k.y. and 20 k.y. McCalpin and others (2011 #7183) suggest that activity on the rift-bounding faults alternates and the east-dipping faults have been more active from the middle

	Pleistocene to present than the west-dipping faults. Soils developed on the colluvial wedges in the Ceja del Rio Puerco exposures also have extensive carbonate development (Machette and others, 1997 #1403), which indicates that a substantial amount of time is recorded in these deposits.
Slip-rate category	Less than 0.2 mm/yr *Comments:* McCalpin and others (2011 #7183) report a long-term vertical-displacement rate of 0.027–0.054 mm/yr based on the 27-m-high scarp on the Llano de Albuquerque surface, assumed to be 0.5–1 Ma. Later work by Connell and others (2013 #7235) indicated that the Llano de Albuquerque surface is 0.8-1.8 Ma, which would decrease these long-term vertical-displacement rates. McCalpin and others (2011 #7183) further report vertical-displacement rates derived from each of the four recent earthquakes, which range from 0.011 to 0.028 mm/yr; although they acknowledge that vertical displacement at this site is likely smaller than that to the north. Displacement on the nearby antithetic fault (5.3 m) is not reported or removed from the vertical displacement referenced above; therefore, the reported vertical-displacement rates include maximum displacement for each event at this site. At a different location, Wright (1946 #1427) described about 45 m of accumulated fault-derived colluvial deposits on the downthrown block. All of these data suggest the Calabacillas section deforms at a rate lower than 0.2 mm/yr.
Date and Compiler(s)	2015 Daniel J. Koning, New Mexico Bureau of Geology & Mineral Resources Kathleen M. Haller, U.S. Geological Survey Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources
References	#1084 Aldrich, M.J., Jr., 1986, Tectonics of the Jemez lineament in the Jemez Mountains and Rio Grande rift: Journal of Geophysical Research, v. 91, no. B2, p. 1753–1762. #1288 Bryan, K., and McCann, F.T., 1937, The Ceja del Rio Puerco—A border feature of the Basin and Range province in New Mexico, Part I, Stratigraphy and structure: Journal of Geology, v. 45, p. 801-828. #1763 Cather, S.M., Connell, S.D., Heynekamp, M.R., and Goodwin, L.B., 1997, Geology of the Arroyo de las Calabacillas [Sky Village SE] 7.5-minute quadrangle, Sandoval County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Open-File Geologic Map 9, 8 p. pamphlet, 1 sheet, scale 1:24,000. #7239 Connell, S.D., 2001, Stratigraphy of the Albuquerque basin, Rio Grande rift, central New Mexico—A progress report, in Connell, S.D., and 8 others, Stratigraphy and tectonic development of the Albuquerque basin, central Rio Grande rift—Field trip guidebook for the Geological Society of America, Rocky Mountain–South-Central Section Meeting, Albuquerque, New Mexico: New Mexico Bureau of Mines & Mineral Resources Open-File Report 454B, p. A-1–A-26. #7454 Connell, S.D., 2008, Geologic map of the

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doi:10.1130/2011.2479(01)

#7460 Thompson, R.A., Shroba, R.R., Menges, C., Schmidt, D.L., Personius, S.F., and Brandt, T.R., 2009, Geologic map of the Volcanoes quadrangle, Bernalillo and Sandoval Counties, New Mexico: U.S. Geological Survey Scientific Investigations Map SIM-3083, scale 1:24,000.

#1722 U.S. Geological Survey, and SIAL Geosciences, Inc., 1997, Description of digital aeromagnetic data collected north and west of Albuquerque, New Mexico: U.S. Geological Survey Open-File Report 97-286, 40 p.

#1155 Wong, I., Kelson, K., Olig, S., Kolbe, T., Hemphill-Haley, M., Bott, J., Green, R., Kanakari, H., Sawyer, J., Silva, W., Stark, C., Haraden, C., Fenton, C., Unruh, J., Gardner, J., Reneau, S., and House, L., 1995, Seismic hazards evaluation of the Los Alamos National Laboratory: Technical report to Los Alamos National Laboratory, Los Alamos, New Mexico, February 24, 1995, 3 volumes, 12 pls., 16 appen.

#1130 Woodward, L.A., 1987, Geology and mineral resources of Sierra Nacimiento and vicinity, New Mexico: New Mexico Bureau of Mines and Mineral Resources Memoir 42, 84 p., 1 pl., scale 1:100,000.

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U.S. Geological Survey - Earthquake Hazards Program

Quaternary Fault and Fold Database of the United States

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Jemez-San Ysidro fault, Jemez section (Class A) No. 2029a

Last Review Date: 2016-06-26

Compiled in cooperation with the New Mexico Bureau of Geology & Mineral Resources

citation for this record: **Jochems, A.P., Kelson, K.I., and Personius, S.F., compilers, 2016, Fault number 2029a, Jemez-San Ysidro fault, Jemez section, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults, accessed 08/27/2025 11:21 AM.**

Synopsis

General: The Jemez-San Ysidro fault is a steeply east-dipping normal fault that, in part, forms the active western margin of the Rio Grande rift south of the Valles caldera. The fault is divided into sections on the basis of a 45° change in fault strike at the latitude of Cañones and evidence for young (Holocene) rupture along its southern section. The northern, northeast-striking section of the fault (Jemez section) is aligned with northeast-striking faults within the collapsed center of the Valles caldera and the Embudo fault, and is coincident with the Jemez Lineament. The central fault (San Ysidro section) merges with the southern fault (Calabacillas section) about 7 km south of the town of San Ysidro.

Sections: This fault has 3 sections. The Jemez-San Ysidro fault consists of a northeast-striking fault (the Jemez fault of Goff and Kron, 1980 #1099), and north-striking faults along the northwestern margin of the Albuquerque basin (the Jemez and San Ysidro faults of Woodward, 1987 #1130). The boundary between the northern (Jemez) and central (San Ysidro) sections is placed at the 45° change in fault strike near Cañones. The boundary between the central and southern (Calabacillas) sections is near Arroyo Piedra Parada, 7 km south of San Ysidro. These sections are distinguished primarily on the basis of younger demonstrated displacement on the Calabacillas section, a

	prominent down-to-the-east normal fault that offsets the west side of the Llano de Albuquerque along the western margin of the Rio Grande rift.
Name comments	**General:** The Jemez-San Ysidro fault extends from the latitude of the Albuquerque Volcanoes north to the southern rim of the Valles caldera near Highway 4. As used herein, the Jemez-San Ysidro fault includes the northeast-striking faults referred to as the Jemez fault zone by Goff and Kron (1980 #1099) and Goff and others (1981 #1182), the north-striking Sierrita fault of Woodward and DuChene (1975 #1131), Aldrich (1986 #1084), and Woodward (1987 #1130); the north-striking San Ysidro fault of Woodward and Ruetschilling (1976 #1133), Hawley and Galusha (1978 #1103), and Woodward (1987 #1130); and the north-striking Calabacillas fault of Bryan and McCann (1937 #1288, fig. 4), Wright (1946 #1427) and Cather and others (1997 #1763). All of these faults are grouped together herein because of lateral continuity (Wong and others, 1995 #1155; Koning and others, 1998 #7375). **Section:** This part of the Jemez-San Ysidro fault was named the Jemez section by Wong and others (1995 #1155). The section extends from Highway 4 near Jemez Falls in the Jemez Mountains, southwest to Crow Springs, about 5 km west of Cañones. Smith (2004 #7529) connected this fault with the Cañones fault [2003].
County(s) and State(s)	SANDOVAL COUNTY, NEW MEXICO
Physiographic province(s)	SOUTHERN ROCKY MOUNTAINS COLORADO PLATEAUS
Reliability of location	Good Compiled at 1:24,000 scale. *Comments:* Detailed geologic maps are available at a scale of 1:24,000 along the entire Jemez fault (Woodward and others, 1977 #1132), which was originally compiled and synthesized by Woodward (1987 #1130). More recent 1:24,000-scale maps include those of Osburn and others (2002 #7528) and Kelley and others (2003 #7527). Maps of selected parts of the fault are given by Goff and Kron (1980 #1099) at a scale of 1:12,000, and by Goff and Shevenell (1987 #1476) at a scale of 1:66,667. <P>
Geologic setting	The Jemez-San Ysidro fault forms the northwestern margin of the Albuquerque basin, although the amount of Quaternary vertical separation is less than that along other rift-margin faults. Aldrich (1986 #1084) stated that the fault was the western margin of the Rio Grande rift during the Oligocene, and that activity later stepped eastward to

	the Pajarito fault zone [2008]. Wong and others (1995 #1155) and House and Hartse (1995 #1160) identified seismicity aligned along the northern part of the fault. <P>
Length (km)	This section is 28 km of a total fault length of 92 km.
Average strike	N41°E (for section) versus N14°E (for whole fault)
Sense of movement	Normal
Dip Direction	V *Comments:* The Jemez fault appears to be near vertical at the surface and in the shallow subsurface based on the relatively straight traces across rugged topography. Microseismicity in the vicinity of the Jemez fault appears to be aligned along a near-vertical zone, with a slight westerly dip (L. House, unpublished data, 1993). However, as a rift-margin fault, the Jemez fault probably dips to the east (Woodward and Ruetschilling, 1976 #1133). Wong and others (1995 #1155) considered dip values of 80° W, 90°, and 80° E, without a preferred dip to constrain the fault's geometry for seismic source characterization. <P>
Paleoseismology studies	<P>
Geomorphic expression	The Jemez section is marked by a prominent southeast-facing scarp across Virgin Mesa, which is underlain by the 1.2–1.3 Ma Tshirege Member of the Bandelier Tuff. Goff and Shevenell (1987 #1476) note a 15-m-high fault scarp on older travertine deposits near Soda Dam. <P>
Age of faulted surficial deposits	The youngest faulted bedrock is the 1.2–1.3 Ma Tshirege Member of the Bandelier Tuff. Tafoya (2012 #7530) obtained U-series ages of 210 ka and younger for calcite growth in the Jemez fault. These ages could relate to fault reactivation or infilling of younger sediment.
Historic earthquake	
Most recent prehistoric	undifferentiated Quaternary (<1.6 Ma)

deformation	*Comments:* The timing of the most-recent event is unknown. Prominent geomorphic expression across Virgin Mesa, displaced upper Bandelier Tuff suggest Quaternary deformation (Wong and others, 1995 #1155). Tafoya's (2012 #7530) U-series ages (<210 ka) on calcite growth in the Jemez fault allow for the possibility of middle or late Quaternary activity. Alternatively, the calcite growth may reflect younger geomorphic phenomena associated with fluvial deposition and incision. <P>
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Assigned slip rate category based on 12 m of separation of 1.2–1.3 Ma Tshirege Member of the Bandelier Tuff along the Jemez fault (Woodward, 1987 #1130) and 50 m of separation of the same unit along the fault reported by Goff and Shevenell (1987 #1476) and Goff and others (1989 #1098).
Date and Compiler(s)	2016 Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources Keith I. Kelson, William Lettis & Associates, Inc. Stephen F. Personius, U.S. Geological Survey
References	#1084 Aldrich, M.J., Jr., 1986, Tectonics of the Jemez lineament in the Jemez Mountains and Rio Grande rift: Journal of Geophysical Research, v. 91, no. B2, p. 1753–1762. #1288 Bryan, K., and McCann, F.T., 1937, The Ceja del Rio Puerco—A border feature of the Basin and Range province in New Mexico, Part I, Stratigraphy and structure: Journal of Geology, v. 45, p. 801-828. #1763 Cather, S.M., Connell, S.D., Heynekamp, M.R., and Goodwin, L.B., 1997, Geology of the Arroyo de las Calabacillas [Sky Village SE] 7.5-minute quadrangle, Sandoval County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Open-File Geologic Map 9, 8 p. pamphlet, 1 sheet, scale 1:24,000. #1099 Goff, F., and Kron, A., 1980, In-progress geologic map of Canon de San Diego, Jemez Springs, New Mexico, and lithologic log of Jemez Springs geothermal well: Los Alamos Scientific Laboratory Report LA-8276-MAP, 1 sheet, scale 1:12,000. #1476 Goff, F., and Shevenell, L., 1987, Travertine deposits of Soda Dam, New Mexico, and their implications for the age and evolution of the Valles caldera hydrothermal system: Geological Society of America Bulletin, v. 99, p. 292-302. #1182 Goff, F.E., Grigsby, C.O., Trujillo, P.E., Jr., Counce, D., and Kron, A., 1981, Geology, water chemistry and geothermal potential of the Jemez Springs area, Canon de San Diego, New Mexico: Journal of Volcanology and Geothermal Research, v. 10, p. 227-244. #1098 Goff, F., Gardner, J.N., Baldridge, W.S., Hulen, J.B., Nielson, D.L., Vaniman, D., Heiken, G., Dungan, M.A.,

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#7375 Koning, D.J., Pederson, J., Pazzaglia, F.J., and Cather, S.M., 1998, Geology of the Cerro Conejo (Sky Village NE) 7.5-minute quadrangle, Sandoval County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Open-file Geologic Map 45, scale 1:24,000.

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	Mexico: Geology, v. 3, p. 114–116. #1133 Woodward, L.A., and Ruetschilling, R.L., 1976, Geology of San Ysidro quadrangle, New Mexico: New Mexico Bureau of Mines and Mineral Resources Geologic Map 37, 1 sheet, scale 1:24,000. #1132 Woodward, L.A., DuChene, H.R., and Martinez, R., 1977, Geology of Gilman quadrangle, New Mexico: New Mexico Bureau of Mines and Mineral Resources Geologic Map 45, scale 1:24,000. #1427 Wright, H.E., Jr., 1946, Tertiary and Quaternary geology of the lower Rio Puerco area, New Mexico: Geological Society of America Bulletin, v. 57, p. 383-456.

U.S. Geological Survey - Earthquake Hazards Program

Quaternary Fault and Fold Database of the United States

As of January 12, 2017, the USGS maintains a limited number of metadata fields that characterize the Quaternary faults and folds of the United States. For the most up-to-date information, please refer to the interactive fault map.

Jemez-San Ysidro fault, San Ysidro section (Class A) No. 2029b

Last Review Date: 2015-02-20

Compiled in cooperation with the New Mexico Bureau of Geology & Mineral Resources

citation for this record: **Kelson, K.I., Personius, S.F., Haller, K.M., Koning, D.J., and Jochems, A.P., compilers, 2015, Fault number 2029b, Jemez-San Ysidro fault, San Ysidro section, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults, accessed 08/27/2025 11:21 AM.**

Synopsis

General: The Jemez-San Ysidro fault is a steeply east-dipping normal fault that, in part, forms the active western margin of the Rio Grande rift south of the Valles caldera. The fault is divided into sections on the basis of a 45° change in fault strike at the latitude of Cañones and evidence for young (Holocene) rupture along its southern section. The northern, northeast-striking section of the fault (Jemez section) is aligned with northeast-striking faults within the collapsed center of the Valles caldera and the Embudo fault, and is coincident with the Jemez Lineament. The central fault (San Ysidro section) merges with the southern fault (Calabacillas section) about 7 km south of the town of San Ysidro.

Sections: This fault has 3 sections. The Jemez-San Ysidro fault consists of a northeast-striking fault (the Jemez fault of Goff and Kron, 1980 #1099), and north-striking faults along the northwestern margin of the Albuquerque basin (the Jemez and San Ysidro faults of Woodward, 1987 #1130). The boundary between the northern (Jemez) and central (San Ysidro) sections is placed at the 45° change in fault strike near Cañones. The boundary between the central and southern (Calabacillas) sections is near Arroyo Piedra Parada, 7 km south of San Ysidro. These sections

	are distinguished primarily on the basis of younger demonstrated displacement on the Calabacillas section, a prominent down-to-the-east normal fault that offsets the west side of the Llano de Albuquerque along the western margin of the Rio Grande rift.
Name comments	**General:** The Jemez-San Ysidro fault extends from the latitude of the Albuquerque Volcanoes north to the southern rim of the Valles caldera near Highway 4. As used herein, the Jemez-San Ysidro fault includes the northeast-striking faults referred to as the Jemez fault zone by Goff and Kron (1980 #1099) and Goff and others (1981 #1182), the north-striking Sierrita fault of Woodward and DuChene (1975 #1131), Aldrich (1986 #1084), and Woodward (1987 #1130); the north-striking San Ysidro fault of Woodward and Ruetschilling (1976 #1133), Hawley and Galusha (1978 #1103), and Woodward (1987 #1130); and the north-striking Calabacillas fault of Bryan and McCann (1937 #1288, fig. 4), Wright (1946 #1427) and Cather and others (1997 #1763). All of these faults are grouped together herein because of lateral continuity (Wong and others, 1995 #1155; Koning and others, 1998 #7375). **Section:** This part of the Jemez-San Ysidro fault was named the San Ysidro section by Wong and others (1995 #1155). The section extends from Crow Springs, about 5 km west of Cañones on the north to near Arroyo Piedra Parada, 7 km south of San Ysidro, where it joins with the Calabacillas section (e.g., Kelley, 1977 #1106; correlation implied by fault name convention of Koning and others, 1998 #7375; Connell, 2008 #7454).
County(s) and State(s)	SANDOVAL COUNTY, NEW MEXICO
Physiographic province(s)	BASIN AND RANGE SOUTHERN ROCKY MOUNTAINS COLORADO PLATEAUS
Reliability of location	Good Compiled at 1:24,000 scale. *Comments:* Detailed geologic maps at a scale of 1:24,000 are available along the entire fault trace (Woodward and Ruetschilling, 1976 #1133; 1977 #1132), which are compiled and synthesized by Woodward (1987 #1130). Formento-Trigilio (1997 #1377) and Formento-Trigilio and others (1998 #7249) mapped Quaternary deposits and faults near Jemez Pueblo and San Ysidro at 1:24,000 scale. Additional detailed mapping of parts of the fault zone can be found in Koning and others (1998 #7375), Minor and Hudson (2006 #7246), and Caine and Minor (2009 #7244). <P>

Geologic setting	The Jemez-San Ysidro fault forms the northwestern margin of the Albuquerque basin, although the amount of Quaternary vertical separation is less than that along other rift-margin faults. Aldrich (1986 #1084) stated that the fault was the western margin of the Rio Grande rift during the Oligocene, and that activity later stepped eastward to the Pajarito fault zone [2008]. Wong and others (1995 #1155) and House and Hartse (1995 #1160) identified seismicity aligned along the northern part of the fault. <P>
Length (km)	This section is 34 km of a total fault length of 92 km.
Average strike	N2°W (for section) versus N14°E (for whole fault)
Sense of movement	Normal *Comments:* Woodward and DuChene (1975 #1131) characterize movement along the fault as dominantly dip-slip with a minor right-slip component. Down-to-the-east normal displacement is consistent with the occurrence of Tertiary rift-fill sediments (Zia Sand Formation) on the east faulted against Precambrian rocks on the west (Woodward, 1987 #1130). <P>
Dip	58°–70° E. *Comments:* Hudson and others (2008 #7245) report the fault dips eastward at 58° to 70° based on magnetic susceptibility studies. Caine and Minor (2009 #7244) report variable oblique slip along strike based on slickenline data; the variation is controlled by the geometry of the fault, which is interpreted to have an average dip of 66° to the east (Caine and Minor, 2009 #7244). Advances in interpreting fault dip from aeromagnetic expression will improve the fault's three-dimensional geometry in the future. <P>
Paleoseismology studies	<P>
Geomorphic expression	Moderate geomorphic expression in bedrock is apparent on aerial photography, as a result of juxtaposition of different rock types and differential erosion. Short fault scarps and fault exposures in middle and late Pleistocene alluvial deposits have been mapped on several strands of the San Ysidro section near Jemez Pueblo and San Ysidro near the southern end of the fault (Formento-Trigilio and Pazzaglia, 1996 #1295; Formento-Trigilio, 1997 #1377;

	Formento-Trigilio and others, 1998 #7249). They measured offsets of 2–11 m on middle Pleistocene alluvial deposits along several strands of the fault. The numerous subparallel faults identified from high-resolution aeromagnetic data (Grauch and Hudson, 2007 #7243) are not included because of lack of reported recognized surface expression. <P>
Age of faulted surficial deposits	The youngest faulted bedrock mapped along the San Ysidro section is the Miocene Zia Sand Formation (Woodward and Ruetschilling, 1976 #1133; 1987 #1130). Formento-Trigilio and Pazzaglia (1996 #1295), Formento-Trigilio (1997 #1377), and Formento-Trigilio and others (1998 #7294) map and describe fault scarps on fluvial and alluvial-fan deposits in the Jemez River drainage. The clearest evidence of faulting is found in deposits that contain the Lava Creek B ash; these sediments were deposited about 620 ka (Izett and Wilcox, 1982 #1708; Sarna-Wojcicki and others, 1987 #1707). Formento-Trigilio and Pazzaglia (1996 #1295) and Formento-Trigilio (1997 #1377) also described probable offset of a 100–200 ka terrace strath; some offset deposits along the San Ysidro section may be late Pleistocene in age.
Historic earthquake	
Most recent prehistoric deformation	middle and late Quaternary (<750 ka) *Comments:* The timing of the most-recent event is unknown. Formento-Trigilio and Pazzaglia (1996 #1295) and Formento-Trigilio (1997 #1377) found offsets in 620-ka alluvial deposits, and probable faulting of a middle- to late-Pleistocene (100–200 ka) fluvial terrace. These relations indicate that the San Ysidro section has been active in middle and probably late Pleistocene time. <P>
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Formento-Trigilio and Pazzaglia (1996 #1295) and Formento-Trigilio (1997 #1377) measured offsets of as much as 6–11 m on several strands of the San Ysidro section in alluvial deposits containing the 620 ka Lava Creek B ash; these data support a low long-term slip rate.

Date and Compiler(s)	2015 Keith I. Kelson, William Lettis & Associates, Inc. Stephen F. Personius, U.S. Geological Survey Kathleen M. Haller, U.S. Geological Survey Daniel J. Koning, New Mexico Bureau of Geology & Mineral Resources Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources
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#1160 House, L., and Hartse, H., 1995, Seismicity and faults in northern New Mexico, in Bauer, P.W., Kues, B.S., Dunbar, N.W., Karlstrom, K.E., and Harrison, B., eds., Geology of the Santa Fe region, New Mexico: New Mexico Geological Society, 46th Field Conference, September 27-30, 1995, Guidebook, p. 135–137.

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#1707 Sarna-Wojcicki, A.M., Morrison, S.D., Meyer, C.E., and Hillhouse, J.W., 1987, Correlation of upper Cenozoic tephra layers between sediments of the Western United States and eastern Pacific Ocean and comparison with biostratigraphic and magnetostratigraphic age data: Geological Society of America Bulletin, v. 98, p. 207-223.

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#1130 Woodward, L.A., 1987, Geology and mineral resources of Sierra Nacimiento and vicinity, New Mexico: New Mexico Bureau of Mines and Mineral Resources Memoir 42, 84 p., 1 pl., scale 1:100,000.

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U.S. Geological Survey - Earthquake Hazards Program

Quaternary Fault and Fold Database of the United States

As of January 12, 2017, the USGS maintains a limited number of metadata fields that characterize the Quaternary faults and folds of the United States. For the most up-to-date information, please refer to the interactive fault map.

Mesa Prieta faults (Class A) No. 1985

Last Review Date: 2016-01-01

citation for this record: Jochems, A.P., compiler, 2016, Fault number 1985, Mesa Prieta faults, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults, accessed 08/27/2025 11:22 AM.

Synopsis	
Name comments	
County(s) and State(s)	SANDOVAL COUNTY, NEW MEXICO
Physiographic province(s)	COLORADO PLATEAUS
Reliability of location	Good Compiled at 1:100,000 scale. *Comments:* <P>
Geologic setting	<P>
Length (km)	12 km.

Average strike	
Sense of movement	Normal
Dip Direction	NW; SE
Paleoseismology studies	<P>
Geomorphic expression	<P>
Age of faulted surficial deposits	
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* <P>
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr
Date and Compiler(s)	2016 Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources
References	

U.S. Geological Survey - Earthquake Hazards Program

Quaternary Fault and Fold Database of the United States

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Nacimiento fault, northern section (Class A) No. 2002a

Last Review Date: 2015-12-14

Compiled in cooperation with the New Mexico Bureau of Geology & Mineral Resources

citation for this record: **Kelson, K.I., Jochems, A.P., and Personius, S.F., compilers, 2015, Fault number 2002a, Nacimiento fault, northern section, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults, accessed 08/27/2025 11:22 AM.**

Synopsis

General: The Nacimiento fault is an east-dipping fault bordering the Nacimiento uplift, an 80-km-long, 10- to 16-km-wide uplift related to Laramide deformation. The fault merges with the Gallina fault to the north, and dies out to the south into a broad anticline. The relatively high level of contemporary microseismicity within the Sierra Nacimiento may be related to deformation in the hanging wall of the fault. Detailed mapping along the southern part of the fault shows several short normal faults with both down-to-the-east and down-to-the-west displacements in Quaternary deposits. Down-to-the-east displacements may indicate normal reactivation of the Nacimiento reverse fault in the late Quaternary.

Sections: This fault has 2 sections. Woodward (1987 #1130) mapped the Nacimiento and Pajarito faults along the western margin of the Sierra Nacimiento. He noted the lack of continuity between these faults in the vicinity of San Miguel Canyon (section boundary), about 3 km southeast of the village of San Miguel. North of San Miguel Canyon, the fault generally has a lower dip and is a thrust fault, whereas south of San Miguel Canyon the fault is a high-angle reverse fault. Wong and others (1995 #1155) considered potential fault-rupture scenarios that included

	rupture on either a northern section or a southern section, and on both sections together. These sections are considered separately here.
Name comments	**General:** The Nacimiento fault extends from Red Mesa, 7 km west of San Ysidro on the south, to the northern end of Sierra Nacimiento, 7 km northeast of Regina. The Nacimiento fault forms the western margin of the Laramide Nacimiento uplift. As used herein, the Nacimiento fault includes the Nacimiento and Pajarito faults of Woodward (1987 #1130), to avoid confusion with the Pajarito fault [2008] along the western margin of the Rio Grande rift near Los Alamos. **Section:** This part of the Nacimiento fault was defined as the northern section by Wong and others (1995 #1155). The northern section extends from San Miguel Canyon about 3 km southeast of the village of San Miguel to the northern end of Sierra Nacimiento, 7 km northeast of Regina.
County(s) and State(s)	RIO ARRIBA COUNTY, NEW MEXICO SANDOVAL COUNTY, NEW MEXICO
Physiographic province(s)	COLORADO PLATEAUS
Reliability of location	Good Compiled at 1:24,000 scale. *Comments:* Detailed geologic maps at a scale of 1:24,000 are available along the entire fault trace; 1:24,000 maps covering the northern section are those of Woodward and others (1972 #7292; 1973 #7293) and Merrick and Woodward (1982 #7291). These maps are compiled and synthesized by Woodward (1987 #1130). The location of the fault was digitized at 1:24,000 scale using photogrammetry to accurately map its trace from these maps. The fault was also mapped by Renick (1931 #1140) at a scale of 1:125,000 and by Wood and Northrop (1946 #1143) at a scale of about 1:95,000. <P>
Geologic setting	The Nacimiento fault is high-angle and over much of its geologic history a west-vergent reverse fault. The Nacimiento uplift is a north-south elongated structural block that lies west of the Jemez Mountains and forms the eastern margin of the San Juan Basin of the Colorado Plateau. Structural relief of the uplift formed during Laramide deformation, with shortening taking place via folding and reverse movement along the Nacimiento fault. The fault is west of the western margin of the Rio Grande rift. Quaternary normal faulting near Arroyo Peñasco

	documented by Formento-Trigilio and Pazzaglia (1996 #1295), Formento-Trigilio (1997 #1377), and Formento-Trigilio and Pazzaglia (1998 #2847) may indicate normal reactivation of the Nacimiento reverse fault. The relatively high level of contemporary microseismicity within the Sierra Nacimiento supports the interpretation of Quaternary deformation in the hanging wall of the fault (Wong and others, 1995 #1155; House and Hartse, 1995 #1160). <P>
Length (km)	This section is 36 km of a total fault length of 82 km.
Average strike	N3°E (for section) versus N1°W (for whole fault)
Sense of movement	Normal *Comments:* West-vergent thrusting occurred during Laramide deformation. Sense of movement associated with contemporary microseismicity is unknown, but normal backslip may be likely in the present extensional regime. <P>
Dip	45°–60° E. *Comments:* Bedrock exposures of the fault noted by Woodward (1987 #1130) provide near-surface data on fault dip. Woodward (1987 #1130) speculates that the fault steepens with depth, although there are no published deep structural data for the fault. <P>
Paleoseismology studies	<P>
Geomorphic expression	Prominent west-facing range front of the Sierra Nacimiento is coincident with the Nacimiento fault. Baltz (1967 #1167) did not find geomorphic evidence of late Quaternary movement. Formento-Trigilio and Pazzaglia (1998 #2847) described low to moderate scarps on middle to late Pleistocene terrace and pediment-fan surfaces along the southern section <P>
Age of faulted surficial deposits	Youngest faulted bedrock is Cretaceous in age, although there are little or no data on the presence or absence of displaced late Quaternary deposits along the northern section. Manley and others (1987 #1119) map undisplaced Quaternary gravel across the fault trace at Rito de los Pinos, about 10 km northeast of the town of Cuba.

Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* Timing of most-recent event on northern section unknown. Prominent geomorphic expression along the range front and possible association with contemporary microseismicity suggest late Quaternary activity (Wong and others, 1995 #1155; House and Hartse, 1995 #1160). <P>
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Low slip-rate category assigned based on the lack of evidence for Quaternary displacement along the northern section.
Date and Compiler(s)	2015 Keith I. Kelson, William Lettis & Associates, Inc. Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources Stephen F. Personius, U.S. Geological Survey
References	#1167 Baltz, E.H., 1967, Stratigraphy and regional tectonic implications of part of Upper Cretaceous and Tertiary rocks east-central San Juan Basin New Mexico: U.S. Geological Survey Professional Paper 552, 99 p., 1 pl., scale 1:377,000. #1377 Formento-Trigilio, M.L., 1997, The tectonic geomorphology and long-term landscape evolution of the southern Sierra Nacimiento, northern New Mexico: Albuquerque, University of New Mexico, unpublished M.S. thesis, 201 p., 1 pl., scale 1:24,000. #1295 Formento-Trigilio, M.L., and Pazzaglia, F.J., 1996, Quaternary stratigraphy, tectonic geomorphology and long-term landscape evolution of the southern Sierra Nacimiento, in Goff, F., Kues, B.S., Rogers, M.A., McFadden, L.D., and Gardner, J.N., eds., The Jemez Mountains region: New Mexico Geological Society, 47th Field Conference, September 25-28, 1996, Guidebook, p. 335-345. #2847 Formento-Trigilio, M.L., and Pazzaglia, F.J., 1998, Tectonic geomorphology of the Sierra Nacimiento—Traditional and new techniques in assessing long-term landscape evolution in the southern Rocky Mountains: Journal of Geology, v. 106, p. 433-453. #1160 House, L., and Hartse, H., 1995, Seismicity and faults in northern New Mexico, in Bauer, P.W., Kues, B.S., Dunbar, N.W., Karlstrom, K.E., and Harrison, B.,

eds., Geology of the Santa Fe region, New Mexico: New Mexico Geological Society, 46th Field Conference, September 27-30, 1995, Guidebook, p. 135–137.

#1119 Manley, K., Scott, G.R., and Wobus, R.A., 1987, Geologic map of the Aztec 1° by 2° quadrangle, northwestern New Mexico and southern Colorado: U.S. Geological Survey Miscellaneous Investigations Map I-1730, 1 sheet, scale 1:250,000.

#7291 Merrick, M.A., and Woodward, L.A., 1982, Geology of Regina quadrangle, Rio Arriba and Sandoval Counties, New Mexico: New Mexico Bureau of Mines and Mineral Resources Geologic Map 46, scale 1:24,000.

#6930 Personius, S.F., Machette, M.N., and Kelson, K.I., 1999, Quaternary faults in the Albuquerque area—An update, in Pazzaglia, F.J., and Lucas, S.G., eds., Albuquerque geology: New Mexico Geological Society 50th Annual Field Conference, Guidebook, September 22–25, p. 189–200.

#1140 Renick, B.C., 1931, Geology and ground-water resources of western Sandoval County, New Mexico: U.S. Geological Survey Water-Supply Paper 620, 117 p., 10 pls.

#1155 Wong, I., Kelson, K., Olig, S., Kolbe, T., Hemphill-Haley, M., Bott, J., Green, R., Kanakari, H., Sawyer, J., Silva, W., Stark, C., Haraden, C., Fenton, C., Unruh, J., Gardner, J., Reneau, S., and House, L., 1995, Seismic hazards evaluation of the Los Alamos National Laboratory: Technical report to Los Alamos National Laboratory, Los Alamos, New Mexico, February 24, 1995, 3 volumes, 12 pls., 16 appen.

#1143 Wood, G.H., Jr., and Northrop, S.A., 1946, Geology of the Nacimiento Mountains, San Pedro Mountain, and adjacent plateaus in parts of Sandoval and Rio Arriba Counties, New Mexico: U.S. Geological Survey Oil and Gas Investigations Map 57, scale 1:95,000.

#1130 Woodward, L.A., 1987, Geology and mineral resources of Sierra Nacimiento and vicinity, New Mexico: New Mexico Bureau of Mines and Mineral Resources Memoir 42, 84 p., 1 pl., scale 1:100,000.

#7293 Woodward, L.A., Anderson, J.B., Kaufman, W.H., and Reed, R.K., 1973, Geologic map and sections of San Pablo quadrangle, New Mexico: New Mexico Bureau of Mines and Mineral Resources Geologic Map 26, scale 1:24,000.

#7292 Woodward, L.A., McLelland, D., and Kaufman, W.H., 1972, Geologic map of Cuba quadrangle: New Mexico Bureau of Mines and Mineral Resources Geologic Map 25, scale 1:24,000.

U.S. Geological Survey - Earthquake Hazards Program

Quaternary Fault and Fold Database of the United States

As of January 12, 2017, the USGS maintains a limited number of metadata fields that characterize the Quaternary faults and folds of the United States. For the most up-to-date information, please refer to the interactive fault map.

Nacimiento fault, southern section (Class A) No. 2002b

Last Review Date: 2015-12-14

Compiled in cooperation with the New Mexico Bureau of Geology & Mineral Resources

citation for this record: **Kelson, K.I., Jochems, A.P., and Personius, S.F., compilers, 2015, Fault number 2002b, Nacimiento fault, southern section, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults, accessed 08/27/2025 11:23 AM.**

Synopsis

General: The Nacimiento fault is an east-dipping fault bordering the Nacimiento uplift, an 80-km-long, 10- to 16-km-wide uplift related to Laramide deformation. The fault merges with the Gallina fault to the north, and dies out to the south into a broad anticline. The relatively high level of contemporary microseismicity within the Sierra Nacimiento may be related to deformation in the hanging wall of the fault. Detailed mapping along the southern part of the fault shows several short normal faults with both down-to-the-east and down-to-the-west displacements in Quaternary deposits. Down-to-the-east displacements may indicate normal reactivation of the Nacimiento reverse fault in the late Quaternary.

Sections: This fault has 2 sections. Woodward (1987 #1130) mapped the Nacimiento and Pajarito faults along the western margin of the Sierra Nacimiento. He noted the lack of continuity between these faults in the vicinity of San Miguel Canyon (section boundary), about 3 km southeast of the village of San Miguel. North of San Miguel Canyon, the fault generally has a lower dip and is a thrust fault, whereas south of San Miguel Canyon the fault is a high-angle reverse fault. Wong and others (1995 #1155) considered potential fault-rupture scenarios that included

	rupture on either a northern section or a southern section, and on both sections together. These sections are considered separately here.
Name comments	**General:** The Nacimiento fault extends from Red Mesa, 7 km west of San Ysidro on the south, to the northern end of Sierra Nacimiento, 7 km northeast of Regina. The Nacimiento fault forms the western margin of the Laramide Nacimiento uplift. As used herein, the Nacimiento fault includes the Nacimiento and Pajarito faults of Woodward (1987 #1130), to avoid confusion with the Pajarito fault [2008] along the western margin of the Rio Grande rift near Los Alamos. **Section:** This part of the Nacimiento fault was defined as the southern section by Wong and others (1995 #1155). The southern section extends from U.S. Highway 44 about 7 km west of the village of San Ysidro, northward to San Miguel Canyon about 3 km southeast of the village of San Miguel.
County(s) and State(s)	SANDOVAL COUNTY, NEW MEXICO
Physiographic province(s)	COLORADO PLATEAUS
Reliability of location	Good Compiled at 1:24,000 scale. *Comments:* Detailed geologic maps at a scale of 1:24,000 are available along the entire fault trace; 1:24,000 maps covering the southern section include those of Woodward and Schumacher (1973 #7295) and Woodward and others (1973 #7293; 1977 #1132). These maps are compiled and synthesized by Woodward (1987 #1130). In addition, detailed mapping of Quaternary deposits at 1:24,000 scale at the southern end of the fault has been completed by Formento-Trigilio and Pazzaglia (1996 #1295), Formento-Trigilio (1997 #1377), and Formento-Trigilio and others (1998 #7294). The location of the fault was digitized at 1:24,000 scale using photogrammetry to accurately map its trace from these maps. The fault also was mapped by Renick(1931 #1140) at a scale of 1:125,000, by Wood and Northrop (1946 #1143) at a scale of about 1:95,000, and by Baltz (1967 #1167) at a scale of 1:63,360. <P>
Geologic setting	The Nacimiento fault is high-angle and over much of its geologic history a west-vergent reverse fault. The Nacimiento uplift is a north-south elongated structural block that lies west of the Jemez Mountains and forms the

	eastern margin of the San Juan Basin of the Colorado Plateau. Structural relief of the uplift formed during Laramide deformation, with shortening taking place via folding and reverse movement along the Nacimiento fault. The fault is west of the western margin of the Rio Grande rift. Quaternary normal faulting near Arroyo Peñasco documented by Formento-Trigilio and Pazzaglia (1996 #1295), Formento-Trigilio (1997 #1377), and Formento-Trigilio and Pazzaglia (1998 #2847) may indicate normal reactivation of the Nacimiento reverse fault. The relatively high level of contemporary microseismicity within the Sierra Nacimiento supports the interpretation of Quaternary deformation in the hanging wall of the fault (Wong and others, 1995 #1155; House and Hartse, 1995 #1160). <P>
Length (km)	This section is 45 km of a total fault length of 82 km.
Average strike	N4°W (for section) versus N1°W (for whole fault)
Sense of movement	Normal *Comments:* West-vergent reverse faulting occurred during Laramide deformation on the Nacimiento fault (Woodward, 1987 #1130). Sense of movement associated with contemporary microseismicity is unknown, but down-to-the-east and down-to-the-west Quaternary normal faults have been mapped by Formento-Trigilio and Pazzaglia (1996 #1295), Formento-Trigilio (1997 #1377), and Koning and others (1998 #7375) near Arroyo Peñasco and Cañada de las Milpas at the southern end of the fault. The down-to-the-west normal faults are in the footwall of the Nacimiento reverse fault, but the down-to-the-east Quaternary movement on one fault strand may be interpreted as normal backslip on a splay of the reverse fault (Formento-Trigilio and Pazzaglia, 1996 #1295; Formento-Trigilio, 1997 #1377). <P>
Dip	75°–90° E. *Comments:* Bedrock exposures of the fault noted by Woodward (1987 #1130) provide near-surface data on fault dip. Although exposures of the main trace of the Laramide Nacimiento fault clearly show steep east dips, west dipping synthetic and antithetic faults are locally present (Woodward, 1987 #1130). Formento-Trigilio and Pazzaglia (1996 #1295) and Formento-Trigilio (1997 #1377) mapped several normal faults in Quaternary deposits with both east and west dips near Arroyo Peñasco at the southern end of the Nacimiento fault. Woodward (1987 #1130) speculated that the fault steepens with depth, although no published subsurface structural data are available to confirm this interpretation. <P>

Paleoseismology studies	Formento-Trigilio and Pazzaglia (1996 #1295), Formento-Trigilio (1997 #1377), and Formento-Trigilio and others (1998 #7294) mapped Quaternary deposits and faults in detail near Arroyo Peñasco at the southern end of the Nacimiento fault. Most of the Quaternary faults mapped by these workers dip west, opposite to the dip of the bedrock fault mapped by Woodward (1987 #1130) in the area. These faults are as much as 2 km long and are marked by scarps up to 17 m high, although some of this apparent displacement may be related to landsliding in the underlying Triassic shale bedrock. Down-to-the-east Quaternary displacement of 4.2 m of travertine-cemented alluvium on one fault strand on the north rim of Arroyo Peñasco may either represent normal reactivation on a trace of the Nacimiento reverse fault mapped by Woodward (1987 #1130), or is an antithetic splay to the down-to-the-west faults mapped further east by Formento-Trigilio and Pazzaglia (1996 #1295) and Formento-Trigilio (1997 #1377). <P>
Geomorphic expression	The prominent west-facing range front of the Sierra Nacimiento is coincident with the Nacimiento fault. Baltz (1967 #1167) did not identify geomorphic evidence of late Quaternary activity, but Formento-Trigilio and Pazzaglia (1996 #1295) and Formento-Trigilio (1997 #1377) discuss evidence of multiple fault strands with Quaternary displacement along the southern end of the Sierra Nacimiento near Arroyo Peñasco. Scarps on middle to late Pleistocene terrace and pediment-fan surfaces in this area are up to 4.2 m high (Formento-Trigilio and Pazzaglia, 1998 #2847). <P>
Age of faulted surficial deposits	Although the youngest faulted bedrock mapped along the Nacimiento fault is Cretaceous in age (Woodward, 1987 #1130), Formento-Trigilio and Pazzaglia (1996 #1295) and Formento-Trigilio (1997 #1377) map fault scarps and infer displacements from geomorphic data in late Pleistocene alluvial deposits near Arroyo Peñasco at the southern end of the Nacimiento fault. Uranium-series ages on faulted, travertine-cemented alluvium indicate the faulted alluvium was deposited between about 270 ka and about 60 ka (Formento-Trigilio, 1997 #1377).
Historic earthquake	
Most recent prehistoric deformation	middle and late Quaternary (<750 ka) *Comments:* Timing of most-recent event is from uranium-series dating of faulted travertine-cemented alluvium by Formento-Trigilio (1997 #1377) that bracket the age of the offset alluvium between about 270 ka and 60 ka. <P>

Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Wong and others (1995 #1155) conservatively estimated a range in slip rate of 0.01 to 0.23 mm/yr for the Nacimiento fault, with a preferred value of 0.02 mm/yr, based on analysis of slip rates on analogous faults in the Rio Grande rift (Formento-Trigilio and Pazzaglia, 1996 #1295; Formento-Trigilio, 1997 #1377). A rate of up to 0.07 mm/yr may be permissible depending on the age of displaced travertine-cemented alluvium (Personius and others, 1999 #6930).
Date and Compiler(s)	2015 Keith I. Kelson, William Lettis & Associates, Inc. Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources Stephen F. Personius, U.S. Geological Survey
References	#1167 Baltz, E.H., 1967, Stratigraphy and regional tectonic implications of part of Upper Cretaceous and Tertiary rocks east-central San Juan Basin New Mexico: U.S. Geological Survey Professional Paper 552, 99 p., 1 pl., scale 1:377,000. #1377 Formento-Trigilio, M.L., 1997, The tectonic geomorphology and long-term landscape evolution of the southern Sierra Nacimiento, northern New Mexico: Albuquerque, University of New Mexico, unpublished M.S. thesis, 201 p., 1 pl., scale 1:24,000. #1295 Formento-Trigilio, M.L., and Pazzaglia, F.J., 1996, Quaternary stratigraphy, tectonic geomorphology and long-term landscape evolution of the southern Sierra Nacimiento, in Goff, F., Kues, B.S., Rogers, M.A., McFadden, L.D., and Gardner, J.N., eds., The Jemez Mountains region: New Mexico Geological Society, 47th Field Conference, September 25-28, 1996, Guidebook, p. 335-345. #2847 Formento-Trigilio, M.L., and Pazzaglia, F.J., 1998, Tectonic geomorphology of the Sierra Nacimiento—Traditional and new techniques in assessing long-term landscape evolution in the southern Rocky Mountains: Journal of Geology, v. 106, p. 433-453. #7294 Formento-Trigilio, M.L., Toya, C., and Pazzaglia, F.J., 1998, Quaternary geologic map of the San Ysidro quadrangle, New Mexico: New Mexico Bureau of Mines and Mineral Resources Open-file Geologic Map 18Q, scale 1:24,000 #1160 House, L., and Hartse, H., 1995, Seismicity and faults in northern New Mexico, in Bauer, P.W., Kues, B.S., Dunbar, N.W., Karlstrom, K.E., and Harrison, B., eds., Geology of the Santa Fe region, New Mexico: New Mexico Geological Society, 46th Field Conference, September 27-30, 1995, Guidebook, p. 135–137. #7375 Koning, D.J., Pederson, J., Pazzaglia, F.J., and Cather, S.M., 1998, Geology of the Cerro Conejo (Sky Village NE) 7.5-minute quadrangle, Sandoval County,

New Mexico: New Mexico Bureau of Mines and Mineral Resources Open-file Geologic Map 45, scale 1:24,000.

#6930 Personius, S.F., Machette, M.N., and Kelson, K.I., 1999, Quaternary faults in the Albuquerque area—An update, in Pazzaglia, F.J., and Lucas, S.G., eds., Albuquerque geology: New Mexico Geological Society 50th Annual Field Conference, Guidebook, September 22–25, p. 189–200.

#1140 Renick, B.C., 1931, Geology and ground-water resources of western Sandoval County, New Mexico: U.S. Geological Survey Water-Supply Paper 620, 117 p., 10 pls.

#1155 Wong, I., Kelson, K., Olig, S., Kolbe, T., Hemphill-Haley, M., Bott, J., Green, R., Kanakari, H., Sawyer, J., Silva, W., Stark, C., Haraden, C., Fenton, C., Unruh, J., Gardner, J., Reneau, S., and House, L., 1995, Seismic hazards evaluation of the Los Alamos National Laboratory: Technical report to Los Alamos National Laboratory, Los Alamos, New Mexico, February 24, 1995, 3 volumes, 12 pls., 16 appen.

#1143 Wood, G.H., Jr., and Northrop, S.A., 1946, Geology of the Nacimiento Mountains, San Pedro Mountain, and adjacent plateaus in parts of Sandoval and Rio Arriba Counties, New Mexico: U.S. Geological Survey Oil and Gas Investigations Map 57, scale 1:95,000.

#1130 Woodward, L.A., 1987, Geology and mineral resources of Sierra Nacimiento and vicinity, New Mexico: New Mexico Bureau of Mines and Mineral Resources Memoir 42, 84 p., 1 pl., scale 1:100,000.

#7293 Woodward, L.A., Anderson, J.B., Kaufman, W.H., and Reed, R.K., 1973, Geologic map and sections of San Pablo quadrangle, New Mexico: New Mexico Bureau of Mines and Mineral Resources Geologic Map 26, scale 1:24,000.

#7295 Woodward, L.A., and Schumacher, O.L., 1973, Geologic map and sections of La Ventana quadrangle, New Mexico: New Mexico Bureau of Mines and Mineral Resources Geologic Map 28, scale 1:24,000.

#1132 Woodward, L.A., DuChene, H.R., and Martinez, R., 1977, Geology of Gilman quadrangle, New Mexico: New Mexico Bureau of Mines and Mineral Resources Geologic Map 45, scale 1:24,000.

U.S. Geological Survey - Earthquake Hazards Program

Quaternary Fault and Fold Database of the United States

As of January 12, 2017, the USGS maintains a limited number of metadata fields that characterize the Quaternary faults and folds of the United States. For the most up-to-date information, please refer to the interactive fault map.

San Felipe fault zone, Algodones section (Class A) No. 2030b

Last Review Date: 2016-06-28

Compiled in cooperation with the New Mexico Bureau of Geology & Mineral Resources

citation for this record: **Personius, S.F., Kelson, K.I., and Jochems, A.P., compilers, 2016, Fault number 2030b, San Felipe fault zone, Algodones section, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults, accessed 08/27/2025 11:29 AM.**

Synopsis	**General:** The San Felipe fault zone is a broad zone of normal faults that offset basalts of the San Felipe volcanic field and underlying Santa Fe Group sedimentary rocks. The fault zone is best expressed where individual fault strands offset the volcanic tablelands of Santa Ana Mesa. The fault zone is primarily a graben, centered on the westernmost of two north-trending eruptive centers in the volcanic field. This structure, the San Felipe graben, is bound on the west by the down-to-the-east Luce and Santa Ana faults, and on the east by the down-to-the-west Algodones fault. Most of these faults offset the 2.4–2.6 Ma basalt flows of the San Felipe volcanic field. Average displacements on most faults are 15–30 m, although some of the larger structures, such as the Luce fault, have as much as 90–120 m of vertical displacement. **Sections:** This fault has 2 sections. Wong and others (1995 #1155) used the polarity of faults in the San Felipe fault zone to delineate two sections: down-to-the-east faults that form the western margin of the San Felipe graben (Santa Ana and Luce faults) are included in the Santa Ana section, and down-to-the-west faults that form the eastern margin of the graben (Algodones fault) are include in the Algodones section. They assumed that one of

	these sections is a "master fault" that controls both sections, but they did not have enough subsurface data to support either scenario.
Name comments	**General:** This complex of numerous, generally north-trending normal faults near Santa Ana Mesa was first mapped in detail by Soister (1952 #1418). Kelley (1954 #1222) followed Soister's mapping closely in his compilation, and applied the name San Felipe fault zone to these structures. Later maps by Smith and others (1970 #1125), Kelley (1977 #1106), and Kelley and Kudo (1978 #1307) show similar fault patterns. Kelley (1977 #1106) named many of the more prominent structures in the zone, such as the Santa Ana, Luce, Cocida, and Algodones faults and the San Felipe graben. In their compilation, Wong and others (1995 #1155) used the name "San Felipe fault zone". **Section:** The Algodones section includes the Algodones fault of Kelley (1977 #1106) and numerous smaller displacement down-to-the-west faults that form the east flank of the San Felipe graben. Some strands of the Algodones section of the San Felipe fault zone have been projected southward across the Rio Grande and connected with parts of the Valley View fault (Kelley, 1977 #1106; Wong and others, 1995 #1155), but detailed mapping by Connell (1995 #1291), Connell and others (1995 #1764), and Cather and Connell (1998 #7435) shows that strands of the Valley View fault trend northeasterly at their northern ends and probably do not connect with the San Felipe fault zone.
County(s) and State(s)	SANDOVAL COUNTY, NEW MEXICO
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:24,000 scale. *Comments:* Fault locations are good where faults cut volcanic rocks, but locations are poor in the less resistant Santa Fe Group rocks. Fault traces are from 1:24,000-scale maps of Cather and Connell (1998 #7435), Connell (1998 #7502), Smith and Kuhle (1998 #1771), Chamberlin and others (1999 #7524), and Personius (2002 #7526). A.P. Jochems used photogrammetric methods to accurately place fault traces in some locations. <P>
Geologic setting	The San Felipe fault zone is located in the western part of the Santo Domingo basin of the Rio Grande rift as defined by Smith and others (2001 #7438). The Santo Domingo basin links the en echelon Albuquerque and Española

	basins, and kinematic and paleostress evidence suggests that the basin functions as a relay that began to narrow in Plio-Pleistocene time (Minor and others, 2013 #7437). The fault zone forms a north-trending graben within the San Felipe volcanic field. Although Wong and others (1995 #1155) conclude that this graben is a minor sub-basin within the Rio Grande rift, the narrowing of the fault zone within the volcanic field indicates that the geometry of the fault zone may be in part controlled by volcanic activity (for example, van Wyk de Vries and Merle, 1996 #1422). <P>
Length (km)	This section is 45 km of a total fault length of 48 km.
Average strike	N7°W (for section) versus N1°E (for whole fault)
Sense of movement	Normal
Dip	64–74° W *Comments:* Dips of 64–74° are reported for west-dipping faults belonging to the Algodones section of the San Felipe fault zone (Connell, 1998 #7502; Personius, 2002 #7526). In addition, Connell (1998 #7502) reported a dip of 77° toward the east along one of the few east-dipping strands in the Algodones section 1.5 km northwest of Canjilon Hill in the Bernalillo 7.5-minute quadrangle <P>
Paleoseismology studies	<P>
Geomorphic expression	The Algodones fault and other faults that cut the basalt flows of the San Felipe volcanic field are well preserved as escarpments covered by basalt talus. Where these structures are located in Santa Fe Group rocks, fault expression is poor. Soister (1952 #1418) and Kelley (1977 #1106) measured average displacements of 15–30 m in basalts on most structures in the San Felipe fault zone, and as much as 90–120 m on larger structures such as the Luce fault in the Santa Ana section. <P>
Age of faulted surficial deposits	Faults in the Algodones section offset the 2.4-2.6 Ma (Bachman and Mehnert, 1978 #1265; Smith and Kuhle, 1998 #1771) basalts of the San Felipe volcanic field and underlying Santa Fe Group sedimentary rocks. Soister (1952 #1418) describes offset of his early Pleistocene Mesita Alta gravel and surface, which overlies San Felipe basalt flows in several places.

Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* No detailed studies of the age of most recent movement have been conducted. However, early Pleistocene gravels are offset locally and 90–120 m of post-San Felipe basalt (2.4-2.6 Ma) displacement has occurred. <P>
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Wong and others (1995 #1155) calculated long-term slip rates of 0.01–0.04 mm/yr based on 90–120 m of displacement that has occurred on the Luce fault since deposition of the San Felipe basalt (2.4-2.6 Ma) and similar data. They also concluded that it is likely that some of the major faults within the San Felipe fault zone act as independent rupture segments, but could not rule out the possibility that some faults rupture together.
Date and Compiler(s)	2016 Stephen F. Personius, U.S. Geological Survey Keith I. Kelson, William Lettis & Associates, Inc. Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources
References	#1265 Bachman, G.O., and Mehnert, H.H., 1978, New K-Ar dates and the late Pliocene to Holocene geomorphic history of the central Rio Grande region, New Mexico: Geological Society of America Bulletin, v. 89, p. 283-292. #7435 Cather, S.M., and Connell, S.D., 1998, Geologic map of the San Felipe Pueblo quadrangle, Sandoval County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Open-File Geologic Map 19, scale 1:24,000. #1764 Cather, S.M., Connell, S.D., Karlstrom, K.E., Ilg, B., Menne, B., Bauer, P.W., and Andronicus, C., 1996, Geology of the Placitas SE 7.5-minute quadrangle, Sandoval County, central New Mexico: New Mexico Bureau of Mines and Mineral Resources Open-File Digital Map OF-DM 2, 26 p. pamphlet, 1 sheet, scale 1:24,000. #7524 Chamberlin, R.M., Pazzaglia, F.J., Wegmann, K.W., and Smith, G.A., 1999, Geologic map of the Loma Creston 7.5-minute quadrangle, Sandoval County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Open-File Geologic Map 25, scale 1:24,000. #1291 Connell, S.D., 1995, Quaternary geology and

geomorphology of the Sandia Mountains piedmont, Bernalillo and Sandoval Counties, central New Mexico: Riverside, University of California, unpublished M.S. thesis, 414 p., 3 pls.

#7502 Connell, S.D., 1998, Geology of the Bernalillo quadrangle, Sandoval County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Open-File Geologic Map 16, scale 1:24,000.

#1222 Kelley, V.C., 1954, Tectonic map of a part of the upper Rio Grande area, New Mexico: U.S. Geological Survey Oil and Gas Investigations Map OM-157, 1 sheet, scale 1:190,080.

#1106 Kelley, V.C., 1977, Geology of Albuquerque basin, New Mexico: New Mexico Bureau of Mines and Mineral Resources Memoir 33, 60 p., 2 pls.

#1307 Kelley, V.C., and Kudo, A.M., 1978, Volcanoes and related basalts of Albuquerque basin, New Mexico: New Mexico Bureau of Mines and Mineral Resources Circular 156, 29 p., 2 pls.

#7437 Minor, S.A., Hudson, M.R., Caine, J.S., and Thompson, R.A., 2013, Oblique transfer of extensional strain between basins of the middle Rio Grande rift, New Mexico—Fault kinematic and paleostress constrains, in Hudson, M.R., and Grauch, V.J.S., eds., New perspectives on Rio Grande rift basins: From Tectonics to Groundwater: Geological Society of America Special Paper 494, p. 345–382.

#7526 Personius, S.F., 2002, Geologic map of the Santa Ana Pueblo quadrangle, Sandoval County, New Mexico: U.S. Geological Survey Miscellaneous Field Studies Map MF-2405, scale 1:24,000.

#1771 Smith, G.A., and Kuhle, A.J., 1998, Geologic map of the Santo Domingo Southwest quadrangle, Sandoval County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Open-File Geologic Map OF-DM 26, 1 sheet, scale 1:24,000.

#7438 Smith, G.A., McIntosh, W.C., and Kuhle, A.J., 2001, Sedimentologic and geomorphic evidence for seesaw subsidence of the Santo Domingo accommodation-zone basin, Rio Grande rift, New Mexico: Geological Society of America Bulletin, v. 113, no. 5, p. 561–574.

#1125 Smith, R.L., Bailey, R.A., and Ross, C.S., 1970, Geologic map of the Jemez Mountains, New Mexico: U.S. Geological Survey Miscellaneous Investigations Map I-571, 1 sheet, scale 1:125,000.

#1418 Soister, P.E., 1952, Geology of Santa Ana Mesa and adjoining areas, Sandoval County, New Mexico: Albuquerque, University of New Mexico, unpublished M.S. thesis, 126 p., 2 pls., scale 1:62,500.

#1422 van Wyk de Vries, B., and Merle, O., 1996, The effects of volcanic constructs on rift fault patterns: Geology, v. 24, p. 643-646.

#1155 Wong, I., Kelson, K., Olig, S., Kolbe, T., Hemphill-Haley, M., Bott, J., Green, R., Kanakari, H., Sawyer, J., Silva, W., Stark, C., Haraden, C., Fenton, C., Unruh, J., Gardner, J., Reneau, S., and House, L., 1995, Seismic hazards evaluation of the Los Alamos National Laboratory: Technical report to Los Alamos National Laboratory, Los Alamos, New Mexico, February 24, 1995, 3 volumes, 12 pls., 16 appen.

U.S. Geological Survey - Earthquake Hazards Program

Quaternary Fault and Fold Database of the United States

As of January 12, 2017, the USGS maintains a limited number of metadata fields that characterize the Quaternary faults and folds of the United States. For the most up-to-date information, please refer to the interactive fault map.

San Felipe fault zone, Santa Ana section (Class A) No. 2030a

Last Review Date: 2016-06-28

Compiled in cooperation with the New Mexico Bureau of Geology & Mineral Resources

citation for this record: **Personius, S.F., Jochems, A.P., and Kelson, K.I., compilers, 2016, Fault number 2030a, San Felipe fault zone, Santa Ana section, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults, accessed 08/27/2025 11:29 AM.**

Synopsis	**General:** The San Felipe fault zone is a broad zone of normal faults that offset basalts of the San Felipe volcanic field and underlying Santa Fe Group sedimentary rocks. The fault zone is best expressed where individual fault strands offset the volcanic tablelands of Santa Ana Mesa. The fault zone is primarily a graben, centered on the westernmost of two north-trending eruptive centers in the volcanic field. This structure, the San Felipe graben, is bound on the west by the down-to-the-east Luce and Santa Ana faults, and on the east by the down-to-the-west Algodones fault. Most of these faults offset the 2.4–2.6 Ma basalt flows of the San Felipe volcanic field. Average displacements on most faults are 15–30 m, although some of the larger structures, such as the Luce fault, have as much as 90–120 m of vertical displacement. **Sections:** This fault has 2 sections. Wong and others (1995 #1155) used the polarity of faults in the San Felipe fault zone to delineate two sections: down-to-the-east faults that form the western margin of the San Felipe graben (Santa Ana and Luce faults) are included in the Santa Ana section, and down-to-the-west faults that form the eastern margin of the graben (Algodones fault) are include in the Algodones section. They assumed that one of

	these sections is a "master fault" that controls both sections, but they did not have enough subsurface data to support either scenario.
Name comments	**General:** This complex of numerous, generally north-trending normal faults near Santa Ana Mesa was first mapped in detail by Soister (1952 #1418). Kelley (1954 #1222) followed Soister's mapping closely in his compilation, and applied the name San Felipe fault zone to these structures. Later maps by Smith and others (1970 #1125), Kelley (1977 #1106), and Kelley and Kudo (1978 #1307) show similar fault patterns. Kelley (1977 #1106) named many of the more prominent structures in the zone, such as the Santa Ana, Luce, Cocida, and Algodones faults and the San Felipe graben. In their compilation, Wong and others (1995 #1155) used the name "San Felipe fault zone". **Section:** The Santa Ana section includes the Santa Ana, Luce, and Cocida faults of Kelley (1977 #1106), the Tamaya fault of Personius (2002 #7526), and numerous smaller displacements, generally down-to-the-east faults that form the west flank of the San Felipe graben. This section also includes an unnamed, west-dipping fault of uncertain origin about 8 km west of the main fault zone (Pazzaglia and others, 1997 #7525).
County(s) and State(s)	SANDOVAL COUNTY, NEW MEXICO
Physiographic province(s)	BASIN AND RANGE SOUTHERN ROCKY MOUNTAINS
Reliability of location	Good Compiled at 1:24,000 scale. *Comments:* Fault locations are good where faults cut volcanic rocks, but locations are poor in the less resistant Santa Fe Group rocks. Fault traces are from 1:24,000-scale maps of Pazzaglia and others (1997 #7525), Connell (1998 #7502), Chamberlin and others (1999 #7524), Personius (2002 #7526), and Kempter and others (2007 #7429). <P>
Geologic setting	The San Felipe fault zone is located in the western part of the Santo Domingo basin of the Rio Grande rift as defined by Smith and others (2001 #7438). The Santo Domingo basin links the en echelon Albuquerque and Española basins, and kinematic and paleostress evidence suggests that the basin functions as a relay that began to narrow in Plio-Pleistocene time (Minor and others, 2013 #7437). The fault zone forms a north-trending graben within the San Felipe volcanic field. Although Wong and others (1995 #1155) conclude that this graben is a minor sub-basin within

	the Rio Grande rift, the narrowing of the fault zone within the volcanic field indicates that the geometry of the fault zone may be in part controlled by volcanic activity (for example, van Wyk de Vries and Merle, 1996 #1422). <P>
Length (km)	This section is 44 km of a total fault length of 48 km.
Average strike	N5°E (for section) versus N1°E (for whole fault)
Sense of movement	Normal
Dip	60°E–90° *Comments:* An exposed section of the Luce fault along highway 44 west of Bernalillo yielded an east dip of 82° (Kelley, 1977 #1106). Connell (1998 #7502) reported east dips of 67–80° on the Luce fault in the Bernalillo 7.5-minute quadrangle, and Chamberlin and others (1999 #7524) reported east to southeast dips of 65–70° for the Cocida fault near Borrego Canyon in the Loma Creston quadrangle. Reported dips for the Santa Ana fault range from 65–80° toward the east or southeast (Chamberlin and others, 1999 #7524). Numerous fault exposures in Santa Fe Group rocks in the Santa Ana Pueblo quadrangle have dips of 45–85°E (Personius, 2002 #7526). <P>
Paleoseismology studies	<P>
Geomorphic expression	The Luce and other faults that cut the basalt flows of the San Felipe volcanic field are well preserved as escarpments covered by basalt talus. The Santa Ana fault and other faults that are only located in Santa Fe Group rocks are poorly expressed, except where they are marked in places by clastic dikes (Soister, 1952 #1418) or strongly cemented zones (Minor and Hudson, 2006 #7246). Soister (1952 #1418) and Kelley (1977 #1106) measured average displacements of 15–30 m in basalts on most structures in the fault zone, and as much as 90–120 m on larger structures such as the Luce fault. <P>
Age of faulted surficial deposits	Faults in the Santa Ana section offset the 2.4-2.6 Ma (Bachman and Mehnert, 1978 #1265; Smith and Kuhle, 1998 #1771) basalts of the San Felipe volcanic field and underlying Santa Fe Group sedimentary rocks. Soister (1952 #1418) describes offset of his early Pleistocene Mesita Alta gravel and surface, which overlies San Felipe basalt flows in several places.

Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* No detailed studies of the age of most recent movement have been conducted. However, 90–120 m of post-San Felipe basalt displacement on some structures in this fault zone indicates a history of recurrent fault movements that probably continued at least into the early Pleistocene. <P>
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Wong and others (1995 #1155) estimated slip rates of 0.01–0.04 mm/yr based on 90–120 m of displacement that has occurred on the Luce fault since deposition of the San Felipe basalt (2.4–2.6 Ma) and similar data. They also concluded that it is likely that some of the major faults within the San Felipe fault zone act as independent rupture segments, but could not rule out the possibility that some faults rupture together.
Date and Compiler(s)	2016 Stephen F. Personius, U.S. Geological Survey Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources Keith I. Kelson, William Lettis & Associates, Inc.
References	#1265 Bachman, G.O., and Mehnert, H.H., 1978, New K-Ar dates and the late Pliocene to Holocene geomorphic history of the central Rio Grande region, New Mexico: Geological Society of America Bulletin, v. 89, p. 283-292. #7524 Chamberlin, R.M., Pazzaglia, F.J., Wegmann, K.W., and Smith, G.A., 1999, Geologic map of the Loma Creston 7.5-minute quadrangle, Sandoval County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Open-File Geologic Map 25, scale 1:24,000. #7502 Connell, S.D., 1998, Geology of the Bernalillo quadrangle, Sandoval County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Open-File Geologic Map 16, scale 1:24,000. #1222 Kelley, V.C., 1954, Tectonic map of a part of the upper Rio Grande area, New Mexico: U.S. Geological Survey Oil and Gas Investigations Map OM-157, 1 sheet, scale 1:190,080. #1106 Kelley, V.C., 1977, Geology of Albuquerque basin, New Mexico: New Mexico Bureau of Mines and Mineral Resources Memoir 33, 60 p., 2 pls. #1307 Kelley, V.C., and Kudo, A.M., 1978, Volcanoes and related basalts of

Albuquerque basin, New Mexico: New Mexico Bureau of Mines and Mineral Resources Circular 156, 29 p., 2 pls.

#7429 Kempter, K., Osburn, G.R., Kelley, S., Rampey, M., Ferguson, C., and Gardner, J., 2007, Preliminary geologic map of the Bear Springs Peak quadrangle, Sandoval County, New Mexico: New Mexico Bureau of Geology and Mineral Resources Open-File Geologic Map 74, scale 1:24,000.

#7246 Minor, S.A., and Hudson, M.R., 2006, Regional survey of structural properties and cementation patterns of fault zones in the northern part of the Albuquerque Basin, New Mexico—Implications for ground-water flow: U.S. Geological Survey Professional Paper 1719, 32 p.

#7437 Minor, S.A., Hudson, M.R., Caine, J.S., and Thompson, R.A., 2013, Oblique transfer of extensional strain between basins of the middle Rio Grande rift, New Mexico—Fault kinematic and paleostress constrains, in Hudson, M.R., and Grauch, V.J.S., eds., New perspectives on Rio Grande rift basins: From Tectonics to Groundwater: Geological Society of America Special Paper 494, p. 345–382.

#7525 Pazzaglia, F.J., Pederson, J.L., Garcia, A.F., Koning, D.J., Formento-Trigilio, M.L., and Toya, C., 1997, Geologic map of the Jemez Pueblo 7.5-minute quadrangle, Sandoval County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Open-File Geologic Map 14, scale 1:24,000.

#7526 Personius, S.F., 2002, Geologic map of the Santa Ana Pueblo quadrangle, Sandoval County, New Mexico: U.S. Geological Survey Miscellaneous Field Studies Map MF-2405, scale 1:24,000.

#1771 Smith, G.A., and Kuhle, A.J., 1998, Geologic map of the Santo Domingo Southwest quadrangle, Sandoval County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Open-File Geologic Map OF-DM 26, 1 sheet, scale 1:24,000.

#7438 Smith, G.A., McIntosh, W.C., and Kuhle, A.J., 2001, Sedimentologic and geomorphic evidence for seesaw subsidence of the Santo Domingo accommodation-zone basin, Rio Grande rift, New Mexico: Geological Society of America Bulletin, v. 113, no. 5, p. 561–574.

#1125 Smith, R.L., Bailey, R.A., and Ross, C.S., 1970, Geologic map of the Jemez Mountains, New Mexico: U.S. Geological Survey Miscellaneous Investigations Map I-571, 1 sheet, scale 1:125,000.

#1418 Soister, P.E., 1952, Geology of Santa Ana Mesa and adjoining areas, Sandoval County, New Mexico: Albuquerque, University of New Mexico, unpublished M.S. thesis, 126 p., 2 pls., scale 1:62,500.

#1422 van Wyk de Vries, B., and Merle, O., 1996, The effects of volcanic constructs on rift fault patterns: Geology, v. 24, p. 643-646.

#1155 Wong, I., Kelson, K., Olig, S., Kolbe, T., Hemphill-Haley, M., Bott, J., Green, R., Kanakari, H., Sawyer, J., Silva, W., Stark, C., Haraden, C., Fenton, C., Unruh, J., Gardner, J., Reneau, S., and House, L., 1995, Seismic hazards evaluation of the Los Alamos National Laboratory: Technical report to Los Alamos National Laboratory, Los Alamos, New Mexico, February 24, 1995, 3 volumes, 12 pls., 16 appen.

U.S. Geological Survey - Earthquake Hazards Program

Quaternary Fault and Fold Database of the United States

As of January 12, 2017, the USGS maintains a limited number of metadata fields that characterize the Quaternary faults and folds of the United States. For the most up-to-date information, please refer to the interactive fault map.

Sand Hill fault zone (Class A) No. 2039

Last Review Date: 2016-06-28

Compiled in cooperation with the New Mexico Bureau of Geology & Mineral Resources

citation for this record: **Personius, S.F., and Jochems, A.P., compilers, 2016, Fault number 2039, Sand Hill fault zone, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults, accessed 08/27/2025 11:29 AM.**

Synopsis	The down-to-the-east Sand Hill fault zone extends from about 9 km south of the Sandoval-Bernalillo County line, northward along the Ceja del Rio Puerco to the vicinity of Cañada de las Milpas. Very little is known about the Quaternary history of the Sand Hill fault zone other than that it cuts probable early Pleistocene sand and gravel of the upper Santa Fe Group and is buried by younger surficial deposits. This fault zone is one of several north-trending faults that form the active western boundary of the Rio Grande rift in the northern part of the Albuquerque-Belen basin.
Name comments	The Sand Hill fault zone was first named, mapped, and described by Bryan and McCann (1937 #1288), has subsequently been mapped in various degrees of detail by Wright (1946 #1427), Kelley and others (1976 #1380, fig. 19), and Kelley (1954 #1222; 1977 #1106), and has more recently been mapped in detail in the Arroyo de las Calabacillas (previously Sky Village SE), Benavidez Ranch, Cerro Conejo (previously Sky Village NE), and The Volcanoes 7.5-minute quadrangles (Cather and others, 1997 #1763; Koning and others, 1998 #7375; Thompson and others, 2009 #7460; Koning and Jochems, 2014 #7507). As originally mapped by Bryan and McCann (1937 #1288),

	the Sand Hill fault zone extended about 10 km along the western edge of the Llano de Albuquerque. Bryan and McCann (1937 #1288) and Wright (1946 #1427) mapped the southern end of the Sand Hill fault zone 3–5 km south of the Bernalillo-Sandoval County line; Bryan and McCann (1937 #1288) state that the fault is covered by Pleistocene and younger alluvium southward. Kelley (1977 #1106, p. 48) used stratigraphic arguments to extend the Sand Hill fault zone a minimum of 12 km further south. Similarly at the north end, Kelley and others (1976 #1380, fig. 19) and Kelley (1977 #1106, p. 48) extended the Sand Hill fault zone along a northeast-trending splay across the Llano de Albuquerque. Kelley (1977 #1106, p. 48) also suggests that some of the down-to-the-east displacement associated with the Sand Hill fault zone is taken up by the Garcia and Tenorio faults, which extend northward another 23 km along the western edge of the Llano. Mapping in the Arroyo de las Calabacillas 7.5-minute quadrangle (Cather and others, 1997 #1763) shows that the Sand Hill fault zone does not trend northeastward across the Llano de Albuquerque, but rather continues northward along the Ceja del Rio Puerco to the vicinity of Cañada de las Milpas in the Cerro Conejo quadrangle (Koning and others, 1998 #7375). Wright (1946 #1427) included in the Sand Hill fault zone a northwest-trending (N20°W) down-to-the-east fault that is 1–2 km east of the Sand Hill fault zone. However, the trend of this fault, Wright's detailed description of a thick sequence of tectonically-derived sediment on the downthrown block, and mapping in the Arroyo de las Calabacillas 7.5-minute quadrangle (Cather and others, 1997 #1763) all indicate that this eastern fault strand is distinct from the Sand Hill fault zone and thus is mapped as a separate structure (Calabacillas section of the Jemez-San Ysidro fault [2029c]) in this compilation.
County(s) and State(s)	BERNALILLO COUNTY, NEW MEXICO SANDOVAL COUNTY, NEW MEXICO
Physiographic province(s)	COLORADO PLATEAUS BASIN AND RANGE
Reliability of location	Good Compiled at 1:24,000 scale. *Comments:* Fault traces are from 1:24,000-scale maps by Cather and others (1997 #1763), Koning and others (1998 #7375), Thompson and others (2009 #7460), and Koning and Jochems (2014 #7507), as well as unpublished air-photo mapping by A.P. Jochems. <P>

Geologic setting	The Sand Hill fault zone is one of several north-trending faults that form the active western boundary of the Rio Grande rift in the northern part of the Albuquerque-Belen basin. <P>
Length (km)	36 km.
Average strike	N6°E
Sense of movement	Normal
Dip	54°–82° E. *Comments:* Fault dips are from surface exposures (Wright, 1946 #1427, plate 8; Cather and others, 1997 #1763; Thompson and others, 2009 #7460; Koning and Jochems, 2014 #7507). <P>
Paleoseismology studies	<P>
Geomorphic expression	The fault is well expressed as linear breaks in slope in the eroded Santa Fe Group badlands below the western edge of the Llano de Albuquerque. Bryan and McCann (1937 #1288) noted that their northernmost strand has been injected by a sand dike that is more erosion resistant than the surrounding rocks; Wright (1946 #1427) stated that all strands of the Sand Hill fault are marked by sand dikes. In places, preferential cementation related to groundwater flow has formed prominent wall- or finger-like features in the fault zone (Mozley and Goodwin, 1995 #7508). No fault scarps on surficial deposits have been described, suggesting a lack of recency to the faulting. <P>
Age of faulted surficial deposits	The trace of the Sand Hill fault zone as originally mapped by Bryan and McCann (1937 #1288) lies entirely within the Upper Buff Member of the Santa Fe Formation, which is roughly correlative with the Ceja Formation of the Upper Santa Fe Group (Kelley, 1977 #1106; Hawley and others, 1991 #1302; Connell, 2008 #7506). In places the upper part of these deposits is early Pleistocene in age. No faulting of younger surficial deposits has been described.
Historic earthquake	

Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* The only deposits documented as offset by the Sand Hill fault zone are early Pleistocene to Pliocene in age. <P>
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* No detailed studies of fault offset or age of offset deposits are available; slip rate estimate is based on lack of fault scarps and low rates of slip on other faults in this part of the Rio Grande rift.
Date and Compiler(s)	2016 Stephen F. Personius, U.S. Geological Survey Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources
References	#1288 Bryan, K., and McCann, F.T., 1937, The Ceja del Rio Puerco—A border feature of the Basin and Range province in New Mexico, Part I, Stratigraphy and structure: Journal of Geology, v. 45, p. 801-828. #1763 Cather, S.M., Connell, S.D., Heynekamp, M.R., and Goodwin, L.B., 1997, Geology of the Arroyo de las Calabacillas [Sky Village SE] 7.5-minute quadrangle, Sandoval County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Open-File Geologic Map 9, 8 p. pamphlet, 1 sheet, scale 1:24,000. #7506 Connell, S.D., 2008, Refinements to the stratigraphic nomenclature of the Santa Fe Group, northwestern Albuquerque Basin, New Mexico: New Mexico Geology, v. 30, p. 14–35. #1302 Hawley, J.W., Love, D.W., Betancourt, J.L., Turner, R.M., and Tharnstrom, S., 1991, Quaternary and Neogene landscape evolution—A transect across the Colorado Plateau and Basin and Range provinces in west-central and central New Mexico, in Julian, B., and Zidek, J., eds., Field guide to geologic excursions in New Mexico and adjacent areas of Texas and Colorado: New Mexico Bureau of Mines and Mineral Resources Bulletin 137, p. 105-148. #1222 Kelley, V.C., 1954, Tectonic map of a part of the upper Rio Grande area, New Mexico: U.S. Geological Survey Oil and Gas Investigations Map OM-157, 1 sheet, scale 1:190,080. #1106 Kelley, V.C., 1977, Geology of Albuquerque basin, New Mexico: New Mexico Bureau of Mines and Mineral Resources Memoir 33, 60 p., 2 pls. #1380 Kelley, V.C., Woodward, L.A., Kudo, A.M., and Callender, J.F., 1976, Guidebook to Albuquerque basin of the Rio Grande rift, New Mexico: New Mexico Bureau of Mines and Mineral

Resources Circular 153, 31 p.

#7507 Koning, D.J., and Jochems, A.P., 2014, Geologic map of the Benavidez Ranch 7.5-minute quadrangle, Bernalillo and Sandoval Counties, New Mexico: New Mexico Bureau of Geology and Mineral Resources Open-File Geologic Map 234, scale 1:24,000.

#7375 Koning, D.J., Pederson, J., Pazzaglia, F.J., and Cather, S.M., 1998, Geology of the Cerro Conejo (Sky Village NE) 7.5-minute quadrangle, Sandoval County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Open-file Geologic Map 45, scale 1:24,000.

#1400 Machette, M.N., 1978, Geologic map of the San Acacia quadrangle, Socorro County, New Mexico: U.S. Geological Survey Geologic quadrangle Map GQ-1415, 1 sheet, scale 1:24,000.

#7508 Mozley, P.S., and Goodwin, L.B., 1995, Patterns of cementation along a Cenozoic normal fault: A record of paleoflow orientations: Geology, v. 23, p. 539-542.

#7460 Thompson, R.A., Shroba, R.R., Menges, C., Schmidt, D.L., Personius, S.F., and Brandt, T.R., 2009, Geologic map of the Volcanoes quadrangle, Bernalillo and Sandoval Counties, New Mexico: U.S. Geological Survey Scientific Investigations Map SIM-3083, scale 1:24,000.

#1427 Wright, H.E., Jr., 1946, Tertiary and Quaternary geology of the lower Rio Puerco area, New Mexico: Geological Society of America Bulletin, v. 57, p. 383-456.

U.S. Geological Survey - Earthquake Hazards Program

Quaternary Fault and Fold Database of the United States

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Santa Fe fault (Class A) No. 2123

Last Review Date: 2015-12-21

Compiled in cooperation with the New Mexico Bureau of Geology & Mineral Resources

citation for this record: **Personius, S.F., and Jochems, A.P., compilers, 2015, Fault number 2123, Santa Fe fault, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults, accessed 08/27/2025 11:30 AM.**

Synopsis	The Santa Fe fault forms the western margin of the Rio Grande rift in the central Albuquerque-Belen basin. The fault has been quite active in the Pliocene and early Pleistocene, based on offset of upper Santa Fe Group (Sierra Ladrones Formation) sediment. Other indirect evidence of Quaternary offset includes differences in the elevation of the "Ortiz surface" across the fault trace and the geometry of spring deposits found along the fault. However, no scarps on surficial deposits have been observed along the trace of the Santa Fe fault.
Name comments	The Santa Fe fault forms part of the western margin of the Rio Grande rift and the Albuquerque basin (Machette, 1982 #1401; Machette and McGimsey, 1983 #1024). The structure was originally named the Carrizo fault by Wright (1946 #1427), was later renamed the Santa Fe fault by Kelley and Wood (1946 #1379), and was included on subsequent compilations (Kelley, 1954 #1222; Kelley, 1977 #1106). The Santa Fe fault places Pliocene to early Pleistocene (Lozinsky and Tedford, 1991 #1399) sediment of the Sierra Ladrones Formation down-to-the-east against older rocks (Machette and McGimsey, 1983 #1024; Ricketts and Karlstrom, 2014 #7300).

	Fault ID: Fault no. 2 of Machette (1982 #1401), fault no. 1 of Machette and McGimsey (1983 #1024).
County(s) and State(s)	VALENCIA COUNTY, NEW MEXICO
Physiographic province(s)	BASIN AND RANGE COLORADO PLATEAUS
Reliability of location	Good Compiled at 1:24,000 scale. *Comments:* No scarps on surficial deposits have been observed; the fault had been shown as dashed along most of its trace on published maps until mapping was completed along much of its trace by Ricketts and Karlstrom (2014 #7300). Fault location is taken from this 1:24,000 map. <P>
Geologic setting	The Santa Fe fault forms the western margin of the Rio Grande rift and the Albuquerque basin; this structure separates the rift from the edge of the Colorado Plateau to the west. <P>
Length (km)	30 km.
Average strike	N4°E
Sense of movement	Normal
Dip	45°–80° E *Comments:* Dip data are from Wright (1946 #1427), Callender and Zilinski, (1976 #1289), Russell and Snelson (1994 #1186), and Ricketts and Karlstrom (2014 #7300). <P>
Paleoseismology studies	<P>

Geomorphic expression	No scarps have been recognized on surficial deposits along the Santa Fe fault, but the fault forms a bedrock escarpment along the northern half of its trace. <P>
Age of faulted surficial deposits	The Santa Fe fault offsets Pliocene to early Pleistocene (Lozinsky and Tedford, 1991 #1399) sediment of the Sierra Ladrones Formation down-to-the-east against older rocks (Machette and McGimsey, 1983 #1024; Ricketts and Karlstrom, 2014 #7300. Other indirect evidence of Quaternary offset includes differences in the elevation of the Pliocene (?) Ortiz surface across the fault trace (Kelley and others, 1976 #1380; Kelley, 1977 #1106, p. 28) and the geometry of spring deposits found along the fault (Callender and Zilinski, 1976 #1289).
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* Timing estimate is based on offset of Pliocene-Pleistocene Sierra Ladrones Formation sediment (Machette and McGimsey, 1983 #1024; Ricketts and Karlstrom, 2014 #7300). <P>
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* No detailed studies of fault offset or age of offset deposits are available; low slip-rate category is assigned based on about 30 m offset of 3.7-Ma basalt (Bachman and Mehnert, 1978 #1265) at the mouth of Arroyo Comanche (Kelley, 1977 #1106; Bachman and Mehnert, 1978 #1265).
Date and Compiler(s)	2015 Stephen F. Personius, U.S. Geological Survey Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources
References	#1265 Bachman, G.O., and Mehnert, H.H., 1978, New K-Ar dates and the late Pliocene to Holocene geomorphic history of the central Rio Grande region, New Mexico: Geological Society of America Bulletin, v. 89, p. 283-292. #1289 Callender, J.F., and Zilinski, R.E., Jr., 1976, Kinematics of Tertiary and Quaternary deformation along the

eastern edge of the Lucero uplift, central New Mexico, in Woodward, L.A., and Northrop, S.A., eds., Tectonics and mineral resources of southwestern North America: New Mexico Geological Society Special Publication 6, p. 53-61.

#1222 Kelley, V.C., 1954, Tectonic map of a part of the upper Rio Grande area, New Mexico: U.S. Geological Survey Oil and Gas Investigations Map OM-157, 1 sheet, scale 1:190,080.

#1106 Kelley, V.C., 1977, Geology of Albuquerque basin, New Mexico: New Mexico Bureau of Mines and Mineral Resources Memoir 33, 60 p., 2 pls.

#1379 Kelley, V.C., and Wood, G.H., Jr., 1946, Geology of the Lucero uplift, Valencia, Socorro, and Bernalillo Counties, New Mexico: U.S. Geological Survey Oil and Gas Investigations Map 47, 1 sheet, scale 1:63,360.

#1380 Kelley, V.C., Woodward, L.A., Kudo, A.M., and Callender, J.F., 1976, Guidebook to Albuquerque basin of the Rio Grande rift, New Mexico: New Mexico Bureau of Mines and Mineral Resources Circular 153, 31 p.

#1399 Lozinsky, R.P., and Tedford, R.H., 1991, Geology and paleontology of the Santa Fe Group, southwestern Albuquerque basin, Valencia County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Bulletin 132, 35 p., 3 pls., scale 1:24,000.

#1401 Machette, M.N., 1982, Quaternary and Pliocene faults in the La Jencia and southern part of the Albuquerque-Belen basins, New Mexico—Evidence of fault history from fault-scarp morphology and Quaternary geology, in Grambling, J.A., and Wells, S.G., eds., Albuquerque Country II: New Mexico Geological Society, 33rd Field Conference, November 4-6, 1982, Guidebook, p. 161-169.

#1024 Machette, M.N., and McGimsey, R.G., 1983, Map of Quaternary and Pliocene faults in the Socorro and western part of the Fort Sumner 1° x 2° quadrangles, central New Mexico: U.S. Geological Survey Miscellaneous Field Studies Map MF-1465-A, 12 p. pamphlet, 1 sheet, scale 1:250,000.

#7300 Ricketts, J.W., and Karlstrom, K.E., 2014, Geologic map of the South Garcia SE 7.5-minute quadrangle, Valencia County, New Mexico: New Mexico Bureau of Geology and Mineral Resources Open-File Geologic Map 246, scale 1:24,000.

#1186 Russell, L.R., and Snelson, S., 1994, Structure and tectonics of the Albuquerque basin segment of the Rio Grande rift—Insights from reflection seismic data, in Keller, G.R., and Cather, S.M., eds., Basins of the Rio Grande rift—Structure, stratigraphy, and tectonic setting: Geological Society of America Special Paper 291, p. 83–112.

#1427 Wright, H.E., Jr., 1946, Tertiary and Quaternary geology of the lower Rio Puerco area, New Mexico: Geological Society of America Bulletin, v. 57, p. 383-456.

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Quaternary Fault and Fold Database of the United States

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unnamed fault of Bonita Canyon (Class B) No. 2144

Last Review Date: 2016-04-22

Compiled in cooperation with the New Mexico Bureau of Geology & Mineral Resources

citation for this record: **Machette, M.N., and Jochems, A.P., compilers, 2016, Fault number 2144, unnamed fault of Bonita Canyon, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults, accessed 08/27/2025 11:30 AM.**

Synopsis	Fault scarp-like features have been mapped on the late Quaternary Twin Craters and El Calderon basalt flows of El Malpais lava field. The associated fault may represent reactivation of a bedrock fault that is concealed in Bonita Canyon, but which must juxtapose Precambrian rock on the west against Paleozoic rock on the east. However, similar mapped features within El Malpais lava field are considered by Levish and others (1992 #1715) to be related to volcanic processes. No detailed study of the fault has been conducted to confirm its origin or document the amount of vertical displacement that may be associated with it. Thus, the feature is herein considered to be of suspect origin.

Name comments	This fault was first mapped by Maxwell (1986 #1720). Levish and others (1992 #1715) characterized it a non-tectonic feature related to volcanic processes as part of a regional reconnaissance for a dam-hazards study. Levish and others (1992 #1715) referred to it as one of the faults in the Zuni-Bandera volcanic field. This fault forms a north-trending scarp (?) across the Twin Craters and El Calderon lava flows south of Bonita Canyon. The scarp is located at the south end of Cerritos de Jaspe (a prominent, west-facing ridge), which is just east of Bonita Canyon.
County(s) and State(s)	CIBOLA COUNTY, NEW MEXICO
Physiographic province(s)	COLORADO PLATEAUS
Reliability of location	Good Compiled at 1:24,000 scale. *Comments:* Trace from 1:62,500-scale geologic map of Maxwell (1986 #1720) combined with accurate placement using photogrammetric methods. <P>
Geologic setting	The fault is in Quaternary (undifferentiated) basalt flows according to the mapping of Maxwell (1986 #1720). It trends north on the basalts, and northwest up Bonita Canyon where it juxtaposes Precambrian rock on the west against Paleozoic rock on the east (Timmons and Cikoski, 2012 #7426). <P>
Length (km)	9 km.
Average strike	N11°W
Sense of movement	Normal *Comments:* Mapping by Maxwell (1986 #1720) and Timmons and Cikoski (2012 #7426) indicates that Paleozoic bedrock is down-dropped on the eastern side of the fault relative to Precambrian bedrock along a northern (concealed) extension of the fault. Conversely, where the fault crosses the El Calderon flow it appears to form a west-facing scarp. On the basis of this observation and similarity to other Cenozoic faults in the region, we infer that the fault has normal dip slip movement. <P>

Dip Direction	Unknown
Paleoseismology studies	<P>
Geomorphic expression	The fault forms a 2-km-long north-trending scarp (?) on basaltic lava flows (Maxwell, 1986 #1720). Levish and others (1992 #1715) suggested that the fault is related to volcanic processes and is not of tectonic origin. No measurements of any vertical displacement have been made across the fault to confirm the amount or direction of possible movement. <P>
Age of faulted surficial deposits	Maxwell (1986 #1720) mapped the fault as offsetting the Twin Craters lava flow, dated at approximately 17_19 ka using radiocarbon and surface cosmogenic techniques (Laughlin and WoldeGabriel, 1997 #7425; Dunbar and Phillips, 2004 #7424). In addition, just south of New Mexico State Highway 53 the fault is mapped as crossing a small tongue of El Calderon flow, dated at 115–120 ka using paleomagnetic constraints (Cascadden and others, 1997 #7423).
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* The fault scarp-like features are present on two Quaternary basalt flows dated at approximately 17–19 and 115–120 ka (Cascadden and others, 1997 #7423; Laughlin and WoldeGabriel, 1997 #7425; Dunbar and Phillips, 2004 #7424). <P>
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* No measurement of offset across the fault has been reported. The fault does not appear to form a high or even moderate (>5 m) scarp on aerial photographs. Thus, it seems reasonable that slip rates associated with this suspect fault would be in the low slip-rate category (<0.2 mm/yr).

Date and Compiler(s)	2016 Michael N. Machette, U.S. Geological Survey, Retired Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources
References	#7423 Cascadden, T.E., Geissman, J.W., Kudo, A.M., and Laughlin, A.W., 1997, El Calderon cinder cone and related basalt flows, in Mabery, K., compiler, Natural History of El Malpais National Monument: New Mexico Bureau of Mines and Mineral Resources Bulletin 156, p. 41-–51. #7424 Dunbar, N.W., and Phillips, F.M., 2004, Cosmogenic ³⁶Cl ages of lava flows in the Zuni-Bandera volcanic field, north-central New Mexico, U.S.A., in Cather, S.M., McIntosh, W.C., and Kelley, S.A., eds., Tectonics, geochronology, and volcanism in the Southern Rocky Mountains and Rio Grande Rift: New Mexico Bureau of Geology and Mineral Resources Bulletin 160, p. 309–317. #7425 Laughlin, A.W., and WoldeGabriel, G., 1997, Dating the Zuni-Bandera volcanic field, in Mabery, K., compiler, Natural History of El Malpais National Monument: New Mexico Bureau of Mines and Mineral Resources Bulletin 156, p. 25–29. #1715 Levish, D.R., Vetter, U.R., Ake, J.P., and Piety, L.A., 1992, Seismotectonic study for Black Rock Dam, Bureau of Indian Affairs, Pueblo of Zuni, New Mexico: Bureau of Reclamation Seismotectonic Report 92-3, 62 p. #1720 Maxwell, C.H., 1986, Geologic map of El Malpais Lava Field and surrounding areas, Cibola County, New Mexico: U.S. Geological Survey Miscellaneous Investigations Map I-1595, 1 sheet, scale 1:62,500. #7426 Timmons, J.M., and Cikoski, C.T., 2012, Geologic map of the San Rafael quadrangle, Cibola County, New Mexico: New Mexico Bureau of Geology and Mineral Resources Open-File Geologic Map 232, scale 1:24,000.

U.S. Geological Survey - Earthquake Hazards Program

Quaternary Fault and Fold Database of the United States

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unnamed faults near Albuquerque Volcanoes (Class A) No. 2049

Last Review Date: 2016-06-26

Compiled in cooperation with the New Mexico Bureau of Geology & Mineral Resources

citation for this record: Personius, S.F., and Jochems, A.P., compilers, 2016, Fault number 2049, unnamed faults near Albuquerque Volcanoes, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults, accessed 08/27/2025 11:31 AM.

Synopsis	Several unnamed north-trending normal faults are located near the Albuquerque Volcanoes. The basaltic volcanic field associated with the volcanoes is apparently confined in a broad graben, defined on the west by the down-to-the-east County Dump fault [2038] and on the east by the down-to-the-west East Paradise fault zone [2040]. Between these two flanking faults there is a series of smaller fault blocks and grabens. Most of these faults appear to be buried by basalt flows dated at about 155 ka. However, these faults can be mapped beneath the flows because most are marked by linear breaks in slope, indicating that preexisting fault scarps disrupted the flows during emplacement. The extent of some buried faults are also evident in high resolution aeromagnetic data. At least two faults are marked by more pronounced linear scarps that indicate small (1–2 m) post-basalt (155–218 ka) movements: a short down-to-the-east fault located between the East [2040] and West Paradise [2042] fault zones clearly offsets basalt in two places along the eastern edge of the volcanic field, and a longer north-trending down-to-the-west fault marked by small scarps in basalt bisects the volcanic field west of the West Paradise fault. This fault may have been the source of the 1978–1979 earthquake swarm near the Albuquerque Volcanoes. Latest movements on both the County Dump [2038] and East Paradise [2040] faults also post-date basalt emplacement.
Name comments	This group of structures is a series of north-trending normal faults on the east side of the Albuquerque Volcanoes. Some of these faults are included in the West Mesa fault zone of Wong and others (1995 #1155) and Hawley and Whitworth (1996 #1303).
County(s) and State(s)	SANDOVAL COUNTY, NEW MEXICO BERNALILLO COUNTY, NEW MEXICO
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:24,000 scale. *Comments:* Fault traces from 1:24,000-scale maps of Connell and others (1998 #7490), Shroba and others (2003 #7459), and Thompson and others (2009 #7460). The locations of some traces beneath the volcanic field are based on high-resolution aeromagnetic data (U.S. Geological Survey and SIAL Geosciences Inc., 1997 #1722; Grauch and Millegan, 1998 #1721). <P>

Geologic setting	These structures are intrabasin faults in the central part of the Albuquerque-Belen basin of the Rio Grande rift. The broad graben that confines the Albuquerque Volcanoes volcanic field suggests that movement on some faults may be associated with magmatic activity. Recent seismicity may be associated with one of these intrabasin structures. An earthquake swarm in 1978–1979 near the southwestern margin of the volcanic field yielded a composite fault-plane solution with a preferred nodal plane striking N. 5° E. and dipping 74° W. (Jaksha and others, 1981 #1760). This fault plane projects to the surface very near the surface trace of an unnamed, 20 km long fault that lies 0.5 km east of the Albuquerque Volcanoes cinder cones. Northeast of the cinder cones, this fault is marked by small scarps on basalt that indicate post-basalt displacement. The County Dump fault [2038] is located between the surface trace of this fault and the surface projection of the earthquake 1978–1979 earthquake swarm, suggesting that the County Dump may sole into the fault at depth. <P>
Length (km)	34 km.
Average strike	N5°W
Sense of movement	Normal
Dip Direction	E; W
Paleoseismology studies	<P>
Geomorphic expression	Outside of the volcanic field, these faults are well expressed as eroded fault scarps on sediment of the upper Santa Fe Group and overlying surficial deposits. Within the Albuquerque Volcanoes volcanic field, these faults are marked by linear breaks in slope and minor fault scarps. Most breaks in slope along these faults appear to be preexisting scarps that disrupted the flow of basalt during eruptions to the west. At least two faults are marked by more pronounced linear scarps that indicate small post-basalt movements. Most of the fault traces in the volcanic field have been partly covered by eolian sand. <P>
Age of faulted surficial deposits	At least two of these faults offset the basalt of the Albuquerque Volcanoes volcanic field; these rocks have been dated by several methods at about 155–218 ka (Geissman and others, 1990 #1297; Peate and others, 1996 #1411;

	Singer and others, 2008 #7492). Most of the faults cut sediment of the upper Santa Fe Group and surficial deposits that predate emplacement of the basalts.
Historic earthquake	
Most recent prehistoric deformation	middle and late Quaternary (<750 ka) *Comments:* At least two faults in this group offset the 155–218-ka basalts of the Albuquerque Volcanoes volcanic field, indicating probable late Pleistocene displacement. Most of the other faults have most recent movements that predate 155–218 ka. <P>
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Two of these structures offset the 155–218-ka basalts of the Albuquerque Volcanoes volcanic field by about 1–2 m, which suggests a low slip rate.
Date and Compiler(s)	2016 Stephen F. Personius, U.S. Geological Survey Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources
References	#7490 Connell, S.D., Allen, B.D., Hawley, J.W., and Shroba, R.R., 1998, Geology of the Albuquerque West 7.5-minute quadrangle, Bernalillo County, New Mexico: New Mexico Bureau of Mines and Mineral Open-File Geologic Map 17, scale 1:24,000. #1297 Geissman, J.W., Brown, L., Turrin, B.D., McFadden, L.D., and Harlan, S.S., 1990, Brunhes chron excursion/polarity episode recorded during the late Pleistocene, Albuquerque Volcanoes, New Mexico, USA: Geophysical Journal International, v. 102, p. 73-88. #1721 Grauch, V.J.S., and Millegan, P.S., 1998, Mapping intrabasinal faults from high-resolution aeromagnetic data: The Leading Edge, v. 17, p. 53-55. #1303 Hawley, J.W., and Whitworth, T.M., compilers, 1996, Hydrogeology of potential recharge areas for the basin- and valley-fill aquifer systems, and hydrogeochemical modeling of proposed artificial recharge of the upper Santa Fe aquifer, northern Albuquerque basin, New Mexico: New Mexico Bureau of Mines and Mineral Resources Open-File Report 402-D, 575 p. #1760 Jaksha, L.H., Locke, J., and Gebhart, H.J., 1981, Microearthquakes

near the Albuquerque volcanoes, New Mexico: Geological Society of America Bulletin, v. 92, p. 31-36.

#1411 Peate, D.W., Chen, J.H., Wasserburg, G.J., Papanastassiou, D.A., and Geissman, J.W., 1996, 238U-230Th dating of a geomagnetic excursion in Quaternary basalts of the Albuquerque Volcanoes Field, New Mexico (USA): Geophysical Research Letters, v. 23, p. 2271-2274.

#7459 Shroba, R.R., Thompson, R.A., Schmidt, D.L., Personius, S.F., Maldonado, F., and Brandt, T.R., 2003, Geologic map of the La Mesita Negra SE quadrangle, Bernalillo County, New Mexico: U.S. Geological Survey Miscellaneous Field Studies Map MF-2416, scale 1:24,000.

#7492 Singer, B.S., Jicha, B.R., Kirby, B.T., Geissman, J.W., Herrero-Bervera, E., 2008, ⁴⁰Ar/³⁹Ar dating links Albuquerque Volcanoes to the Pringle Falls excursion and the Geomagnetic Instability Time Scale: Earth and Planetary Science Letters, v. 267, p. 584–595.

#7460 Thompson, R.A., Shroba, R.R., Menges, C., Schmidt, D.L., Personius, S.F., and Brandt, T.R., 2009, Geologic map of the Volcanoes quadrangle, Bernalillo and Sandoval Counties, New Mexico: U.S. Geological Survey Scientific Investigations Map SIM-3083, scale 1:24,000.

#1722 U.S. Geological Survey, and SIAL Geosciences, Inc., 1997, Description of digital aeromagnetic data collected north and west of Albuquerque, New Mexico: U.S. Geological Survey Open-File Report 97-286, 40 p.

#1155 Wong, I., Kelson, K., Olig, S., Kolbe, T., Hemphill-Haley, M., Bott, J., Green, R., Kanakari, H., Sawyer, J., Silva, W., Stark, C., Haraden, C., Fenton, C., Unruh, J., Gardner, J., Reneau, S., and House, L., 1995, Seismic hazards evaluation of the Los Alamos National Laboratory: Technical report to Los Alamos National Laboratory, Los Alamos, New Mexico, February 24, 1995, 3 volumes, 12 pls., 16 appen.

U.S. Geological Survey - Earthquake Hazards Program

Quaternary Fault and Fold Database of the United States

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unnamed faults near Picuda Peak (Class A) No. 2041

Last Review Date: 2016-06-26

Compiled in cooperation with the New Mexico Bureau of Geology & Mineral Resources

citation for this record: **Personius, S.F., and Jochems, A.P., compilers, 2016, Fault number 2041, unnamed faults near Picuda Peak, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults, accessed 08/27/2025 11:32 AM.**

Synopsis	Near Picuda Peak there is a group of down-to-the-east and down-to-the-west, north trending normal faults that offset coarse gravels and underlying sands of the upper Santa Fe Group. Most of these faults trend to the northeast at their southern ends near Picuda Peak; further north, they trend generally north. Detailed mapping of the nearly complete exposures of the Santa Fe Group section in the Rincones de Zia show very closely spaced normal faults, most of which have displacements of only a few meters. These faults generally offset the uppermost coarse gravel of the Upper Santa Fe Group by a few tens of meters.
Name comments	This group of faults are herein named for their proximity to Picuda Peak. Some faults near Picuda Peak were previously described by Black and Hiss (1974 #1287) and Kelley (1977 #1106). These structures were mapped in detail by Manley (1978 #1404) in the Bernalillo NW 7.5-minute quadrangle and by Personius and others (2000 #1413) in the Loma Machete quadrangle.

County(s) and State(s)	SANDOVAL COUNTY, NEW MEXICO
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:24,000 scale. *Comments:* Fault traces are from 1:24,000-scale mapping of Manley (1978 #1404) in the Bernalillo NW quadrangle and Personius and others (2000 #1413) in the Loma Machete quadrangle. <P>
Geologic setting	Near Picuda Peak there is a group of down-to-the-east and down-to-the-west, north trending intrabasin faults near the northern margin of the Albuquerque-Belen basin in the Rio Grande rift. In previous publications, these faults were located near the crest of the Ziana anticline (Black and Hiss, 1974 #1287; Kelley and others, 1976 #1380; Kelley, 1977 #1106), but work by Personius and others (2000 #1413) indicates that opposing dips in the region that were thought to be the expression of a large fold may instead be related to intense normal faulting and block rotation. <P>
Length (km)	10 km.
Average strike	N2°E
Sense of movement	Normal
Dip	43–75° E., 47–87° W. *Comments:* Numerous fault exposures indicate that these faults are usually steeply dipping (Personius and others, 2000 #1413). <P>
Paleoseismology studies	<P>

Geomorphic expression	Most faults form narrow topographic ridges and valleys that correlate with sense of fault displacement. Topographic expression is lost, but numerous fault exposures and juxtaposed bedrock mark these faults in the badlands of the Rincones de Zia. <P>
Age of faulted surficial deposits	The ages of offset deposits are poorly known, but the uppermost sand and gravel of the upper Santa Fe Group in this area are thought to be early Pleistocene in age (Personius and others, 2000 #1413).
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* The unnamed faults near Picuda Peak offset early Pleistocene sediments of the upper Santa Fe Group a few tens of meters but do not appear to offset younger surficial deposits (Personius and others, 2000 #1413). <P>
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Offsets of early Pleistocene gravels across individual faults are probably no more than 20–30 m.
Date and Compiler(s)	2016 Stephen F. Personius, U.S. Geological Survey Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources
References	#1287 Black, B.A., and Hiss, W.L., 1974, Structure and stratigraphy in the vicinity of the Shell Oil Co. Santa Fe Pacific No. 1 test well, southern Sandoval County, New Mexico, in Siemers, C.T., Woodward, L.A., and Callender, J.F., eds., Ghost Ranch central-northern New Mexico: New Mexico Geological Society, 25th Field Conference, October 10-12, 1974, Guidebook, p. 365-370. #1106 Kelley, V.C., 1977, Geology of Albuquerque basin, New Mexico: New Mexico Bureau of Mines and Mineral Resources Memoir 33, 60 p., 2 pls. #1380 Kelley, V.C., Woodward, L.A., Kudo, A.M., and Callender, J.F., 1976, Guidebook to Albuquerque basin of

	the Rio Grande rift, New Mexico: New Mexico Bureau of Mines and Mineral Resources Circular 153, 31 p. #1404 Manley, K., 1978, Geologic map of Bernalillo NW quadrangle, Sandoval County, New Mexico: U.S. Geological Survey Geologic quadrangle Map GQ-1446, 1 sheet, scale 1:24,000. #1413 Personius, S.F., Machette, M.N., and Stone, B.D., 2000, Preliminary geologic map of the Loma Machete quadrangle, Sandoval County, New Mexico: U.S. Geological Survey Miscellaneous Field Studies Map MF-2334, scale 1:24,000.

U.S. Geological Survey - Earthquake Hazards Program

Quaternary Fault and Fold Database of the United States

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unnamed faults near Star Heights (Class A) No. 2048

Last Review Date: 2016-06-26

Compiled in cooperation with the New Mexico Bureau of Geology & Mineral Resources

citation for this record: **Personius, S.F., and Jochems, A.P., compilers, 2016, Fault number 2048, unnamed faults near Star Heights, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults, accessed 08/27/2025 11:32 AM.**

Synopsis	This group of north-trending, mostly down-to-the-east normal faults offsets upper Santa Fe Group sediments, the Llano de Albuquerque, and younger piedmont deposits near the neighborhood of Star Heights. Individual faults have displaced upper Santa Fe Group sediments of a few tens of meters, 15–20 m of the Llano de Albuquerque, and 5–10 m in probable middle Pleistocene piedmont deposits.
Name comments	These north-trending normal faults include parts of the Star Heights fault of Kelley (1977 #1106) and Hawley and Whitworth (1996 #1303). Detailed mapping by Cather and others (1997 #1763), Personius and others (2000 #1413), and Thompson and others (2009 #7460) indicate that the Star Heights fault mapped by Kelley (1977 #1106) and Hawley and Whitworth (1996 #1303) includes parts of at least two separate faults, so this name has been abandoned.
County(s) and State(s)	BERNALILLO COUNTY, NEW MEXICO SANDOVAL COUNTY, NEW MEXICO

Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:24,000 scale. *Comments:* Fault traces from 1:24,000-scale mapping of Cather and others (1997 #1763), Personius and others (2000 #1413), and Thompson and others (2009 #7460) supplemented with additional photogrammetric analysis by Jochems. The locations of some fault traces are based on high-resolution aeromagnetic data (U.S. Geological Survey and SIAL Geosciences Inc., 1997 #1722; Grauch and Millegan, 1998 #1721). <P>
Geologic setting	These structures are intrabasin faults in the northern part of the Albuquerque-Belen basin of the Rio Grande rift. <P>
Length (km)	18 km.
Average strike	N5°E
Sense of movement	Normal
Dip	70° E. *Comments:* Dip data are from Personius and others (2000 #1413). <P>
Paleoseismology studies	<P>
Geomorphic expression	These faults offset upper Santa Fe Group sediment, form broad scarps on the Llano de Albuquerque, and form steeper, smaller scarps on younger piedmont deposits. <P>
Age of faulted surficial deposits	These faults offset early Plio-Pleistocene upper Santa Fe Group sediment, the early Pleistocene Llano de Albuquerque, and younger piedmont deposits (Personius and others, 2000 #1413). The faulted piedmont deposits are characterized by well-developed (stage III) calcic soils, so they probably are middle Pleistocene in age.

Historic earthquake	
Most recent prehistoric deformation	middle and late Quaternary (<750 ka) *Comments:* Some of these structures offset the early Pleistocene Llano de Albuquerque 15–20 m and middle Pleistocene piedmont deposits 5–10 m; these data indicate a history of recurrent movement that, in some cases, possibly extend into the late Pleistocene. <P>
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Inferred low slip rate is based on presence of broad scarps on the Llano de Albuquerque that offset the surface 15–20 m.
Date and Compiler(s)	2016 Stephen F. Personius, U.S. Geological Survey Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources
References	#1763 Cather, S.M., Connell, S.D., Heynekamp, M.R., and Goodwin, L.B., 1997, Geology of the Arroyo de las Calabacillas [Sky Village SE] 7.5-minute quadrangle, Sandoval County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Open-File Geologic Map 9, 8 p. pamphlet, 1 sheet, scale 1:24,000. #1721 Grauch, V.J.S., and Millegan, P.S., 1998, Mapping intrabasinal faults from high-resolution aeromagnetic data: The Leading Edge, v. 17, p. 53-55. #1303 Hawley, J.W., and Whitworth, T.M., compilers, 1996, Hydrogeology of potential recharge areas for the basin- and valley-fill aquifer systems, and hydrogeochemical modeling of proposed artificial recharge of the upper Santa Fe aquifer, northern Albuquerque basin, New Mexico: New Mexico Bureau of Mines and Mineral Resources Open-File Report 402-D, 575 p. #1106 Kelley, V.C., 1977, Geology of Albuquerque basin, New Mexico: New Mexico Bureau of Mines and Mineral Resources Memoir 33, 60 p., 2 pls. #1413 Personius, S.F., Machette, M.N., and Stone, B.D., 2000, Preliminary geologic map of the Loma Machete quadrangle, Sandoval County, New Mexico: U.S. Geological Survey Miscellaneous Field Studies Map MF-2334, scale 1:24,000. #7460 Thompson, R.A., Shroba, R.R., Menges, C., Schmidt, D.L., Personius, S.F., and Brandt, T.R., 2009,

	Geologic map of the Volcanoes quadrangle, Bernalillo and Sandoval Counties, New Mexico: U.S. Geological Survey Scientific Investigations Map SIM-3083, scale 1:24,000. #1722 U.S. Geological Survey, and SIAL Geosciences, Inc., 1997, Description of digital aeromagnetic data collected north and west of Albuquerque, New Mexico: U.S. Geological Survey Open-File Report 97-286, 40 p.

U.S. Geological Survey - Earthquake Hazards Program

Quaternary Fault and Fold Database of the United States

As of January 12, 2017, the USGS maintains a limited number of metadata fields that characterize the Quaternary faults and folds of the United States. For the most up-to-date information, please refer to the interactive fault map.

unnamed faults of El Malpais lava field (Class B) No. 2146

Last Review Date: 2016-04-22

Compiled in cooperation with the New Mexico Bureau of Geology & Mineral Resources

citation for this record: **Machette, M.N., and Jochems, A.P., compilers, 2016, Fault number 2146, unnamed faults of El Malpais lava field, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults, accessed 08/27/2025 11:32 AM.**

Synopsis	These three groups of suspect faults form numerous fissures and cracks in early Quaternary basalt flows of El Malpais lava field. They may include pressure ridges and collapsed lava tubes that give the expression of tectonic activity, but could be related to volcanic processes. Thus, these features are considered to be of suspect origin. No detailed studies of the features have been conducted to confirm their origin or document the amount of vertical displacement, if any, that may be associated with them.
Name comments	These faults were first mapped by Maxwell (1986 #1720); additional structures were mapped to the west by Baldridge and others (1989 #1741). Levish and others (1992 #1715), as part of a regional reconnaissance for a dam-hazards study, characterized them as non-tectonic features related to volcanic processes. Levish and others (1992 #1715) referred to the features as "Faults in the Zuni-Bandera volcanic field". The faults form four groups on El Malpais lava field. The southern group trends north across the North Plains, the main (longest) feature of which is named La Rendija. The southern extent of these faults is approximately 10 km south of the map area of Maxwell (1986 #1720). The northwestern group is comprised of two short north-northeast trending faults and associated

	fissure-like features located about 3 km south and southwest of Hoya de Cibola (Maxwell, 1986 #1720). The northeastern group is comprised of four short faults that trend north to northeast; they are located about 5 km southeast of Cerro Encierro.
County(s) and State(s)	CIBOLA COUNTY, NEW MEXICO
Physiographic province(s)	COLORADO PLATEAUS
Reliability of location	Good Compiled at 1:24,000 scale. *Comments:* Fault traces are shown on 1:62,500-scale geologic map of Maxwell (1986 #1720) and a small-scale (approximately 1:400,000 scale) geologic map of Baldridge and others (1989 #1741). Extensions of the fault features west of Maxwell's mapping are shown on 1:100,000-scale geologic map of Anderson (1986 #1281). Fault traces were recompiled and digitized at 1:24,000 scale using photogrammetric methods. <P>
Geologic setting	These fault-like features are present on Quaternary (undifferentiated) basalt flows according to the mapping of Maxwell (1986 #1720). They trend north and northeast and may be related to westward directed extension or to the NE-trending Jemez lineament. Levish and others (1992 #1715) characterized the faults as non-tectonic features related to volcanic processes. <P>
Length (km)	26 km.
Average strike	N7°E
Sense of movement	Normal *Comments:* As mapped by Maxwell (1986 #1720), although most of the features are fissures that may not correspond to vertical displacement. <P>
Dip Direction	W; NW; SE

	Comments: As reported by Maxwell (1986 #1720). <P>
Paleoseismology studies	<P>
Geomorphic expression	The faults (?) form short north- and northeast-trending en echelon scarps (?), fissures, and open crevices in lava flows (Maxwell, 1986 #1720). Levish and others (1992 #1715) suggested that the faults are fissures, cracks, pressure ridges, and collapsed lava tubes that give the expression of tectonic activity, but are in fact related to volcanic processes. <P>
Age of faulted surficial deposits	Maxwell (1986 #1720) mapped the faults as having offset Quaternary basalts that have reported K-Ar ages as old as and 1.38±0.29 Ma and Ar-Ar ages as young as 0.593±0.086 Ma (Laughlin and West, 1976 #7420; Laughlin and others, 1993 #7421). These dates suggest that the older (undifferentiated) basalts flows (Qb) span the early to middle Quaternary.
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* The features are present on basalts flows (Qb) of early to possibly middle Quaternary age. However, Maxwell (1986 #1720) suggested that the southern group of features (La Rendija) is Holocene in age because the crevices are not filled with alluvium, thus suggesting very recent formation of the features. In addition, he suggested that the numerous small fault scarps (?) on unconsolidated alluvium at the eastern edge of North Plains are also young. <P>
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* No measurements of offset across the features have been reported. If the features are really faults of Holocene age (Maxwell, 1986 #1720) and have substantial (>10 m) offset, they could have a slip rate that exceeds 0.2 mm/yr. However, the features are formed on an early to middle Quaternary landscape; thus, the recurrence

	interval for accumulating stress prior to the most recent faulting (suspect) event could be 750 k.y. or more. It therefore seems reasonable that slip rates associated with these suspect faults would be in the lowest slip-rate category.
Date and Compiler(s)	2016 Michael N. Machette, U.S. Geological Survey, Retired Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources
References	#1281 Anderson, O.J., compiler, 1986, Geologic map of Fence Lake, New Mexico 1:100,000 metric sheet: New Mexico Bureau of Mines and Mineral Resources Open-File Report 220, 4 p. pamphlet, 4 sheets, scale 1:100,000. #1741 Baldridge, W.S., Perry, F.V., Vaniman, D.T., Nealey, L.D., Leavy, B.D., Laughlin, A.W., Kyle, P., Bartov, Y., Steinitz, G., and Gladney, E.S., 1989, Excursion 8A—Magmatism associated with lithospheric extension—Middle to late Cenozoic magmatism of the southeastern Colorado Plateau and central Rio Grande rift, New Mexico and Arizona, in Chapin, C.E., and Zidek, J., eds., Field excursions to volcanic terranes in the Western United States, v. I, Southern Rocky Mountain region: New Mexico Bureau of Mines and Mineral Resources Memoir 46, p. 187-202. #7420 Laughlin, A.W., and West, F.G., 1976, The Zuni Mountains, New Mexico, as a potential dry hot rock geothermal energy site: U.S. Energy Research and Development Administration, Los Alamos Scientific Laboratories Informal Report LA-3197-MS, 13 p. #7421 Laughlin, A.W., Perry, F.V., Damon, P.E., Shafiqullah, M., WoldeGabriel, G., McIntosh, W., Harrington, C.D., Wells, S.G., and Drakos, P.G., 1993, Geochronology of Mount Taylor, Cebollita Mesa, and Zuni-Bandera volcanic fields, Cibola County, New Mexico: New Mexico Geology, v. 16, no. 4, p. 81–92. #1715 Levish, D.R., Vetter, U.R., Ake, J.P., and Piety, L.A., 1992, Seismotectonic study for Black Rock Dam, Bureau of Indian Affairs, Pueblo of Zuni, New Mexico: Bureau of Reclamation Seismotectonic Report 92-3, 62 p. #1720 Maxwell, C.H., 1986, Geologic map of El Malpais Lava Field and surrounding areas, Cibola County, New Mexico: U.S. Geological Survey Miscellaneous Investigations Map I-1595, 1 sheet, scale 1:62,500.

U.S. Geological Survey - Earthquake Hazards Program

Quaternary Fault and Fold Database of the United States

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unnamed intrabasin faults west of the Rio Puerco (Class A) No. 2115

Last Review Date: 2016-03-30

Compiled in cooperation with the New Mexico Bureau of Geology & Mineral Resources

citation for this record: **Personius, S.F., and Jochems, A.P., compilers, 2016, Fault number 2115, unnamed intrabasin faults west of the Rio Puerco, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults, accessed 08/27/2025 11:33 AM.**

Synopsis	These intrabasin faults east of the Coyote Springs fault [2114] in the southwest Albuquerque basin of the Rio Grande rift are mostly expressed as short fault scarps in deposits of the upper Santa Fe Group Sierra Ladrones Formation; some have offsets of 3–20 m in middle Pleistocene alluvium. Most of the faults are partly to nearly completely buried by eolian sand.
Name comments	This group of structures consists of numerous short to relatively long, generally isolated, north-trending faults within the Belen sub-basin of the Albuquerque basin west of the Rio Puerco that were mapped by Machette (1982 #1401), Machette and McGimsey (1983 #1024), and Love and Young (1983 #1723). Some of these faults were previously mapped and named by Kelley (1977 #1106), including the east-down Gabaldon fault, the northern part of which was mapped by Lozinsky and Tedford (1991 #1339).
County(s) and State(s)	SOCORRO COUNTY, NEW MEXICO VALENCIA COUNTY, NEW MEXICO

Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:24,000 scale. *Comments:* Fault traces compiled using photogrammetric methods and previous mapping of Machette and McGimsey (1983 #1024) at 1:250,000 scale and Lozinsky and Tedford (1991 #1339) at 1:24,000 scale. <P>
Geologic setting	These faults dip to the east and west, and form a broad zone within the active part of the Belen sub-basin of the Albuquerque basin, west of the Rio Puerco. The longest fault (~27 km) in this group of structures (Gabaldon fault of Kelley, 1977 #1106) is thought to be an east-down listric fault at depth based on 2D geophysical modeling and well data (Grauch and Connell, 2013 #7268). <P>
Length (km)	22 km.
Average strike	N7°W
Sense of movement	Normal
Dip Direction	E; W *Comments:* Grauch and Connell (2013 #7268) show the longest east-down fault in this group of structures as a relatively shallow listric fault based on 2D geophysical modeling and well data. <P>
Paleoseismology studies	<P>
Geomorphic expression	These faults are marked by subdued, discontinuously preserved scarps that are mostly covered by eolian sand within the western part of the Belen sub-basin. Machette and McGimsey (1983 #1024) measured offsets of 3–20 m in middle Pleistocene alluvium. <P>

Age of faulted surficial deposits	These faults offset lower Pleistocene sediment of the upper Santa Fe Group Sierra Ladrones Formation, and early and middle Pleistocene alluvium (Machette, 1978 #1223; Machette and McGimsey, 1983 #1024).
Historic earthquake	
Most recent prehistoric deformation	middle and late Quaternary (<750 ka) *Comments:* No deposits younger than middle Pleistocene (150–750 ka) have been shown to be offset by these faults, but the 3–20 m offsets measured by Machette and McGimsey (1983 #1024) indicate a recurrent history of movement that in some cases probably extended into the late Pleistocene. <P>
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Low slip-rate category assigned based on offsets of 3–20 m of middle Pleistocene (150–750 ka) alluvium (Machette and McGimsey, 1983 #1024).
Date and Compiler(s)	2016 Stephen F. Personius, U.S. Geological Survey Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources
References	#7268 Grauch, V.J.S., and Connell, S.D., 2013, New perspectives on the geometry of the Albuquerque basin, Rio Grande rift, New Mexico: Insights from geophysical models of rift-fill thickness, in Hudson, M.R., and Grauch, V.J.S., eds., New perspectives on Rio Grande rift basins—From tectonics to groundwater: Geological Society of America Special Paper 494, p. 427–462, doi:10.1130/2013.2494(16). #1106 Kelley, V.C., 1977, Geology of Albuquerque basin, New Mexico: New Mexico Bureau of Mines and Mineral Resources Memoir 33, 60 p., 2 pls. #1723 Love, D.W., and Young, J.D., 1983, Progress report on the late Cenozoic geologic evolution of the lower Rio Puerco, in Chapin, C.E., and Callender, J.F., eds., Socorro region II: New Mexico Geological Society, 34th Field Conference, October 13-15, 1983, Guidebook, p. 277-284. #1399 Lozinsky, R.P., and Tedford, R.H., 1991, Geology and paleontology of the Santa Fe Group, southwestern Albuquerque basin, Valencia County, New

	Mexico: New Mexico Bureau of Mines and Mineral Resources Bulletin 132, 35 p., 3 pls., scale 1:24,000. #1401 Machette, M.N., 1982, Quaternary and Pliocene faults in the La Jencia and southern part of the Albuquerque-Belen basins, New Mexico—Evidence of fault history from fault-scarp morphology and Quaternary geology, in Grambling, J.A., and Wells, S.G., eds., Albuquerque Country II: New Mexico Geological Society, 33rd Field Conference, November 4-6, 1982, Guidebook, p. 161-169. #1024 Machette, M.N., and McGimsey, R.G., 1983, Map of Quaternary and Pliocene faults in the Socorro and western part of the Fort Sumner 1° x 2° quadrangles, central New Mexico: U.S. Geological Survey Miscellaneous Field Studies Map MF-1465-A, 12 p. pamphlet, 1 sheet, scale 1:250,000. #1223 Machette, M.N., compiler, 1978, Preliminary geologic map of the Socorro 1° by 2° quadrangle, central New Mexico: U.S. Geological Survey Open-File Report 78-607, 1 sheet, scale 1:250,000.

U.S. Geological Survey - Earthquake Hazards Program

Quaternary Fault and Fold Database of the United States

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Zia fault (Class A) No. 2046

Last Review Date: 2015-04-13

Compiled in cooperation with the New Mexico Bureau of Geology & Mineral Resources

citation for this record: **Personius, S.F., and Haller, K.M., compilers, 2015, Fault number 2046, Zia fault, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults, accessed 08/27/2025 11:33 AM.**

Synopsis	The down-to-the-east Zia fault offsets Santa Fe Group sediment exposed in the Zia badlands, on the Llano de Albuquerque, and in younger Quaternary deposits. Upper Santa Fe Group sediment may have been offset about 60 m across the Zia fault since early Quaternary time.
Name comments	The Zia fault is one of several north-trending normal faults named by Kelley (1977 #1106) in the Zia badlands in the northern part of the Albuquerque-Belen basin. Galusha (1966 #1296), G.O. Bachman (unpublished mapping, 1975) and Manley (1978 #1404) mapped the northern end of the Zia fault in the Sky Village NE and Bernalillo NW quadrangles, respectively. Galusha (1966 #1296) and Manley (1978 #1404) used the name Rincon fault in the Bernalillo NW quadrangle, but we retain the name Zia fault herein due to apparent common usage in recent publications (Wong and others, 1995 #1155; Hawley and Whitworth, 1996 #1303). Recent mapping (Hawley and Whitworth, 1996 #1303; Cather and others, 1997 #1763; Connell, 2008 #7454) extends the Zia fault much further south than the original trace of the fault as mapped by Kelley (1977 #1106).

County(s) and State(s)	BERNALILLO COUNTY, NEW MEXICO SANDOVAL COUNTY, NEW MEXICO
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:100,000 scale. *Comments:* Fault trace from Manley (1978 #1404) in the Bernalillo NW quadrangle, G.O. Bachman (unpubl. mapping, 1975) in the Sky Village NE quadrangle, Cather and others (1997 #1763) in the Sky Village SE quadrangle, and unpublished air photo mapping by the compiler (1997) in the Sky Village NE, Sky Village SE, and Volcano Ranch quadrangles, all recompiled at 1:100,000 scale on a topographic base map. The fault location is also evident in high-resolution aeromagnetic data (U.S. Geological Survey and SIAL Geosciences Inc., 1997 #1722; Grauch and Millegan, 1998 #1721). <P> The southern trace of the Zia fault is open to interpretation. Cather and others (1997 #1763) mapped the Zia fault as a queried trace with a southward strike along the eastern margin of the Sky Village SE (now Arroyo de las Calabacillas) 7.5-minute quadrangle. However, the compiler used the mapping of Hawley and Whitworth (1996 #1303), airphoto analysis (S.F. Personius, unpubl. mapping, 1997), and geophysical data (U.S. Geological Survey and SIAL Geosciences Inc., 1997 #1722; Grauch and Millegan, 1998 #1721) to infer a more southwestward trace of the Zia fault across the Sky Village SE quadrangle. The latter trace is used in the compilation because the fault appears to have better topographic expression, and thus may have younger movement. <P>
Geologic setting	The Zia fault is one of several down-to-the-east intrabasin faults in the northern part of the Albuquerque-Belen basin. <P>
Length (km)	32 km.
Average strike	N15°E
Sense of movement	Normal

Dip Direction	E
Paleoseismology studies	Site 2046-1. Referred to as the Zia trench site is located near the southern rim of Ceja de-Rio Jemez (the northern limit of the Llano de Albuquerque geomorphic surface). McCalpin and Harrison (2001 #6924) excavated three trenches at this site in order to better observe the stratigraphy. The middle trench crosses the steepest, highest part of the fault scarp and reveals evidence for at least 5 faulting events. Displacement in these events ranged from 0.6 to 2.6 m, with an average of 1.3 m. The study includes two independent age estimates from soil-carbonate accumulation and luminescence ages. Soil-carbonate age estimates are preferred because the thermoluminescence ages (56–416 ka) were deemed unreliable because all dates are in an inverted stratigraphic order. The soils in the upper 3 m of the trench required 10–32 k.y. to form, and the strong soils at the base of the trench required an additional 32 k.y. <P>
Geomorphic expression	The Zia fault is well exposed in Santa Fe Group sediment in the Zia badlands north of the Llano de Albuquerque. Farther south, the fault forms broad, dissected fault scarps across the Llano de Albuquerque and on younger surficial deposits. <P>
Age of faulted surficial deposits	Manley (1978 #1404) described minor (0.5 m) offset of middle or upper (?) Pleistocene alluvium by the Zia fault in the Bernalillo NW quadrangle. Kelly (1997 #1106) estimated approximately 60 m of throw in Upper Santa Fe Group sediment (Pliocene to early Pleistocene) across the Zia fault. In most places, the Zia fault offsets the early Pleistocene Llano de Albuquerque surface and middle (?) Pleistocene surficial deposits.
Historic earthquake	
Most recent prehistoric deformation	latest Quaternary (<15 ka) *Comments:* McCalpin and Harrison (2001 #6924) conclude that the most recent surface rupture at the trench site occurred about 11 ka as inferred from soil-carbonate age estimates. Furthermore, the most recent event is older than the Holocene unconformity that occurred about 2,380–2,740 cal. yr BP. <P>
Recurrence interval	10–21 k.y. (<119 ka)

	Comments: McCalpin and Harrison (2001 #6924) base their estimate of long-term average recurrence by assuming five events have occurred since the formation of buried soils 5 and 6, which have a soil-carbonate age estimate of greater than 63 ka and an optically stimulated luminescence (OSL) age of 119 ka. McCalpin and Harrison (2001 #6924) suggest that if the most recent event occurred at 11 ka, then the four preceding recurrence cycles spanned 52–108 k.y., which results in an average recurrence interval of 10–21 k.y.
Slip-rate category	Less than 0.2 mm/yr *Comments:* The five events inferred from the middle trench have a cumulative down-to-the-east vertical displacement of 6.5 m, which occurred over the past 63-119 ka. McCalpin and Harrison (2001 #6924) suggest that the resulting average long-term vertical displacement rate is 0.055–0.1 mm/yr.
Date and Compiler(s)	2015 Stephen F. Personius, U.S. Geological Survey Kathleen M. Haller, U.S. Geological Survey
References	#1763 Cather, S.M., Connell, S.D., Heynekamp, M.R., and Goodwin, L.B., 1997, Geology of the Arroyo de las Calabacillas [Sky Village SE] 7.5-minute quadrangle, Sandoval County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Open-File Geologic Map 9, 8 p. pamphlet, 1 sheet, scale 1:24,000. #7454 Connell, S.D., 2008, Geologic map of the Albuquerque-Rio Rancho metropolitan area and vicinity, Bernalillo and Sandoval Counties, New Mexico: New Mexico Bureau of Geology and Mineral Resources Geologic Map 78, scale 1:50,000. #1296 Galusha, T., 1966, The Zia Sand Formation, new early to medial Miocene beds in New Mexico: American Museum Novitates 2271, 12 p. #1721 Grauch, V.J.S., and Millegan, P.S., 1998, Mapping intrabasinal faults from high-resolution aeromagnetic data: The Leading Edge, v. 17, p. 53-55. #1303 Hawley, J.W., and Whitworth, T.M., compilers, 1996, Hydrogeology of potential recharge areas for the basin- and valley-fill aquifer systems, and hydrogeochemical modeling of proposed artificial recharge of the upper Santa Fe aquifer, northern Albuquerque basin, New Mexico: New Mexico Bureau of Mines and Mineral Resources Open-File Report 402-D, 575 p. #1106 Kelley, V.C., 1977, Geology of Albuquerque basin, New Mexico: New Mexico Bureau of Mines and Mineral Resources Memoir 33, 60 p., 2 pls. #1404 Manley, K., 1978, Geologic map of Bernalillo NW quadrangle, Sandoval County, New Mexico: U.S. Geological Survey Geologic quadrangle Map GQ-1446, 1 sheet, scale 1:24,000. #6924 McCalpin, J.P., and Harrison, J.B.J., 2001, Paleoseismicity of Quaternary faults near Albuquerque, New Mexico: Final Technical Report, Second Year, to U.S. Geological Survey for Contract 99HQGR0056, 58 p. #1722 U.S. Geological Survey, and SIAL Geosciences, Inc., 1997, Description of digital

	aeromagnetic data collected north and west of Albuquerque, New Mexico: U.S. Geological Survey Open-File Report 97-286, 40 p. #1155 Wong, I., Kelson, K., Olig, S., Kolbe, T., Hemphill-Haley, M., Bott, J., Green, R., Kanakari, H., Sawyer, J., Silva, W., Stark, C., Haraden, C., Fenton, C., Unruh, J., Gardner, J., Reneau, S., and House, L., 1995, Seismic hazards evaluation of the Los Alamos National Laboratory: Technical report to Los Alamos National Laboratory, Los Alamos, New Mexico, February 24, 1995, 3 volumes, 12 pls., 16 appen.

APPENDIX C
DETERMINISTIC ANALYSES

APPENDIX C.1
DETERMINISTIC EZ-FRISK SOFTWARE INPUT

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*********************************************
*****              EZ-FRISK              *****
***** SEISMIC HAZARD ANALYSIS DEFINITION *****
*****               FUGRO                *****
*****        WALNUT CREEK, CA  USA       *****
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PROGRAM VERSION
  EZ-FRISK 8.11 Build 019

ANALYSIS TITLE:
  Mt Taylor Deterministic

ANALYSIS TYPE:
  Single Site Analysis

SITE COORDINATES
  Latitude 35.3409
  Longitude -107.635

INTENSITY TYPE: Spectral Response @ 5% Damping

HAZARD DEAGGREGATION
  Status: ON
  Deagregation Scenario 1
    Period: PGA
    Amplitude: 0.0001 Acceleration (g)
  Bin Configuration
    Magnitude
      Scale: Moment Magnitude
      Lowest Value: 5 Mw
      Highest Value: 9 Mw
      Bin Size: 0.1
    Distance
      Lowest Value: 0 km
      Highest Value: 102.5 km
      Bin Size: 2.5 km
    Epsilon
      Lowest Value: -2.2
      Highest Value: 4.2
      Bin Size: 0.2

SOIL AMPLIFICATION
  Method: Do not use soil amplification

ATTENUATION EQUATION SITE PARAMETERS
  Depth[Vs=1,000m/s] (m): 5
  Depth[Vs=1000m/s] (m): -1
  Estimate Z1 from Vs30 for CY NGA: 1
  Regional Code: Default
  Subduction Zone Setting: Unknown
  Vs30 (m/s): 1200
  Vs30 Is Measured: 0
  Z25 (km): 0.79

AMPLITUDES - Acceleration (g)
  0.0001
  0.001
  0.01
  0.02
  0.05
  0.07
  0.1
  0.2
  0.3
  0.4
  0.5
  0.7
  1
  2
  3

PERIODS (s)
  PGA
  0.05
  0.1
  0.2
  0.3
  0.4
  0.5
  0.75
  1
  2
  3
  4

DETERMINISTIC FRACTILES
  0.5
  0.84

PLOTTING PARAMETERS
  Period at which to plot PGA: 0.0001

CALCULATIONAL PARAMETERS
  Fault Seismic Sources -
    Maximum inclusion distance   :   1000 km
    Down dip integration increment   :   1 km
    Horizontal integration increment   :   1 km
    Number rupture length per earthquake :   1
  Subduction Interface Seismic Sources -
    Maximum inclusion distance   :   1000 km
    Down dip integration increment   :   5 km
    Horizontal integration increment   :   20 km
    Number rupture length per earthquake :   1
  Subduction Slab Seismic Sources -
    Maximum inclusion distance   :   300 km
    Down dip integration increment   :   5 km
    Horizontal integration increment   :   20 km

```
    Number rupture length per earthquake :   1
  Area Seismic Sources -
    Maximum inclusion distance           :   200 km
    Vertical integration increment       :   3 km
    Number of rupture azimuths           :   3
    Minimum epicentral distance step     :   0.5 km
    Maximum epicentral distance step     :   10 km
  Gridded Seismic Sources -
    Maximum inclusion distance            :   1000 km
    Default number of rupture azimuths    :   20
    Maximum distance for default azimuths :   40 km
    Minimum distance for one azimuth      :   150
    Use binned calcuations if possible    :   true
    Bins per decade in distance (km)      :   20
  All Seismic Sources -
    Magnitude integration step           :   0.1 M
    Apply magnitude scaling              :   NO
    Include near-source directivity      :   NO

ATTENUATION EQUATIONS

  Name: Abrahamson-et al (2014) NGA West 2 USGS 2014
  Database: C:\Program Files (x86)\EZ-FRISK 8.11\Files\standard.bin-
attendb
  Base: Abrahamson-et al 2014 NGA West 2
  Truncation Type: USGS 2008 NSHM Truncation
  Truncation Value: 3
  Magnitude Scale: Moment Magnitude
  Distance Type: Distance To Rupture

  Name: Boore-et al (2014) NGA West 2 USGS 2014
  Database: C:\Program Files (x86)\EZ-FRISK 8.11\Files\standard.bin-
attendb
  Base: Boore-et al 2014 NGA West 2
  Truncation Type: USGS 2008 NSHM Truncation
  Truncation Value: 3
  Magnitude Scale: Moment Magnitude
  Distance Type: Horizontal Distance To Rupture

  Name: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
  Database: C:\Program Files (x86)\EZ-FRISK 8.11\Files\standard.bin-
attendb
  Base: Campbell-Bozorgnia 2014 NGA West 2
  Truncation Type: USGS 2008 NSHM Truncation
  Truncation Value: 3
  Magnitude Scale: Moment Magnitude
  Distance Type: Distance To Rupture

  Name: Chiou-Youngs (2014) NGA West 2 USGS 2014
  Database: C:\Program Files (x86)\EZ-FRISK 8.11\Files\standard.bin-
attendb
  Base: Chiou-Youngs 2014 NGA West 2
  Truncation Type: USGS 2008 NSHM Truncation
  Truncation Value: 3
```

Magnitude Scale: Moment Magnitude
Distance Type: Distance To Rupture

SEISMIC SOURCE SUMMARY TABLE

Closest Deterministic Fault Source	Distance	Magnitude	Mechanism	Dip Angle	Dips To	Site Region Lies
Random Earthquake	15.08	6.3000	Normal	60.0000	NE	Mt Taylor Deterministic S
Cat Mesa fault	75.81	6.6000	Normal	80.0000	W	Mt Taylor Deterministic NW
Cebollita Mesa fault	74.73	6.3000	Normal	60.0000	W	Mt Taylor Deterministic NE
Continental Divide fault	91.78	6.5000	Normal	60.0000	NW	Mt Taylor Deterministic NE
County Dump fault [2038]	76.49	6.8900	Normal	35-65	E	USGS 2014 New Mexico W
Coyote Springs fault	93.39	6.5000	Normal	60.0000	SW	Mt Taylor Deterministic NW
Intrabasin faults on the Llano de Albuquerque	66.68	7.5000	Normal	60.0000	W	Mt Taylor Deterministic W
Jemez-San Ysidro fault [2029ab]	77.22	7.0900	Normal	35-65	E	USGS 2014 New Mexico W
Calabacillas fault [2035]	70.51	6.8300	Normal	35-65	E	USGS 2014 New Mexico W
Mesa Prieta faults	47.03	6.3000	Normal	60.0000	W	Mt Taylor Deterministic W
Nacimiento fault [2002ab]	72.26	7.3000	Normal	35-65	E	USGS 2014 New Mexico W
San Felipe fault zone [2030a]	93.19	6.9700	Normal	35-65	E	USGS 2014 New Mexico W
San Felipe fault zone (Algodones section)	93.26	7.0000	Normal	60.0000	W	Mt Taylor Deterministic W
Sand Hill fault zone	62.14	6.9000	Normal	60.0000	W	Mt Taylor Deterministic W
Santa Fe fault	67.75	6.8000	Normal	60.0000	W	Mt Taylor Deterministic NW
unnamed fault of Bonita Canyon	49.31	6.1000	Normal	60.0000	W	Mt Taylor Deterministic NE
unnamed faults near Albuquerque Volcanoes	73.56	6.9000	Normal	60.0000	W	Mt Taylor Deterministic W
unnamed faults near Picuda Peak	78.77	6.4000	Normal	60.0000	W	Mt Taylor Deterministic W
unnamed faults near Star Heights	78.52	6.5000	Normal	70.0000	W	Mt Taylor Deterministic W
unnamed faults of El Malpais lava field	60.42	6.7000	Normal	60.0000	W	Mt Taylor Deterministic NE
unnamed intrabasin faults west of the Rio Puerco	87.25	6.6000	Normal	60.0000	W	Mt Taylor Deterministic NW

Zia fault [2046] USGS 2014 New Mexico
73.70 6.8400 Normal 35-65 E W

SEISMIC SOURCES

Name: Random Earthquake
Region: Mt Taylor Deterministic
Category:Fault
Database: C:\Users\dgarcia\AppData\Local\Fugro\EZ-FRISK\Files\user.xml-ssdb
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 1.00000000
Deterministic Magnitude: 6.3

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
60	60	0	0.1	15

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	1	Slip	2.000e-02	6.200000	6.400000	0.000000	6.300000	0.120000	0.000000	0.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.100000	4.000000	0.000000	0.100000	--	--	--

Trace Coordinates:

Latitude	Longitude
35.4750	-107.6100
35.4760	-107.6110

Attenuation Equations for Source:

Raw Weight	Normalized Weight	Name
0.25	0.250000	Abrahamson-et al (2014) NGA West 2 USGS 2014
0.25	0.250000	Boore-et al (2014) NGA West 2 USGS 2014
0.25	0.250000	Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
0.25	0.250000	Chiou-Youngs (2014) NGA West 2 USGS 2014

****

Name: Cat Mesa fault
Region: Mt Taylor Deterministic
Category:Fault
Database: C:\Users\dgarcia\AppData\Local\Fugro\EZ-FRISK\Files\user.xml-ssdb
Fault Mechanism: Normal

Magnitude Scale: Moment Magnitude
Probability of Activity: 1.00000000
Deterministic Magnitude: 6.6

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
80	80	0	0.1	15

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	1	Slip	2.000e-02	6.300000	6.900000	0.000000	6.600000	0.120000	0.000000	0.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.100000	4.000000	0.000000	0.100000	--	--	--

Trace Coordinates:

Latitude	Longitude
35.0060	-106.8960
34.7350	-106.9260

Attenuation Equations for Source:

Raw Weight	Normalized Weight	Name
0.25	0.250000	Abrahamson-et al (2014) NGA West 2 USGS 2014
0.25	0.250000	Boore-et al (2014) NGA West 2 USGS 2014
0.25	0.250000	Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
0.25	0.250000	Chiou-Youngs (2014) NGA West 2 USGS 2014

****

Name: Cebollita Mesa fault
Region: Mt Taylor Deterministic
Category:Fault
Database: C:\Users\dgarcia\AppData\Local\Fugro\EZ-FRISK\Files\user.xml-ssdb
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 1.00000000
Deterministic Magnitude: 6.3

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
60	60	0	0.1	15

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2

```
          Normal         1        Slip   2.000e-02  6.000000  6.600000
0.000000  6.300000  0.120000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw        Bw
Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.100000  4.000000  0.000000
0.100000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    34.7310  -107.9810
    34.6100  -107.9750

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
      0.25      0.250000          Abrahamson-et al (2014) NGA West 2 USGS
2014
      0.25      0.250000          Boore-et al (2014) NGA West 2 USGS 2014
      0.25      0.250000          Campbell-Bozorgnia (2014) NGA West 2
USGS 2014
      0.25      0.250000          Chiou-Youngs (2014) NGA West 2 USGS
2014

*****************************************

Name: Continental Divide fault
Region: Mt Taylor Deterministic
Category:Fault
Database: C:\Users\dgarcia\AppData\Local\Fugro\EZ-FRISK\Files\user.xml-
ssdb
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.50000000
Deterministic Magnitude: 6.5

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          60        60         0       0.1        15

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag    MaxMag
Beta      Mean     Sigma    Delta1    Delta2
          Normal         1        Slip   2.000e-02  6.200000  6.800000
0.000000  6.500000  0.120000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw        Bw
Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.100000  4.000000  0.000000
0.100000        --        --        --

Trace Coordinates:
  Latitude   Longitude
```

```
    34.7820  -108.3780
    34.6090  -108.4870

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
      0.25      0.250000          Abrahamson-et al (2014) NGA West 2 USGS
2014
      0.25      0.250000          Boore-et al (2014) NGA West 2 USGS 2014
      0.25      0.250000          Campbell-Bozorgnia (2014) NGA West 2
USGS 2014
      0.25      0.250000          Chiou-Youngs (2014) NGA West 2 USGS
2014

*****************************************

Name: County Dump fault [2038]
Region: USGS 2014 New Mexico
Category:Composite Seismic Source
Database: C:\Users\dgarcia\AppData\Local\Fugro\EZ-FRISK\Regions\EZ-FRISK
USGS2014 Lower 48 v1.00\Files\USGS 2014 Lower 48.bin-ssdb
Magnitude Scale: Moment Magnitude
Probability of Activity: 1
 ------ Start Nested Sources forCounty Dump fault [2038] -------
Name: 2038 County Dump fault (dip 35)
Region: USGS 2014 New Mexico
Category:Fault
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.20000000
Deterministic Magnitude: 6.89

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        35         0     0.001        15

Magnitude Recurrence Distributions:
       ModelType    Weight    RateType        Rate    MinMag    MaxMag
Beta      Mean     Sigma    Delta1    Delta2
          Normal  0.013334    Activity   4.132e-05  6.450000  6.930000
2.300000  6.690000  0.120000  0.010000 10.000000
          Normal  0.040002    Activity   4.132e-05  6.650000  7.130000
2.300000  6.890000  0.120000  0.010000 10.000000
          Normal  0.013334    Activity   4.132e-05  6.850000  7.330000
2.300000  7.090000  0.120000  0.010000 10.000000
     Exponential  0.006666    Activity   5.043e-05  6.500000  6.690000
1.842068  0.000000  0.000000  0.000000  0.000000
     Exponential  0.019998    Activity   8.751e-05  6.500000  6.890000
1.842068  0.000000  0.000000  0.000000  0.000000
     Exponential  0.006666    Activity   1.132e-04  6.500000  7.090000
1.842068  0.000000  0.000000  0.000000  0.000000
          Normal  0.106666    Activity   4.095e-05  6.450000  6.930000
2.300000  6.690000  0.120000  0.010000 10.000000
          Normal  0.319998    Activity   4.095e-05  6.650000  7.130000
2.300000  6.890000  0.120000  0.010000 10.000000
```

Normal	0.106666	Activity	4.095e-05	6.850000	7.330000	2.300000
7.090000	0.120000	0.010000	10.000000			
Exponential	0.053334	Activity	5.003e-05	6.500000	6.690000	1.842068
0.000000	0.000000	0.000000	0.000000			
Exponential	0.160002	Activity	8.682e-05	6.500000	6.890000	1.842068
0.000000	0.000000	0.000000	0.000000			
Exponential	0.053334	Activity	1.123e-04	6.500000	7.090000	1.842068
0.000000	0.000000	0.000000	0.000000			
Normal	0.013334	Activity	4.951e-05	6.450000	6.930000	2.300000
6.690000	0.120000	0.010000	10.000000			
Normal	0.040002	Activity	4.951e-05	6.650000	7.130000	2.300000
6.890000	0.120000	0.010000	10.000000			
Normal	0.013334	Activity	4.951e-05	6.850000	7.330000	2.300000
7.090000	0.120000	0.010000	10.000000			
Exponential	0.006666	Activity	6.051e-05	6.500000	6.690000	1.842068
0.000000	0.000000	0.000000	0.000000			
Exponential	0.019998	Activity	1.050e-04	6.500000	6.890000	1.842068
0.000000	0.000000	0.000000	0.000000			
Exponential	0.006666	Activity	1.358e-04	6.500000	7.090000	1.842068
0.000000	0.000000	0.000000	0.000000			

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

```
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    35.0085  -106.7757
    35.1051  -106.7841
    35.1830  -106.7825
    35.2448  -106.8003
    35.2807  -106.7828
    35.3260  -106.7499

Name: 2038 County Dump fault (dip 50)
Region: USGS 2014 New Mexico
Category:Fault
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.60000000
Deterministic Magnitude: 6.89

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        50         0     0.001        15

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag    MaxMag
Beta      Mean     Sigma    Delta1    Delta2
           Normal  0.013334    Activity   4.132e-05  6.450000  6.930000
2.300000  6.690000  0.120000  0.010000 10.000000
           Normal  0.040002    Activity   4.132e-05  6.650000  7.130000
2.300000  6.890000  0.120000  0.010000 10.000000
           Normal  0.013334    Activity   4.132e-05  6.850000  7.330000
2.300000  7.090000  0.120000  0.010000 10.000000
      Exponential  0.006666    Activity   5.043e-05  6.500000  6.690000
1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.019998    Activity   8.751e-05  6.500000  6.890000
1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.006666    Activity   1.132e-04  6.500000  7.090000
1.842068  0.000000  0.000000  0.000000  0.000000
           Normal  0.106666    Activity   4.095e-05  6.450000  6.930000
2.300000  6.690000  0.120000  0.010000 10.000000
           Normal  0.319998    Activity   4.095e-05  6.650000  7.130000
2.300000  6.890000  0.120000  0.010000 10.000000
           Normal  0.106666    Activity   4.095e-05  6.850000  7.330000
2.300000  7.090000  0.120000  0.010000 10.000000
      Exponential  0.053334    Activity   5.003e-05  6.500000  6.690000
1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.160002    Activity   8.682e-05  6.500000  6.890000
1.842068  0.000000  0.000000  0.000000  0.000000
```

Exponential	0.053334	Activity	1.123e-04	6.500000	7.090000	1.842068
0.000000	0.000000	0.000000	0.000000			
Normal	0.013334	Activity	4.951e-05	6.450000	6.930000	2.300000
6.690000	0.120000	0.010000	10.000000			
Normal	0.040002	Activity	4.951e-05	6.650000	7.130000	2.300000
6.890000	0.120000	0.010000	10.000000			
Normal	0.013334	Activity	4.951e-05	6.850000	7.330000	2.300000
7.090000	0.120000	0.010000	10.000000			
Exponential	0.006666	Activity	6.051e-05	6.500000	6.690000	1.842068
0.000000	0.000000	0.000000	0.000000			
Exponential	0.019998	Activity	1.050e-04	6.500000	6.890000	1.842068
0.000000	0.000000	0.000000	0.000000			
Exponential	0.006666	Activity	1.358e-04	6.500000	7.090000	1.842068
0.000000	0.000000	0.000000	0.000000			

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--

Trace Coordinates:

Latitude	Longitude
35.0085	-106.7757
35.1051	-106.7841
35.1830	-106.7825
35.2448	-106.8003
35.2807	-106.7828
35.3260	-106.7499

Name: 2038 County Dump fault (dip 65)
Region: USGS 2014 New Mexico
Category:Fault
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.20000000
Deterministic Magnitude: 6.89

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	65	0	0.001	15

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.013334	Activity	4.132e-05	6.450000	6.930000	2.300000	6.690000	0.120000	0.010000	10.000000
Normal	0.040002	Activity	4.132e-05	6.650000	7.130000	2.300000	6.890000	0.120000	0.010000	10.000000
Normal	0.013334	Activity	4.132e-05	6.850000	7.330000	2.300000	7.090000	0.120000	0.010000	10.000000
Exponential	0.006666	Activity	5.043e-05	6.500000	6.690000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.019998	Activity	8.751e-05	6.500000	6.890000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.006666	Activity	1.132e-04	6.500000	7.090000	1.842068	0.000000	0.000000	0.000000	0.000000
Normal	0.106666	Activity	4.095e-05	6.450000	6.930000	2.300000	6.690000	0.120000	0.010000	10.000000
Normal	0.319998	Activity	4.095e-05	6.650000	7.130000	2.300000	6.890000	0.120000	0.010000	10.000000
Normal	0.106666	Activity	4.095e-05	6.850000	7.330000	2.300000	7.090000	0.120000	0.010000	10.000000
Exponential	0.053334	Activity	5.003e-05	6.500000	6.690000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.160002	Activity	8.682e-05	6.500000	6.890000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.053334	Activity	1.123e-04	6.500000	7.090000	1.842068	0.000000	0.000000	0.000000	0.000000
Normal	0.013334	Activity	4.951e-05	6.450000	6.930000	2.300000	6.690000	0.120000	0.010000	10.000000
Normal	0.040002	Activity	4.951e-05	6.650000	7.130000	2.300000	6.890000	0.120000	0.010000	10.000000

	Normal	0.013334	Activity	4.951e-05	6.850000	7.330000	2.300000	7.090000	0.120000	0.010000	10.000000
	Exponential	0.006666	Activity	6.051e-05	6.500000	6.690000	1.842068	0.000000	0.000000	0.000000	0.000000
	Exponential	0.019998	Activity	1.050e-04	6.500000	6.890000	1.842068	0.000000	0.000000	0.000000	0.000000
	Exponential	0.006666	Activity	1.358e-04	6.500000	7.090000	1.842068	0.000000	0.000000	0.000000	0.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--

Trace Coordinates:

Latitude	Longitude
35.0085	-106.7757
35.1051	-106.7841
35.1830	-106.7825

```
    35.2448  -106.8003
    35.2807  -106.7828
    35.3260  -106.7499

 ------ End Nested Sources for County Dump fault [2038] -------

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
      0.25      0.250000          Abrahamson-et al (2014) NGA West 2 USGS
2014
      0.25      0.250000          Boore-et al (2014) NGA West 2 USGS 2014
      0.25      0.250000          Campbell-Bozorgnia (2014) NGA West 2
USGS 2014
      0.25      0.250000          Chiou-Youngs (2014) NGA West 2 USGS
2014

*****************************************

Name: Coyote Springs fault
Region: Mt Taylor Deterministic
Category:Fault
Database: C:\Users\dgarcia\AppData\Local\Fugro\EZ-FRISK\Files\user.xml-
ssdb
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 1.00000000
Deterministic Magnitude: 6.5

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          60        60         0       0.1        15

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag    MaxMag
Beta      Mean     Sigma    Delta1    Delta2
          Normal         1        Slip   2.000e-02  6.200000  6.800000
0.000000  6.500000  0.120000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw        Bw
Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.100000  4.000000  0.000000
0.100000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    34.6210  -107.1060
    34.4710  -107.0050

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
      0.25      0.250000          Abrahamson-et al (2014) NGA West 2 USGS
2014
      0.25      0.250000          Boore-et al (2014) NGA West 2 USGS 2014
```

```
      0.25      0.250000          Campbell-Bozorgnia (2014) NGA West 2
USGS 2014
      0.25      0.250000          Chiou-Youngs (2014) NGA West 2 USGS
2014

****************************************

Name: Intrabasin faults on the Llano de Albuquerque
Region: Mt Taylor Deterministic
Category:Fault
Database: C:\Users\dgarcia\AppData\Local\Fugro\EZ-FRISK\Files\user.xml-
ssdb
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 1.00000000
Deterministic Magnitude: 7.5

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          60        60         0       0.1        15

Magnitude Recurrence Distributions:
       ModelType    Weight    RateType        Rate    MinMag    MaxMag
Beta      Mean     Sigma    Delta1    Delta2
         Normal         1        Slip   2.000e-02  7.200000  7.800000
0.000000  7.500000  0.120000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw        Bw
Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.100000  4.000000  0.000000
0.100000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    35.1810  -106.8520
    34.4930  -106.8350

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
      0.25      0.250000          Abrahamson-et al (2014) NGA West 2 USGS
2014
      0.25      0.250000          Boore-et al (2014) NGA West 2 USGS 2014
      0.25      0.250000          Campbell-Bozorgnia (2014) NGA West 2
USGS 2014
      0.25      0.250000          Chiou-Youngs (2014) NGA West 2 USGS
2014

****************************************

Name: Jemez-San Ysidro fault [2029ab]
Region: USGS 2014 New Mexico
Category:Composite Seismic Source
```

Database: C:\Users\dgarcia\AppData\Local\Fugro\EZ-FRISK\Regions\EZ-FRISK USGS2014 Lower 48 v1.00\Files\USGS 2014 Lower 48.bin-ssdb
Magnitude Scale: Moment Magnitude
Probability of Activity: 1
------ Start Nested Sources forJemez-San Ysidro fault [2029ab] -------
Name: 2029ab Jemez-San Ysidro fault (dip 35)
Region: USGS 2014 New Mexico
Category:Fault
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.20000000
Deterministic Magnitude: 7.09

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	35	0	0.001	15

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.013334	Activity	1.815e-05	6.650000	7.130000	2.300000	6.890000	0.120000	0.010000	10.000000
Normal	0.040002	Activity	1.815e-05	6.850000	7.330000	2.300000	7.090000	0.120000	0.010000	10.000000
Normal	0.013334	Activity	1.815e-05	7.050000	7.530000	2.300000	7.290000	0.120000	0.010000	10.000000
Exponential	0.006666	Activity	4.237e-05	6.500000	6.890000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.019998	Activity	5.479e-05	6.500000	7.090000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.006666	Activity	6.339e-05	6.500000	7.290000	1.842068	0.000000	0.000000	0.000000	0.000000
Normal	0.106666	Activity	1.582e-05	6.650000	7.130000	2.300000	6.890000	0.120000	0.010000	10.000000
Normal	0.319998	Activity	1.582e-05	6.850000	7.330000	2.300000	7.090000	0.120000	0.010000	10.000000
Normal	0.106666	Activity	1.582e-05	7.050000	7.530000	2.300000	7.290000	0.120000	0.010000	10.000000
Exponential	0.053334	Activity	3.687e-05	6.500000	6.890000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.160002	Activity	4.768e-05	6.500000	7.090000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.053334	Activity	5.516e-05	6.500000	7.290000	1.842068	0.000000	0.000000	0.000000	0.000000
Normal	0.013334	Activity	2.420e-05	6.650000	7.130000	2.300000	6.890000	0.120000	0.010000	10.000000
Normal	0.040002	Activity	2.420e-05	6.850000	7.330000	2.300000	7.090000	0.120000	0.010000	10.000000
Normal	0.013334	Activity	2.420e-05	7.050000	7.530000	2.300000	7.290000	0.120000	0.010000	10.000000
Exponential	0.006666	Activity	5.650e-05	6.500000	6.890000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.019998	Activity	7.306e-05	6.500000	7.090000	1.842068	0.000000	0.000000	0.000000	0.000000

Exponential 0.006666 Activity 8.452e-05 6.500000 7.290000
1.842068 0.000000 0.000000 0.000000 0.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--

Trace Coordinates:

Latitude	Longitude
35.4204	-106.7887
35.4846	-106.7821
35.5444	-106.7889
35.5588	-106.7854
35.5980	-106.7870
35.6099	-106.7896
35.6472	-106.8137
35.6645	-106.8166
35.6864	-106.8126

35.7072 -106.7940
35.7251 -106.7645
35.7443 -106.7555
35.7529 -106.7401
35.7737 -106.7198
35.7876 -106.6880
35.8181 -106.6576
35.8332 -106.6346

Name: 2029ab Jemez-San Ysidro fault (dip 50)
Region: USGS 2014 New Mexico
Category:Fault
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.60000000
Deterministic Magnitude: 7.09

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	50	0	0.001	15

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.013334	Activity	1.815e-05	6.650000	7.130000	2.300000	6.890000	0.120000	0.010000	10.000000
Normal	0.040002	Activity	1.815e-05	6.850000	7.330000	2.300000	7.090000	0.120000	0.010000	10.000000
Normal	0.013334	Activity	1.815e-05	7.050000	7.530000	2.300000	7.290000	0.120000	0.010000	10.000000
Exponential	0.006666	Activity	4.237e-05	6.500000	6.890000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.019998	Activity	5.479e-05	6.500000	7.090000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.006666	Activity	6.339e-05	6.500000	7.290000	1.842068	0.000000	0.000000	0.000000	0.000000
Normal	0.106666	Activity	1.582e-05	6.650000	7.130000	2.300000	6.890000	0.120000	0.010000	10.000000
Normal	0.319998	Activity	1.582e-05	6.850000	7.330000	2.300000	7.090000	0.120000	0.010000	10.000000
Normal	0.106666	Activity	1.582e-05	7.050000	7.530000	2.300000	7.290000	0.120000	0.010000	10.000000
Exponential	0.053334	Activity	3.687e-05	6.500000	6.890000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.160002	Activity	4.768e-05	6.500000	7.090000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.053334	Activity	5.516e-05	6.500000	7.290000	1.842068	0.000000	0.000000	0.000000	0.000000
Normal	0.013334	Activity	2.420e-05	6.650000	7.130000	2.300000	6.890000	0.120000	0.010000	10.000000
Normal	0.040002	Activity	2.420e-05	6.850000	7.330000	2.300000	7.090000	0.120000	0.010000	10.000000
Normal	0.013334	Activity	2.420e-05	7.050000	7.530000	2.300000	7.290000	0.120000	0.010000	10.000000

Exponential	0.006666	Activity	5.650e-05	6.500000	6.890000	1.842068	0.000000
0.000000	0.000000	0.000000					
Exponential	0.019998	Activity	7.306e-05	6.500000	7.090000	1.842068	0.000000
0.000000	0.000000	0.000000					
Exponential	0.006666	Activity	8.452e-05	6.500000	7.290000	1.842068	0.000000
0.000000	0.000000	0.000000					

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--

Trace Coordinates:

Latitude	Longitude
35.4204	-106.7887
35.4846	-106.7821
35.5444	-106.7889
35.5588	-106.7854
35.5980	-106.7870

```
    35.6099  -106.7896
    35.6472  -106.8137
    35.6645  -106.8166
    35.6864  -106.8126
    35.7072  -106.7940
    35.7251  -106.7645
    35.7443  -106.7555
    35.7529  -106.7401
    35.7737  -106.7198
    35.7876  -106.6880
    35.8181  -106.6576
    35.8332  -106.6346

Name: 2029ab Jemez-San Ysidro fault (dip 65)
Region: USGS 2014 New Mexico
Category:Fault
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.20000000
Deterministic Magnitude: 7.09

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        65         0     0.001        15

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag    MaxMag
Beta      Mean     Sigma    Delta1    Delta2
           Normal  0.013334    Activity   1.815e-05  6.650000  7.130000
2.300000  6.890000  0.120000  0.010000 10.000000
           Normal  0.040002    Activity   1.815e-05  6.850000  7.330000
2.300000  7.090000  0.120000  0.010000 10.000000
           Normal  0.013334    Activity   1.815e-05  7.050000  7.530000
2.300000  7.290000  0.120000  0.010000 10.000000
      Exponential  0.006666    Activity   4.237e-05  6.500000  6.890000
1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.019998    Activity   5.479e-05  6.500000  7.090000
1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.006666    Activity   6.339e-05  6.500000  7.290000
1.842068  0.000000  0.000000  0.000000  0.000000
           Normal  0.106666    Activity   1.582e-05  6.650000  7.130000
2.300000  6.890000  0.120000  0.010000 10.000000
           Normal  0.319998    Activity   1.582e-05  6.850000  7.330000
2.300000  7.090000  0.120000  0.010000 10.000000
           Normal  0.106666    Activity   1.582e-05  7.050000  7.530000
2.300000  7.290000  0.120000  0.010000 10.000000
      Exponential  0.053334    Activity   3.687e-05  6.500000  6.890000
1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.160002    Activity   4.768e-05  6.500000  7.090000
1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.053334    Activity   5.516e-05  6.500000  7.290000
1.842068  0.000000  0.000000  0.000000  0.000000
           Normal  0.013334    Activity   2.420e-05  6.650000  7.130000
2.300000  6.890000  0.120000  0.010000 10.000000
```

```
           Normal  0.040002    Activity   2.420e-05  6.850000  7.330000
2.300000  7.090000  0.120000  0.010000 10.000000
           Normal  0.013334    Activity   2.420e-05  7.050000  7.530000
2.300000  7.290000  0.120000  0.010000 10.000000
      Exponential  0.006666    Activity   5.650e-05  6.500000  6.890000
1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.019998    Activity   7.306e-05  6.500000  7.090000
1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.006666    Activity   8.452e-05  6.500000  7.290000
1.842068  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw        Bw
Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    35.4204  -106.7887
```

```
    35.4846  -106.7821
    35.5444  -106.7889
    35.5588  -106.7854
    35.5980  -106.7870
    35.6099  -106.7896
    35.6472  -106.8137
    35.6645  -106.8166
    35.6864  -106.8126
    35.7072  -106.7940
    35.7251  -106.7645
    35.7443  -106.7555
    35.7529  -106.7401
    35.7737  -106.7198
    35.7876  -106.6880
    35.8181  -106.6576
    35.8332  -106.6346

 ------ End Nested Sources for Jemez-San Ysidro fault [2029ab] -------

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
      0.25      0.250000          Abrahamson-et al (2014) NGA West 2 USGS
2014
      0.25      0.250000          Boore-et al (2014) NGA West 2 USGS 2014
      0.25      0.250000          Campbell-Bozorgnia (2014) NGA West 2
USGS 2014
      0.25      0.250000          Chiou-Youngs (2014) NGA West 2 USGS
2014

****************************************

Name: Calabacillas fault [2035]
Region: USGS 2014 New Mexico
Category:Composite Seismic Source
Database: C:\Users\dgarcia\AppData\Local\Fugro\EZ-FRISK\Regions\EZ-FRISK
USGS2014 Lower 48 v1.00\Files\USGS 2014 Lower 48.bin-ssdb
Magnitude Scale: Moment Magnitude
Probability of Activity: 1
 ------ Start Nested Sources forCalabacillas fault [2035] -------
Name: 2035 Calabacillas fault (dip 35)
Region: USGS 2014 New Mexico
Category:Fault
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.20000000
Deterministic Magnitude: 6.83

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        35         0     0.001        15

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag    MaxMag
Beta      Mean     Sigma    Delta1    Delta2
```

	Normal	0.013334	Activity	1.984e-04	6.390000	6.870000	2.300000	6.630000	0.120000	0.010000	10.000000
	Normal	0.040002	Activity	1.984e-04	6.590000	7.070000	2.300000	6.830000	0.120000	0.010000	10.000000
	Normal	0.013334	Activity	1.984e-04	6.790000	7.270000	2.300000	7.030000	0.120000	0.010000	10.000000
	Exponential	0.006666	Activity	1.770e-04	6.500000	6.630000	1.842068	0.000000	0.000000	0.000000	0.000000
	Exponential	0.019998	Activity	3.787e-04	6.500000	6.830000	1.842068	0.000000	0.000000	0.000000	0.000000
	Exponential	0.006666	Activity	5.181e-04	6.500000	7.030000	1.842068	0.000000	0.000000	0.000000	0.000000
	Normal	0.106666	Activity	8.097e-06	6.390000	6.870000	2.300000	6.630000	0.120000	0.010000	10.000000
	Normal	0.319998	Activity	8.097e-06	6.590000	7.070000	2.300000	6.830000	0.120000	0.010000	10.000000
	Normal	0.106666	Activity	8.097e-06	6.790000	7.270000	2.300000	7.030000	0.120000	0.010000	10.000000
	Exponential	0.053334	Activity	7.248e-06	6.500000	6.630000	1.842068	0.000000	0.000000	0.000000	0.000000
	Exponential	0.160002	Activity	1.550e-05	6.500000	6.830000	1.842068	0.000000	0.000000	0.000000	0.000000
	Exponential	0.053334	Activity	2.121e-05	6.500000	7.030000	1.842068	0.000000	0.000000	0.000000	0.000000
	Normal	0.013334	Activity	9.028e-06	6.390000	6.870000	2.300000	6.630000	0.120000	0.010000	10.000000
	Normal	0.040002	Activity	9.028e-06	6.590000	7.070000	2.300000	6.830000	0.120000	0.010000	10.000000
	Normal	0.013334	Activity	9.028e-06	6.790000	7.270000	2.300000	7.030000	0.120000	0.010000	10.000000
	Exponential	0.006666	Activity	8.047e-06	6.500000	6.630000	1.842068	0.000000	0.000000	0.000000	0.000000
	Exponential	0.019998	Activity	1.721e-05	6.500000	6.830000	1.842068	0.000000	0.000000	0.000000	0.000000
	Exponential	0.006666	Activity	2.355e-05	6.500000	7.030000	1.842068	0.000000	0.000000	0.000000	0.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--		
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--		
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--		
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--		
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--		
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--		
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--		
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--		
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--		
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--		
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--		

Trace Coordinates:

Latitude	Longitude
35.1404	-106.8390
35.2034	-106.8526
35.2416	-106.8654
35.2671	-106.8632
35.3315	-106.8350
35.4192	-106.7898

Name: 2035 Calabacillas fault (dip 50)
Region: USGS 2014 New Mexico
Category:Fault
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.60000000
Deterministic Magnitude: 6.83

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	50	0	0.001	15

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.013334	Activity	1.984e-04	6.390000	6.870000	2.300000	6.630000	0.120000	0.010000	10.000000
Normal	0.040002	Activity	1.984e-04	6.590000	7.070000	2.300000	6.830000	0.120000	0.010000	10.000000
Normal	0.013334	Activity	1.984e-04	6.790000	7.270000	2.300000	7.030000	0.120000	0.010000	10.000000

Exponential	0.006666	Activity	1.770e-04	6.500000	6.630000	1.842068	0.000000	0.000000	0.000000	0.000000		
Exponential	0.019998	Activity	3.787e-04	6.500000	6.830000	1.842068	0.000000	0.000000	0.000000	0.000000		
Exponential	0.006666	Activity	5.181e-04	6.500000	7.030000	1.842068	0.000000	0.000000	0.000000	0.000000		
Normal	0.106666	Activity	8.097e-06	6.390000	6.870000	2.300000	6.630000	0.120000	0.010000	10.000000		
Normal	0.319998	Activity	8.097e-06	6.590000	7.070000	2.300000	6.830000	0.120000	0.010000	10.000000		
Normal	0.106666	Activity	8.097e-06	6.790000	7.270000	2.300000	7.030000	0.120000	0.010000	10.000000		
Exponential	0.053334	Activity	7.248e-06	6.500000	6.630000	1.842068	0.000000	0.000000	0.000000	0.000000		
Exponential	0.160002	Activity	1.550e-05	6.500000	6.830000	1.842068	0.000000	0.000000	0.000000	0.000000		
Exponential	0.053334	Activity	2.121e-05	6.500000	7.030000	1.842068	0.000000	0.000000	0.000000	0.000000		
Normal	0.013334	Activity	9.028e-06	6.390000	6.870000	2.300000	6.630000	0.120000	0.010000	10.000000		
Normal	0.040002	Activity	9.028e-06	6.590000	7.070000	2.300000	6.830000	0.120000	0.010000	10.000000		
Normal	0.013334	Activity	9.028e-06	6.790000	7.270000	2.300000	7.030000	0.120000	0.010000	10.000000		
Exponential	0.006666	Activity	8.047e-06	6.500000	6.630000	1.842068	0.000000	0.000000	0.000000	0.000000		
Exponential	0.019998	Activity	1.721e-05	6.500000	6.830000	1.842068	0.000000	0.000000	0.000000	0.000000		
Exponential	0.006666	Activity	2.355e-05	6.500000	7.030000	1.842068	0.000000	0.000000	0.000000	0.000000		

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--

Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--

Trace Coordinates:

Latitude	Longitude
35.1404	-106.8390
35.2034	-106.8526
35.2416	-106.8654
35.2671	-106.8632
35.3315	-106.8350
35.4192	-106.7898

Name: 2035 Calabacillas fault (dip 65)
Region: USGS 2014 New Mexico
Category:Fault
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.20000000
Deterministic Magnitude: 6.83

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	65	0	0.001	15

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.013334	Activity	1.984e-04	6.390000	6.870000	2.300000	6.630000	0.120000	0.010000	10.000000
Normal	0.040002	Activity	1.984e-04	6.590000	7.070000	2.300000	6.830000	0.120000	0.010000	10.000000
Normal	0.013334	Activity	1.984e-04	6.790000	7.270000	2.300000	7.030000	0.120000	0.010000	10.000000
Exponential	0.006666	Activity	1.770e-04	6.500000	6.630000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.019998	Activity	3.787e-04	6.500000	6.830000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.006666	Activity	5.181e-04	6.500000	7.030000	1.842068	0.000000	0.000000	0.000000	0.000000

	Normal	0.106666	Activity	8.097e-06	6.390000	6.870000	2.300000	6.630000	0.120000	0.010000	10.000000
	Normal	0.319998	Activity	8.097e-06	6.590000	7.070000	2.300000	6.830000	0.120000	0.010000	10.000000
	Normal	0.106666	Activity	8.097e-06	6.790000	7.270000	2.300000	7.030000	0.120000	0.010000	10.000000
	Exponential	0.053334	Activity	7.248e-06	6.500000	6.630000	1.842068	0.000000	0.000000	0.000000	0.000000
	Exponential	0.160002	Activity	1.550e-05	6.500000	6.830000	1.842068	0.000000	0.000000	0.000000	0.000000
	Exponential	0.053334	Activity	2.121e-05	6.500000	7.030000	1.842068	0.000000	0.000000	0.000000	0.000000
	Normal	0.013334	Activity	9.028e-06	6.390000	6.870000	2.300000	6.630000	0.120000	0.010000	10.000000
	Normal	0.040002	Activity	9.028e-06	6.590000	7.070000	2.300000	6.830000	0.120000	0.010000	10.000000
	Normal	0.013334	Activity	9.028e-06	6.790000	7.270000	2.300000	7.030000	0.120000	0.010000	10.000000
	Exponential	0.006666	Activity	8.047e-06	6.500000	6.630000	1.842068	0.000000	0.000000	0.000000	0.000000
	Exponential	0.019998	Activity	1.721e-05	6.500000	6.830000	1.842068	0.000000	0.000000	0.000000	0.000000
	Exponential	0.006666	Activity	2.355e-05	6.500000	7.030000	1.842068	0.000000	0.000000	0.000000	0.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

```
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    35.1404  -106.8390
    35.2034  -106.8526
    35.2416  -106.8654
    35.2671  -106.8632
    35.3315  -106.8350
    35.4192  -106.7898

 ------ End Nested Sources for Calabacillas fault [2035] -------

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
      0.25      0.250000          Abrahamson-et al (2014) NGA West 2 USGS
2014
      0.25      0.250000          Boore-et al (2014) NGA West 2 USGS 2014
      0.25      0.250000          Campbell-Bozorgnia (2014) NGA West 2
USGS 2014
      0.25      0.250000          Chiou-Youngs (2014) NGA West 2 USGS
2014

*****************************************

Name: Mesa Prieta faults
Region: Mt Taylor Deterministic
Category:Fault
Database: C:\Users\dgarcia\AppData\Local\Fugro\EZ-FRISK\Files\user.xml-
ssdb
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.50000000
Deterministic Magnitude: 6.3

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          60        60         0       0.1        15

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag    MaxMag
Beta      Mean     Sigma    Delta1    Delta2
          Normal         1        Slip   2.000e-02  6.000000  6.600000
0.000000  6.300000  0.120000  0.000000  0.000000
```

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.100000	4.000000	0.000000	0.100000	--	--	--

Trace Coordinates:

Latitude	Longitude
35.5190	-107.0400
35.4360	-107.0760

Attenuation Equations for Source:

Raw Weight	Normalized Weight	Name
0.25	0.250000	Abrahamson-et al (2014) NGA West 2 USGS 2014
0.25	0.250000	Boore-et al (2014) NGA West 2 USGS 2014
0.25	0.250000	Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
0.25	0.250000	Chiou-Youngs (2014) NGA West 2 USGS 2014

****

Name: Nacimiento fault [2002ab]
Region: USGS 2014 New Mexico
Category:Composite Seismic Source
Database: C:\Users\dgarcia\AppData\Local\Fugro\EZ-FRISK\Regions\EZ-FRISK USGS2014 Lower 48 v1.00\Files\USGS 2014 Lower 48.bin-ssdb
Magnitude Scale: Moment Magnitude
Probability of Activity: 1
------ Start Nested Sources forNacimiento fault [2002ab] -------
Name: 2002ab Nacimiento fault (dip 35)
Region: USGS 2014 New Mexico
Category:Fault
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.20000000
Deterministic Magnitude: 7.3

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	35	0	0.001	15

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.013334	Activity	1.041e-04	6.860000	7.340000	2.300000	7.100000	0.120000	0.010000	10.000000
Normal	0.040002	Activity	1.041e-04	7.060000	7.540000	2.300000	7.300000	0.120000	0.010000	10.000000
Normal	0.013334	Activity	1.041e-04	7.260000	7.740000	2.300000	7.500000	0.120000	0.010000	10.000000
Exponential	0.006666	Activity	3.949e-04	6.500000	7.100000	1.842068	0.000000	0.000000	0.000000	0.000000

Exponential	0.019998	Activity	4.551e-04	6.500000	7.300000	1.842068	0.000000
0.000000	0.000000	0.000000					
Exponential	0.006666	Activity	4.968e-04	6.500000	7.500000	1.842068	0.000000
0.000000	0.000000	0.000000					
Normal	0.106666	Activity	1.182e-05	6.860000	7.340000	2.300000	7.100000
0.120000	0.010000	10.000000					
Normal	0.319998	Activity	1.182e-05	7.060000	7.540000	2.300000	7.300000
0.120000	0.010000	10.000000					
Normal	0.106666	Activity	1.182e-05	7.260000	7.740000	2.300000	7.500000
0.120000	0.010000	10.000000					
Exponential	0.053334	Activity	4.483e-05	6.500000	7.100000	1.842068	0.000000
0.000000	0.000000	0.000000					
Exponential	0.160002	Activity	5.167e-05	6.500000	7.300000	1.842068	0.000000
0.000000	0.000000	0.000000					
Exponential	0.053334	Activity	5.640e-05	6.500000	7.500000	1.842068	0.000000
0.000000	0.000000	0.000000					
Normal	0.013334	Activity	1.815e-05	6.860000	7.340000	2.300000	7.100000
0.120000	0.010000	10.000000					
Normal	0.040002	Activity	1.815e-05	7.060000	7.540000	2.300000	7.300000
0.120000	0.010000	10.000000					
Normal	0.013334	Activity	1.815e-05	7.260000	7.740000	2.300000	7.500000
0.120000	0.010000	10.000000					
Exponential	0.006666	Activity	6.868e-05	6.500000	7.100000	1.842068	0.000000
0.000000	0.000000	0.000000					
Exponential	0.019998	Activity	7.916e-05	6.500000	7.300000	1.842068	0.000000
0.000000	0.000000	0.000000					
Exponential	0.006666	Activity	8.640e-05	6.500000	7.500000	1.842068	0.000000
0.000000	0.000000	0.000000					

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--

Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--

Trace Coordinates:

Latitude	Longitude
35.4853	-106.8574
35.5849	-106.8557
35.6246	-106.8577
35.6777	-106.8687
35.7441	-106.8701
35.7740	-106.8782
35.7902	-106.8878
35.8244	-106.8941
35.8730	-106.8830
35.8874	-106.8885
35.8967	-106.8886
35.9087	-106.8936
35.9475	-106.8926
35.9999	-106.9014
36.0348	-106.8992
36.0541	-106.9073
36.0739	-106.9093
36.0917	-106.9093
36.1155	-106.9015
36.1908	-106.9112
36.1985	-106.9056
36.2198	-106.9021

Name: 2002ab Nacimiento fault (dip 50)
Region: USGS 2014 New Mexico
Category:Fault
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.60000000
Deterministic Magnitude: 7.3

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	50	0	0.001	15

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.013334	Activity	1.041e-04	6.860000	7.340000	2.300000	7.100000	0.120000	0.010000	10.000000
Normal	0.040002	Activity	1.041e-04	7.060000	7.540000	2.300000	7.300000	0.120000	0.010000	10.000000
Normal	0.013334	Activity	1.041e-04	7.260000	7.740000	2.300000	7.500000	0.120000	0.010000	10.000000
Exponential	0.006666	Activity	3.949e-04	6.500000	7.100000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.019998	Activity	4.551e-04	6.500000	7.300000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.006666	Activity	4.968e-04	6.500000	7.500000	1.842068	0.000000	0.000000	0.000000	0.000000
Normal	0.106666	Activity	1.182e-05	6.860000	7.340000	2.300000	7.100000	0.120000	0.010000	10.000000
Normal	0.319998	Activity	1.182e-05	7.060000	7.540000	2.300000	7.300000	0.120000	0.010000	10.000000
Normal	0.106666	Activity	1.182e-05	7.260000	7.740000	2.300000	7.500000	0.120000	0.010000	10.000000
Exponential	0.053334	Activity	4.483e-05	6.500000	7.100000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.160002	Activity	5.167e-05	6.500000	7.300000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.053334	Activity	5.640e-05	6.500000	7.500000	1.842068	0.000000	0.000000	0.000000	0.000000
Normal	0.013334	Activity	1.815e-05	6.860000	7.340000	2.300000	7.100000	0.120000	0.010000	10.000000
Normal	0.040002	Activity	1.815e-05	7.060000	7.540000	2.300000	7.300000	0.120000	0.010000	10.000000
Normal	0.013334	Activity	1.815e-05	7.260000	7.740000	2.300000	7.500000	0.120000	0.010000	10.000000
Exponential	0.006666	Activity	6.868e-05	6.500000	7.100000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.019998	Activity	7.916e-05	6.500000	7.300000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.006666	Activity	8.640e-05	6.500000	7.500000	1.842068	0.000000	0.000000	0.000000	0.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--

Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--

Trace Coordinates:

Latitude	Longitude
35.4853	-106.8574
35.5849	-106.8557
35.6246	-106.8577
35.6777	-106.8687
35.7441	-106.8701
35.7740	-106.8782
35.7902	-106.8878
35.8244	-106.8941
35.8730	-106.8830
35.8874	-106.8885
35.8967	-106.8886
35.9087	-106.8936
35.9475	-106.8926
35.9999	-106.9014
36.0348	-106.8992
36.0541	-106.9073
36.0739	-106.9093
36.0917	-106.9093
36.1155	-106.9015
36.1908	-106.9112
36.1985	-106.9056
36.2198	-106.9021

Name: 2002ab Nacimiento fault (dip 65)
Region: USGS 2014 New Mexico
Category:Fault
Fault Mechanism: Normal

Magnitude Scale: Moment Magnitude
Probability of Activity: 0.20000000
Deterministic Magnitude: 7.3

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	65	0	0.001	15

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.013334	Activity	1.041e-04	6.860000	7.340000	2.300000	7.100000	0.120000	0.010000	10.000000
Normal	0.040002	Activity	1.041e-04	7.060000	7.540000	2.300000	7.300000	0.120000	0.010000	10.000000
Normal	0.013334	Activity	1.041e-04	7.260000	7.740000	2.300000	7.500000	0.120000	0.010000	10.000000
Exponential	0.006666	Activity	3.949e-04	6.500000	7.100000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.019998	Activity	4.551e-04	6.500000	7.300000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.006666	Activity	4.968e-04	6.500000	7.500000	1.842068	0.000000	0.000000	0.000000	0.000000
Normal	0.106666	Activity	1.182e-05	6.860000	7.340000	2.300000	7.100000	0.120000	0.010000	10.000000
Normal	0.319998	Activity	1.182e-05	7.060000	7.540000	2.300000	7.300000	0.120000	0.010000	10.000000
Normal	0.106666	Activity	1.182e-05	7.260000	7.740000	2.300000	7.500000	0.120000	0.010000	10.000000
Exponential	0.053334	Activity	4.483e-05	6.500000	7.100000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.160002	Activity	5.167e-05	6.500000	7.300000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.053334	Activity	5.640e-05	6.500000	7.500000	1.842068	0.000000	0.000000	0.000000	0.000000
Normal	0.013334	Activity	1.815e-05	6.860000	7.340000	2.300000	7.100000	0.120000	0.010000	10.000000
Normal	0.040002	Activity	1.815e-05	7.060000	7.540000	2.300000	7.300000	0.120000	0.010000	10.000000
Normal	0.013334	Activity	1.815e-05	7.260000	7.740000	2.300000	7.500000	0.120000	0.010000	10.000000
Exponential	0.006666	Activity	6.868e-05	6.500000	7.100000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.019998	Activity	7.916e-05	6.500000	7.300000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.006666	Activity	8.640e-05	6.500000	7.500000	1.842068	0.000000	0.000000	0.000000	0.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--

Trace Coordinates:

Latitude	Longitude
35.4853	-106.8574
35.5849	-106.8557
35.6246	-106.8577
35.6777	-106.8687
35.7441	-106.8701
35.7740	-106.8782
35.7902	-106.8878
35.8244	-106.8941
35.8730	-106.8830
35.8874	-106.8885
35.8967	-106.8886
35.9087	-106.8936
35.9475	-106.8926
35.9999	-106.9014
36.0348	-106.8992
36.0541	-106.9073
36.0739	-106.9093

```
    36.0917  -106.9093
    36.1155  -106.9015
    36.1908  -106.9112
    36.1985  -106.9056
    36.2198  -106.9021

 ------ End Nested Sources for Nacimiento fault [2002ab] -------

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
      0.25      0.250000          Abrahamson-et al (2014) NGA West 2 USGS
2014
      0.25      0.250000          Boore-et al (2014) NGA West 2 USGS 2014
      0.25      0.250000          Campbell-Bozorgnia (2014) NGA West 2
USGS 2014
      0.25      0.250000          Chiou-Youngs (2014) NGA West 2 USGS
2014

*****************************************

Name: San Felipe fault zone [2030a]
Region: USGS 2014 New Mexico
Category:Composite Seismic Source
Database: C:\Users\dgarcia\AppData\Local\Fugro\EZ-FRISK\Regions\EZ-FRISK
USGS2014 Lower 48 v1.00\Files\USGS 2014 Lower 48.bin-ssdb
Magnitude Scale: Moment Magnitude
Probability of Activity: 1
 ------ Start Nested Sources forSan Felipe fault zone [2030a] -------
Name: 2030a San Felipe fault zone (dip 35)
Region: USGS 2014 New Mexico
Category:Fault
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.20000000
Deterministic Magnitude: 6.97

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        35         0     0.001        15

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag    MaxMag
Beta      Mean     Sigma    Delta1    Delta2
           Normal  0.013334    Activity   3.667e-05  6.530000  7.010000
2.300000  6.770000  0.120000  0.010000 10.000000
           Normal  0.040002    Activity   3.667e-05  6.730000  7.210000
2.300000  6.970000  0.120000  0.010000 10.000000
           Normal  0.013334    Activity   3.667e-05  6.930000  7.410000
2.300000  7.170000  0.120000  0.010000 10.000000
      Exponential  0.006666    Activity   6.049e-05  6.500000  6.770000
1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.019998    Activity   8.942e-05  6.500000  6.970000
1.842068  0.000000  0.000000  0.000000  0.000000
```

Exponential	0.006666	Activity	1.094e-04	6.500000	7.170000	1.842068	0.000000	0.000000	0.000000	0.000000	
Normal	0.106666	Activity	4.114e-05	6.530000	7.010000	2.300000	6.770000	0.120000	0.010000	10.000000	
Normal	0.319998	Activity	4.114e-05	6.730000	7.210000	2.300000	6.970000	0.120000	0.010000	10.000000	
Normal	0.106666	Activity	4.114e-05	6.930000	7.410000	2.300000	7.170000	0.120000	0.010000	10.000000	
Exponential	0.053334	Activity	6.791e-05	6.500000	6.770000	1.842068	0.000000	0.000000	0.000000	0.000000	
Exponential	0.160002	Activity	1.004e-04	6.500000	6.970000	1.842068	0.000000	0.000000	0.000000	0.000000	
Exponential	0.053334	Activity	1.229e-04	6.500000	7.170000	1.842068	0.000000	0.000000	0.000000	0.000000	
Normal	0.013334	Activity	5.863e-05	6.530000	7.010000	2.300000	6.770000	0.120000	0.010000	10.000000	
Normal	0.040002	Activity	5.863e-05	6.730000	7.210000	2.300000	6.970000	0.120000	0.010000	10.000000	
Normal	0.013334	Activity	5.863e-05	6.930000	7.410000	2.300000	7.170000	0.120000	0.010000	10.000000	
Exponential	0.006666	Activity	9.678e-05	6.500000	6.770000	1.842068	0.000000	0.000000	0.000000	0.000000	
Exponential	0.019998	Activity	1.431e-04	6.500000	6.970000	1.842068	0.000000	0.000000	0.000000	0.000000	
Exponential	0.006666	Activity	1.751e-04	6.500000	7.170000	1.842068	0.000000	0.000000	0.000000	0.000000	

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--

Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--

Trace Coordinates:

Latitude	Longitude
35.3121	-106.6081
35.3270	-106.6074
35.3567	-106.5956
35.3788	-106.5946
35.4247	-106.6022
35.4578	-106.6165
35.4795	-106.6103
35.5200	-106.6145
35.5312	-106.6112
35.5464	-106.5983
35.5640	-106.5927
35.5981	-106.5979
35.6192	-106.5958
35.6399	-106.6049
35.6641	-106.6000
35.6832	-106.5846

Name: 2030a San Felipe fault zone (dip 50)
Region: USGS 2014 New Mexico
Category:Fault
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.60000000
Deterministic Magnitude: 6.97

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	50	0	0.001	15

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.013334	Activity	3.667e-05	6.530000	7.010000	2.300000	6.770000	0.120000	0.010000	10.000000
Normal	0.040002	Activity	3.667e-05	6.730000	7.210000	2.300000	6.970000	0.120000	0.010000	10.000000
Normal	0.013334	Activity	3.667e-05	6.930000	7.410000	2.300000	7.170000	0.120000	0.010000	10.000000

```
      Exponential  0.006666    Activity   6.049e-05  6.500000  6.770000
1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.019998    Activity   8.942e-05  6.500000  6.970000
1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.006666    Activity   1.094e-04  6.500000  7.170000
1.842068  0.000000  0.000000  0.000000  0.000000
           Normal  0.106666    Activity   4.114e-05  6.530000  7.010000
2.300000  6.770000  0.120000  0.010000 10.000000
           Normal  0.319998    Activity   4.114e-05  6.730000  7.210000
2.300000  6.970000  0.120000  0.010000 10.000000
           Normal  0.106666    Activity   4.114e-05  6.930000  7.410000
2.300000  7.170000  0.120000  0.010000 10.000000
      Exponential  0.053334    Activity   6.791e-05  6.500000  6.770000
1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.160002    Activity   1.004e-04  6.500000  6.970000
1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.053334    Activity   1.229e-04  6.500000  7.170000
1.842068  0.000000  0.000000  0.000000  0.000000
           Normal  0.013334    Activity   5.863e-05  6.530000  7.010000
2.300000  6.770000  0.120000  0.010000 10.000000
           Normal  0.040002    Activity   5.863e-05  6.730000  7.210000
2.300000  6.970000  0.120000  0.010000 10.000000
           Normal  0.013334    Activity   5.863e-05  6.930000  7.410000
2.300000  7.170000  0.120000  0.010000 10.000000
      Exponential  0.006666    Activity   9.678e-05  6.500000  6.770000
1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.019998    Activity   1.431e-04  6.500000  6.970000
1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.006666    Activity   1.751e-04  6.500000  7.170000
1.842068  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw        Bw
Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
```

Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--

Trace Coordinates:

Latitude	Longitude
35.3121	-106.6081
35.3270	-106.6074
35.3567	-106.5956
35.3788	-106.5946
35.4247	-106.6022
35.4578	-106.6165
35.4795	-106.6103
35.5200	-106.6145
35.5312	-106.6112
35.5464	-106.5983
35.5640	-106.5927
35.5981	-106.5979
35.6192	-106.5958
35.6399	-106.6049
35.6641	-106.6000
35.6832	-106.5846

Name: 2030a San Felipe fault zone (dip 65)
Region: USGS 2014 New Mexico
Category:Fault
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.20000000
Deterministic Magnitude: 6.97

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	65	0	0.001	15

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.013334	Activity	3.667e-05	6.530000	7.010000	2.300000	6.770000	0.120000	0.010000	10.000000

	Normal	0.040002	Activity	3.667e-05	6.730000	7.210000	2.300000	6.970000	0.120000	0.010000	10.000000	
	Normal	0.013334	Activity	3.667e-05	6.930000	7.410000	2.300000	7.170000	0.120000	0.010000	10.000000	
	Exponential	0.006666	Activity	6.049e-05	6.500000	6.770000	1.842068	0.000000	0.000000	0.000000	0.000000	
	Exponential	0.019998	Activity	8.942e-05	6.500000	6.970000	1.842068	0.000000	0.000000	0.000000	0.000000	
	Exponential	0.006666	Activity	1.094e-04	6.500000	7.170000	1.842068	0.000000	0.000000	0.000000	0.000000	
	Normal	0.106666	Activity	4.114e-05	6.530000	7.010000	2.300000	6.770000	0.120000	0.010000	10.000000	
	Normal	0.319998	Activity	4.114e-05	6.730000	7.210000	2.300000	6.970000	0.120000	0.010000	10.000000	
	Normal	0.106666	Activity	4.114e-05	6.930000	7.410000	2.300000	7.170000	0.120000	0.010000	10.000000	
	Exponential	0.053334	Activity	6.791e-05	6.500000	6.770000	1.842068	0.000000	0.000000	0.000000	0.000000	
	Exponential	0.160002	Activity	1.004e-04	6.500000	6.970000	1.842068	0.000000	0.000000	0.000000	0.000000	
	Exponential	0.053334	Activity	1.229e-04	6.500000	7.170000	1.842068	0.000000	0.000000	0.000000	0.000000	
	Normal	0.013334	Activity	5.863e-05	6.530000	7.010000	2.300000	6.770000	0.120000	0.010000	10.000000	
	Normal	0.040002	Activity	5.863e-05	6.730000	7.210000	2.300000	6.970000	0.120000	0.010000	10.000000	
	Normal	0.013334	Activity	5.863e-05	6.930000	7.410000	2.300000	7.170000	0.120000	0.010000	10.000000	
	Exponential	0.006666	Activity	9.678e-05	6.500000	6.770000	1.842068	0.000000	0.000000	0.000000	0.000000	
	Exponential	0.019998	Activity	1.431e-04	6.500000	6.970000	1.842068	0.000000	0.000000	0.000000	0.000000	
	Exponential	0.006666	Activity	1.751e-04	6.500000	7.170000	1.842068	0.000000	0.000000	0.000000	0.000000	

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

```
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    35.3121  -106.6081
    35.3270  -106.6074
    35.3567  -106.5956
    35.3788  -106.5946
    35.4247  -106.6022
    35.4578  -106.6165
    35.4795  -106.6103
    35.5200  -106.6145
    35.5312  -106.6112
    35.5464  -106.5983
    35.5640  -106.5927
    35.5981  -106.5979
    35.6192  -106.5958
    35.6399  -106.6049
    35.6641  -106.6000
    35.6832  -106.5846

 ------ End Nested Sources for San Felipe fault zone [2030a] -------

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
      0.25      0.250000          Abrahamson-et al (2014) NGA West 2 USGS
2014
      0.25      0.250000          Boore-et al (2014) NGA West 2 USGS 2014
      0.25      0.250000          Campbell-Bozorgnia (2014) NGA West 2
USGS 2014
      0.25      0.250000          Chiou-Youngs (2014) NGA West 2 USGS
2014

*****************************************
```

Name: San Felipe fault zone (Algodones section)
Region: Mt Taylor Deterministic
Category:Fault
Database: C:\Users\dgarcia\AppData\Local\Fugro\EZ-FRISK\Files\user.xml-ssdb
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.50000000
Deterministic Magnitude: 7

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
60	60	0	0.1	15

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	1	Slip	2.000e-02	6.700000	7.300000	0.000000	7.000000	0.120000	0.000000	0.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.100000	4.000000	0.000000	0.100000	--	--	--

Trace Coordinates:

Latitude	Longitude
35.5690	-106.4950
35.3340	-106.5250

Attenuation Equations for Source:

Raw Weight	Normalized Weight	Name
0.25	0.250000	Abrahamson-et al (2014) NGA West 2 USGS 2014
0.25	0.250000	Boore-et al (2014) NGA West 2 USGS 2014
0.25	0.250000	Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
0.25	0.250000	Chiou-Youngs (2014) NGA West 2 USGS 2014

****

Name: Sand Hill fault zone
Region: Mt Taylor Deterministic
Category:Fault
Database: C:\Users\dgarcia\AppData\Local\Fugro\EZ-FRISK\Files\user.xml-ssdb
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.50000000
Deterministic Magnitude: 6.9

Fault Profile Parameters:

```
        Dip1      Dip2    Depth1    Depth2    Depth3
          60        60         0       0.1        15

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag    MaxMag
Beta      Mean     Sigma    Delta1    Delta2
           Normal         1        Slip   2.000e-02  6.600000  7.200000
0.000000  6.900000  0.120000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw        Bw
Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.100000  4.000000  0.000000
0.100000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    35.4440  -106.8690
    35.1400  -106.8840

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
      0.25      0.250000          Abrahamson-et al (2014) NGA West 2 USGS
2014
      0.25      0.250000          Boore-et al (2014) NGA West 2 USGS 2014
      0.25      0.250000          Campbell-Bozorgnia (2014) NGA West 2
USGS 2014
      0.25      0.250000          Chiou-Youngs (2014) NGA West 2 USGS
2014

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Name: Santa Fe fault
Region: Mt Taylor Deterministic
Category:Fault
Database: C:\Users\dgarcia\AppData\Local\Fugro\EZ-FRISK\Files\user.xml-
ssdb
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.50000000
Deterministic Magnitude: 6.8

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          60        60         0       0.1        15

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag    MaxMag
Beta      Mean     Sigma    Delta1    Delta2
           Normal         1        Slip   2.000e-02  6.500000  7.100000
0.000000  6.800000  0.120000  0.000000  0.000000

Rupture Length Parameters
```

```
  Rupture Dimensioning        Al        Bl      Sigl        Aw        Bw
Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.100000  4.000000  0.000000
0.100000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    34.8880  -107.0530
    34.6360  -107.1040

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
      0.25      0.250000          Abrahamson-et al (2014) NGA West 2 USGS
2014
      0.25      0.250000          Boore-et al (2014) NGA West 2 USGS 2014
      0.25      0.250000          Campbell-Bozorgnia (2014) NGA West 2
USGS 2014
      0.25      0.250000          Chiou-Youngs (2014) NGA West 2 USGS
2014

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Name: unnamed fault of Bonita Canyon
Region: Mt Taylor Deterministic
Category:Fault
Database: C:\Users\dgarcia\AppData\Local\Fugro\EZ-FRISK\Files\user.xml-
ssdb
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.50000000
Deterministic Magnitude: 6.1

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          60        60         0       0.1        15

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag    MaxMag
Beta      Mean     Sigma    Delta1    Delta2
           Normal         1        Slip   2.000e-02  5.800000  6.400000
0.000000  6.100000  0.120000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw        Bw
Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.100000  4.000000  0.000000
0.100000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    34.9800  -107.9510
    34.9250  -107.9400

Attenuation Equations for Source:
```

Raw Weight	Normalized Weight	Name
0.25	0.250000	Abrahamson-et al (2014) NGA West 2 USGS 2014
0.25	0.250000	Boore-et al (2014) NGA West 2 USGS 2014
0.25	0.250000	Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
0.25	0.250000	Chiou-Youngs (2014) NGA West 2 USGS 2014

****

Name: unnamed faults near Albuquerque Volcanoes
Region: Mt Taylor Deterministic
Category:Fault
Database: C:\Users\dgarcia\AppData\Local\Fugro\EZ-FRISK\Files\user.xml-ssdb
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 1.00000000
Deterministic Magnitude: 6.9

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
60	60	0	0.1	15

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	1	Slip	2.000e-02	6.600000	7.200000	0.000000	6.900000	0.120000	0.000000	0.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.100000	4.000000	0.000000	0.100000	--	--	--

Trace Coordinates:

Latitude	Longitude
35.2180	-106.7620
35.0650	-106.7500

Attenuation Equations for Source:

Raw Weight	Normalized Weight	Name
0.25	0.250000	Abrahamson-et al (2014) NGA West 2 USGS 2014
0.25	0.250000	Boore-et al (2014) NGA West 2 USGS 2014
0.25	0.250000	Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
0.25	0.250000	Chiou-Youngs (2014) NGA West 2 USGS 2014

****

Name: unnamed faults near Picuda Peak
Region: Mt Taylor Deterministic
Category:Fault
Database: C:\Users\dgarcia\AppData\Local\Fugro\EZ-FRISK\Files\user.xml-ssdb
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.50000000
Deterministic Magnitude: 6.4

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
60	60	0	0.1	15

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	1	Slip	2.000e-02	6.100000	6.700000	0.000000	6.400000	0.120000	0.000000	0.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.100000	4.000000	0.000000	0.100000	--	--	--

Trace Coordinates:

Latitude	Longitude
35.4270	-106.6850
35.2830	-106.6880

Attenuation Equations for Source:

Raw Weight	Normalized Weight	Name
0.25	0.250000	Abrahamson-et al (2014) NGA West 2 USGS 2014
0.25	0.250000	Boore-et al (2014) NGA West 2 USGS 2014
0.25	0.250000	Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
0.25	0.250000	Chiou-Youngs (2014) NGA West 2 USGS 2014

****

Name: unnamed faults near Star Heights
Region: Mt Taylor Deterministic
Category:Fault
Database: C:\Users\dgarcia\AppData\Local\Fugro\EZ-FRISK\Files\user.xml-ssdb
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 1.00000000
Deterministic Magnitude: 6.5

Fault Profile Parameters:

```
        Dip1      Dip2    Depth1    Depth2    Depth3
          70        70         0       0.1        15

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag    MaxMag
Beta      Mean     Sigma    Delta1    Delta2
           Normal         1        Slip   2.000e-02  6.200000  6.800000
0.000000  6.500000  0.120000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw        Bw
Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.100000  4.000000  0.000000
0.100000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    35.3510  -106.7250
    35.1680  -106.7160

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
      0.25      0.250000          Abrahamson-et al (2014) NGA West 2 USGS
2014
      0.25      0.250000          Boore-et al (2014) NGA West 2 USGS 2014
      0.25      0.250000          Campbell-Bozorgnia (2014) NGA West 2
USGS 2014
      0.25      0.250000          Chiou-Youngs (2014) NGA West 2 USGS
2014

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Name: unnamed faults of El Malpais lava field
Region: Mt Taylor Deterministic
Category:Fault
Database: C:\Users\dgarcia\AppData\Local\Fugro\EZ-FRISK\Files\user.xml-
ssdb
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.50000000
Deterministic Magnitude: 6.7

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          60        60         0       0.1        15

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag    MaxMag
Beta      Mean     Sigma    Delta1    Delta2
           Normal         1        Slip   2.000e-02  6.400000  7.000000
0.000000  6.700000  0.120000  0.000000  0.000000

Rupture Length Parameters
```

```
  Rupture Dimensioning        Al        Bl      Sigl        Aw        Bw
Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.100000  4.000000  0.000000
0.100000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    34.8880  -108.0030
    34.5720  -108.1560

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
      0.25      0.250000          Abrahamson-et al (2014) NGA West 2 USGS
2014
      0.25      0.250000          Boore-et al (2014) NGA West 2 USGS 2014
      0.25      0.250000          Campbell-Bozorgnia (2014) NGA West 2
USGS 2014
      0.25      0.250000          Chiou-Youngs (2014) NGA West 2 USGS
2014

*****************************************

Name: unnamed intrabasin faults west of the Rio Puerco
Region: Mt Taylor Deterministic
Category:Fault
Database: C:\Users\dgarcia\AppData\Local\Fugro\EZ-FRISK\Files\user.xml-
ssdb
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 1.00000000
Deterministic Magnitude: 6.6

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          60        60         0       0.1        15

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag    MaxMag
Beta      Mean     Sigma    Delta1    Delta2
          Normal         1        Slip   2.000e-02  6.300000  6.900000
0.000000  6.600000  0.120000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw        Bw
Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.100000  4.000000  0.000000
0.100000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    34.7190  -106.9930
    34.4700  -106.9620

Attenuation Equations for Source:
```

Raw Weight	Normalized Weight	Name
0.25	0.250000	Abrahamson-et al (2014) NGA West 2 USGS 2014
0.25	0.250000	Boore-et al (2014) NGA West 2 USGS 2014
0.25	0.250000	Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
0.25	0.250000	Chiou-Youngs (2014) NGA West 2 USGS 2014

****

Name: Zia fault [2046]
Region: USGS 2014 New Mexico
Category:Composite Seismic Source
Database: C:\Users\dgarcia\AppData\Local\Fugro\EZ-FRISK\Regions\EZ-FRISK USGS2014 Lower 48 v1.00\Files\USGS 2014 Lower 48.bin-ssdb
Magnitude Scale: Moment Magnitude
Probability of Activity: 1
------ Start Nested Sources forZia fault [2046] -------
Name: 2046 Zia fault (dip 35)
Region: USGS 2014 New Mexico
Category:Fault
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.20000000
Deterministic Magnitude: 6.84

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	35	0	0.001	15

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.013334	Activity	4.384e-05	6.400000	6.880000	2.300000	6.640000	0.120000	0.010000	10.000000
Normal	0.040002	Activity	4.384e-05	6.600000	7.080000	2.300000	6.840000	0.120000	0.010000	10.000000
Normal	0.013334	Activity	4.384e-05	6.800000	7.280000	2.300000	7.040000	0.120000	0.010000	10.000000
Exponential	0.006666	Activity	4.160e-05	6.500000	6.640000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.019998	Activity	8.517e-05	6.500000	6.840000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.006666	Activity	1.153e-04	6.500000	7.040000	1.842068	0.000000	0.000000	0.000000	0.000000
Normal	0.106666	Activity	4.356e-05	6.400000	6.880000	2.300000	6.640000	0.120000	0.010000	10.000000
Normal	0.319998	Activity	4.356e-05	6.600000	7.080000	2.300000	6.840000	0.120000	0.010000	10.000000
Normal	0.106666	Activity	4.356e-05	6.800000	7.280000	2.300000	7.040000	0.120000	0.010000	10.000000
Exponential	0.053334	Activity	4.127e-05	6.500000	6.640000	1.842068	0.000000	0.000000	0.000000	0.000000

```
      Exponential  0.160002    Activity   8.450e-05  6.500000  6.840000
1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.053334    Activity   1.144e-04  6.500000  7.040000
1.842068  0.000000  0.000000  0.000000  0.000000
           Normal  0.013334    Activity   5.268e-05  6.400000  6.880000
2.300000  6.640000  0.120000  0.010000 10.000000
           Normal  0.040002    Activity   5.268e-05  6.600000  7.080000
2.300000  6.840000  0.120000  0.010000 10.000000
           Normal  0.013334    Activity   5.268e-05  6.800000  7.280000
2.300000  7.040000  0.120000  0.010000 10.000000
      Exponential  0.006666    Activity   4.992e-05  6.500000  6.640000
1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.019998    Activity   1.022e-04  6.500000  6.840000
1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.006666    Activity   1.384e-04  6.500000  7.040000
1.842068  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw        Bw
Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
```

Length and width -3.220000 0.690000 0.220000 -3.220000 0.690000 0.220000 -- -- --

Trace Coordinates:

Latitude	Longitude
35.1892	-106.8434
35.2802	-106.8231
35.3228	-106.7957
35.3473	-106.7841
35.3751	-106.7784
35.4006	-106.7624
35.4706	-106.7481

Name: 2046 Zia fault (dip 50)
Region: USGS 2014 New Mexico
Category:Fault
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.60000000
Deterministic Magnitude: 6.84

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	50	0	0.001	15

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.013334	Activity	4.384e-05	6.400000	6.880000	2.300000	6.640000	0.120000	0.010000	10.000000
Normal	0.040002	Activity	4.384e-05	6.600000	7.080000	2.300000	6.840000	0.120000	0.010000	10.000000
Normal	0.013334	Activity	4.384e-05	6.800000	7.280000	2.300000	7.040000	0.120000	0.010000	10.000000
Exponential	0.006666	Activity	4.160e-05	6.500000	6.640000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.019998	Activity	8.517e-05	6.500000	6.840000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.006666	Activity	1.153e-04	6.500000	7.040000	1.842068	0.000000	0.000000	0.000000	0.000000
Normal	0.106666	Activity	4.356e-05	6.400000	6.880000	2.300000	6.640000	0.120000	0.010000	10.000000
Normal	0.319998	Activity	4.356e-05	6.600000	7.080000	2.300000	6.840000	0.120000	0.010000	10.000000
Normal	0.106666	Activity	4.356e-05	6.800000	7.280000	2.300000	7.040000	0.120000	0.010000	10.000000
Exponential	0.053334	Activity	4.127e-05	6.500000	6.640000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.160002	Activity	8.450e-05	6.500000	6.840000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.053334	Activity	1.144e-04	6.500000	7.040000	1.842068	0.000000	0.000000	0.000000	0.000000
Normal	0.013334	Activity	5.268e-05	6.400000	6.880000	2.300000	6.640000	0.120000	0.010000	10.000000

```
           Normal  0.040002    Activity   5.268e-05  6.600000  7.080000
2.300000  6.840000  0.120000  0.010000 10.000000
           Normal  0.013334    Activity   5.268e-05  6.800000  7.280000
2.300000  7.040000  0.120000  0.010000 10.000000
      Exponential  0.006666    Activity   4.992e-05  6.500000  6.640000
1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.019998    Activity   1.022e-04  6.500000  6.840000
1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.006666    Activity   1.384e-04  6.500000  7.040000
1.842068  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw        Bw
Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    35.1892  -106.8434
```

35.2802 -106.8231
35.3228 -106.7957
35.3473 -106.7841
35.3751 -106.7784
35.4006 -106.7624
35.4706 -106.7481

Name: 2046 Zia fault (dip 65)
Region: USGS 2014 New Mexico
Category:Fault
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.20000000
Deterministic Magnitude: 6.84

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	65	0	0.001	15

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.013334	Activity	4.384e-05	6.400000	6.880000	2.300000	6.640000	0.120000	0.010000	10.000000
Normal	0.040002	Activity	4.384e-05	6.600000	7.080000	2.300000	6.840000	0.120000	0.010000	10.000000
Normal	0.013334	Activity	4.384e-05	6.800000	7.280000	2.300000	7.040000	0.120000	0.010000	10.000000
Exponential	0.006666	Activity	4.160e-05	6.500000	6.640000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.019998	Activity	8.517e-05	6.500000	6.840000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.006666	Activity	1.153e-04	6.500000	7.040000	1.842068	0.000000	0.000000	0.000000	0.000000
Normal	0.106666	Activity	4.356e-05	6.400000	6.880000	2.300000	6.640000	0.120000	0.010000	10.000000
Normal	0.319998	Activity	4.356e-05	6.600000	7.080000	2.300000	6.840000	0.120000	0.010000	10.000000
Normal	0.106666	Activity	4.356e-05	6.800000	7.280000	2.300000	7.040000	0.120000	0.010000	10.000000
Exponential	0.053334	Activity	4.127e-05	6.500000	6.640000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.160002	Activity	8.450e-05	6.500000	6.840000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.053334	Activity	1.144e-04	6.500000	7.040000	1.842068	0.000000	0.000000	0.000000	0.000000
Normal	0.013334	Activity	5.268e-05	6.400000	6.880000	2.300000	6.640000	0.120000	0.010000	10.000000
Normal	0.040002	Activity	5.268e-05	6.600000	7.080000	2.300000	6.840000	0.120000	0.010000	10.000000
Normal	0.013334	Activity	5.268e-05	6.800000	7.280000	2.300000	7.040000	0.120000	0.010000	10.000000
Exponential	0.006666	Activity	4.992e-05	6.500000	6.640000	1.842068	0.000000	0.000000	0.000000	0.000000

```
      Exponential  0.019998    Activity   1.022e-04  6.500000  6.840000
1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.006666    Activity   1.384e-04  6.500000  7.040000
1.842068  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw        Bw
Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    35.1892  -106.8434
    35.2802  -106.8231
    35.3228  -106.7957
    35.3473  -106.7841
    35.3751  -106.7784
    35.4006  -106.7624
    35.4706  -106.7481
```

------ End Nested Sources for Zia fault [2046] -------

Attenuation Equations for Source:

Raw Weight	Normalized Weight	Name
0.25	0.250000	Abrahamson-et al (2014) NGA West 2 USGS 2014
0.25	0.250000	Boore-et al (2014) NGA West 2 USGS 2014
0.25	0.250000	Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
0.25	0.250000	Chiou-Youngs (2014) NGA West 2 USGS 2014

****

MAGNITUDE CONVERSIONS

This analysis does not require any magnitude conversions.
Note: Your analysis may indirectly use magnitude conversions that are not listed here.

Echo File Creation Time: 14:08:38 Thursday, September 18, 2025

APPENDIX C.2
DETERMINISTIC RESULTS

Appendix C.2 Results of Deterministic Hazard Analysis

Name of Faults	ID Number	Age of Most Recent Prehistoric Deformation (ya)[1]	Slip-rate (mm/yr)	Fault Length (Km)	Fault Type	Distance from site to surface trace of fault (km)	MCE[2,3]	PGA									
								Lognormal Mean		Arahamson-et al (2014)		Borre-et al (2014)		Campbell-Bozorgnia (2014)		Chiou-Youngs (2014)	
								Mean	Mean +1SD	Mean	Mean +1SD	Mean	Mean +1SD	Mean	Mean +1SD	Mean	Mean +1SD
Random Earthquake	-	-	-	-	-	15.1	6.3	0.09	0.17	0.09	0.16	0.09	0.16	0.12	0.21	0.08	0.14
Cat Mesa fault	2122	<750,000	<0.2	20	Normal	75.9	6.6	0.02	0.04	0.02	0.04	0.02	0.03	0.02	0.04	0.02	0.03
Cebollita Mesa fault	2140	<15,000	<0.2	13	Normal	74.8	6.3	0.01	0.03	0.01	0.03	0.02	0.03	0.02	0.03	0.01	0.02
Continental Divide fault	2145	<1,600,000	<0.2	17	Normal	91.8	6.5	0.01	0.02	0.01	0.02	0.01	0.02	0.02	0.03	0.01	0.02
County Dump fault[(3)]	2038	<130,000	<0.2	35	Normal	76.5	6.89	0.02	0.04	0.02	0.05	0.02	0.04	0.03	0.05	0.02	0.04
Coyote Springs fault	2114	<15,000	<0.2	17	Normal	93.4	6.5	0.01	0.02	0.01	0.02	0.01	0.02	0.02	0.03	0.01	0.02
Intrabasin faults on the Llano de Albuquerque	2121	<750,000	<0.2	101	Normal	66.7	7.5	0.04	0.08	0.05	0.09	0.04	0.07	0.05	0.09	0.04	0.08
Jemez-San Ysidro fault (Jemez section)[(3)]	2029a	<1,600,000	<0.2	28	Normal	77.3	7.09	0.03	0.05	0.03	0.05	0.03	0.05	0.03	0.06	0.03	0.04
Jemez-San Ysidro fault (San Ysidro section)[(3)]	2029b	<750,000	<0.2	34	Normal	77.3	7.09										
Jemez-San Ysidro fault (Calabacillas section)[(3)]	2029c	<15,000	<0.2	34	Normal	70.5	6.83	0.03	0.05	0.03	0.05	0.02	0.04	0.03	0.05	0.02	0.04
Mesa Prieta faults	1985	<1,600,000	<0.2	12	Normal	47.1	6.3	0.03	0.05	0.02	0.05	0.03	0.05	0.03	0.06	0.02	0.04
Nacimiento fault (northern section)[(3)]	2002a	<1,600,000	<0.2	36	Normal	72.3	7.30	0.03	0.06	0.04	0.07	0.03	0.06	0.04	0.07	0.03	0.06
Nacimiento fault (southern section)[(3)]	2002b	<750,000	<0.2	45	Normal	72.3	7.30										
San Felipe fault zone (Santa Ana section)[(3)]	2030a	<1,600,000	<0.2	44	Normal	93.2	6.97	0.02	0.04	0.02	0.04	0.02	0.03	0.02	0.04	0.02	0.03
San Felipe fault zone (Algodones section)	2030b	<1,600,000	<0.2	45	Normal	93.3	7.0	0.02	0.04	0.02	0.04	0.02	0.03	0.02	0.04	0.02	0.03
Sand Hill fault zone	2039	<1,600,000	<0.2	36	Normal	62.2	6.9	0.03	0.06	0.03	0.06	0.03	0.05	0.04	0.07	0.03	0.05
Santa Fe fault	2123	<1,600,000	<0.2	30	Normal	67.8	6.8	0.03	0.05	0.03	0.05	0.03	0.05	0.03	0.06	0.02	0.04
unnamed fault of Bonita Canyon	2144	<1,600,000	<0.2	9	Normal	49.3	6.1	0.02	0.04	0.02	0.04	0.02	0.04	0.03	0.05	0.02	0.03
unnamed faults near Albuquerque Volcanoes	2049	<750,000	<0.2	34	Normal	73.6	6.9	0.03	0.05	0.03	0.05	0.02	0.04	0.03	0.05	0.02	0.04
unnamed faults near Picuda Peak	2041	<1,600,000	<0.2	16	Normal	78.8	6.4	0.02	0.03	0.01	0.03	0.02	0.03	0.02	0.04	0.01	0.02
unnamed faults near Star Heights	2048	<750,000	<0.2	18	Normal	78.6	6.5	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.04	0.01	0.02
unnamed faults of El Malpais lava field	2146	<1,600,000	<0.2	26	Normal	60.5	6.7	0.03	0.05	0.03	0.05	0.03	0.05	0.03	0.06	0.02	0.04
unnamed intrabasin faults west of the Rio Puerco	2115	<750,000	<0.2	22	Normal	87.3	6.6	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.04	0.01	0.02
Zia fault[(3)]	2046	<15,000	<0.2	32	Normal	73.7	6.84	0.02	0.04	0.02	0.05	0.02	0.04	0.03	0.05	0.02	0.04

[1]ya = years ago

[2]Wells and Coopersmith (1994)

[3]The parameters included in the EZ Frisk program from the USGS Hazard mapping used for analysis

Deterministic Spectra Results using EZ-FRISK 8.11 Build 019

Largest Amplitudes of Ground Motions Considering All Sources Calculated using Weighted Mean of Attenuation Equations
Amplitude Units: Acceleration (g)

Fractile: 0.5

Period	Amplitude	Magnitude	Closest Distance(km)	Region	Controlling Source
PGA	9.248e-02	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
0.05	1.448e-01	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
0.1	1.997e-01	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
0.2	1.987e-01	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
0.3	1.529e-01	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
0.4	1.192e-01	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
0.5	9.607e-02	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
0.75	6.452e-02	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
1	4.625e-02	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
2	2.025e-02	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
3	1.229e-02	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
4	9.177e-03	7.50 Mw	66.71	Mt Taylor	Deterministic Intrabasin faults on the Llano de Albuquerque

Fractile: 0.84

Period	Amplitude	Magnitude	Closest Distance(km)	Region	Controlling Source
PGA	1.695e-01	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
0.05	2.768e-01	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
0.1	3.937e-01	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
0.2	3.815e-01	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
0.3	2.935e-01	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
0.4	2.308e-01	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
0.5	1.886e-01	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake

0.75	1.301e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
1	9.416e-02	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
2	4.145e-02	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
3	2.515e-02	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
4	1.851e-02	7.50 Mw	66.71	Mt Taylor Deterministic Intrabasin faults on the Llano de Albuquerque	

Largest Amplitudes of Ground Motions Considering Sources Calculated with Abrahamson-et al (2014) NGA West 2 USGS 2014
Amplitude Units: Acceleration (g)

Fractile: 0.5

Period	Amplitude	Magnitude	Closest Distance(km)	Region	Controlling Source
PGA	8.560e-02	6.30 Mw	15.09	Mt Taylor Deterministic	Random Earthquake
0.05	1.112e-01	6.30 Mw	15.09	Mt Taylor Deterministic	Random Earthquake
0.1	1.690e-01	6.30 Mw	15.09	Mt Taylor Deterministic	Random Earthquake
0.2	1.680e-01	6.30 Mw	15.09	Mt Taylor Deterministic	Random Earthquake
0.3	1.250e-01	6.30 Mw	15.09	Mt Taylor Deterministic	Random Earthquake
0.4	9.558e-02	6.30 Mw	15.09	Mt Taylor Deterministic	Random Earthquake
0.5	7.845e-02	6.30 Mw	15.09	Mt Taylor Deterministic	Random Earthquake
0.75	5.106e-02	6.30 Mw	15.09	Mt Taylor Deterministic	Random Earthquake
1	3.775e-02	7.50 Mw	66.71	Mt Taylor Deterministic	Intrabasin faults on the Llano de Albuquerque
2	2.364e-02	7.50 Mw	66.71	Mt Taylor Deterministic	Intrabasin faults on the Llano de Albuquerque
3	1.730e-02	7.50 Mw	66.71	Mt Taylor Deterministic	Intrabasin faults on the Llano de Albuquerque
4	1.270e-02	7.50 Mw	66.71	Mt Taylor Deterministic	Intrabasin faults on the Llano de Albuquerque

Fractile: 0.84

Period	Amplitude	Magnitude	Closest Distance(km)	Region	Controlling Source
PGA	1.642e-01	6.30 Mw	15.09	Mt Taylor Deterministic	Random Earthquake
0.05	2.150e-01	6.30 Mw	15.09	Mt Taylor Deterministic	Random Earthquake

0.1	3.321e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
0.2	3.342e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
0.3	2.517e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
0.4	1.940e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
0.5	1.606e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
0.75	1.058e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
1	7.872e-02	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
2	4.950e-02	7.50 Mw	66.71	Mt Taylor Deterministic Intrabasin faults on the Llano de Albuquerque	
3	3.591e-02	7.50 Mw	66.71	Mt Taylor Deterministic Intrabasin faults on the Llano de Albuquerque	
4	2.614e-02	7.50 Mw	66.71	Mt Taylor Deterministic Intrabasin faults on the Llano de Albuquerque	

Largest Amplitudes of Ground Motions Considering Sources Calculated with Boore-et al (2014) NGA West 2 USGS 2014
Amplitude Units: Acceleration (g)

Fractile: 0.5

Period	Amplitude	Magnitude	Closest Distance(km)	Region	Controlling Source
PGA	8.586e-02	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
0.05	1.307e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
0.1	1.803e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
0.2	2.075e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
0.3	1.626e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
0.4	1.261e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
0.5	9.983e-02	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
0.75	6.853e-02	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
1	5.002e-02	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
2	2.062e-02	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
3	1.373e-02	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
4	1.025e-02	7.50 Mw	66.71	Mt Taylor Deterministic Intrabasin faults on the Llano de Albuquerque	

Fractile: 0.84

Period	Amplitude	Magnitude	Closest Distance(km)	Region	Controlling Source
PGA	1.567e-01	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
0.05	2.574e-01	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
0.1	3.648e-01	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
0.2	3.848e-01	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
0.3	2.970e-01	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
0.4	2.328e-01	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
0.5	1.886e-01	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
0.75	1.343e-01	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
1	9.959e-02	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
2	4.137e-02	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
3	2.777e-02	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
4	2.072e-02	7.50 Mw	66.71	Mt Taylor	Deterministic Intrabasin faults on the Llano de Albuquerque

Largest Amplitudes of Ground Motions Considering Sources Calculated with Campbell-Bozorgnia (2014) NGA West 2 USGS 2014

Amplitude Units: Acceleration (g)

Fractile: 0.5

Period	Amplitude	Magnitude	Closest Distance(km)	Region	Controlling Source
PGA	1.183e-01	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
0.05	2.044e-01	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
0.1	2.594e-01	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
0.2	2.386e-01	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
0.3	1.850e-01	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
0.4	1.452e-01	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake
0.5	1.158e-01	6.30 Mw	15.09	Mt Taylor	Deterministic Random Earthquake

0.75	7.848e-02	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
1	5.536e-02	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
2	2.357e-02	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
3	1.375e-02	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
4	9.487e-03	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	

Fractile: 0.84

Period	Amplitude	Magnitude	Closest Distance(km)	Region	Controlling Source
PGA	2.123e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
0.05	3.872e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
0.1	5.153e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
0.2	4.541e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
0.3	3.504e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
0.4	2.768e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
0.5	2.243e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
0.75	1.593e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
1	1.133e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
2	4.781e-02	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
3	2.793e-02	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
4	1.872e-02	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	

Largest Amplitudes of Ground Motions Considering Sources Calculated with Chiou-Youngs (2014) NGA West 2 USGS 2014

Amplitude Units: Acceleration (g)

Fractile: 0.5

Period	Amplitude	Magnitude	Closest Distance(km)	Region	Controlling Source
PGA	8.015e-02	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
0.05	1.330e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	

0.1	1.902e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
0.2	1.809e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
0.3	1.392e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
0.4	1.102e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
0.5	9.024e-02	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
0.75	6.000e-02	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
1	4.210e-02	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
2	1.634e-02	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
3	8.738e-03	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
4	5.425e-03	7.50 Mw	66.71	Mt Taylor Deterministic Intrabasin faults on the Llano de Albuquerque	

Fractile: 0.84

Period	Amplitude	Magnitude	Closest Distance(km)	Region	Controlling Source
PGA	1.448e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
0.05	2.478e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
0.1	3.626e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
0.2	3.529e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
0.3	2.750e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
0.4	2.195e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
0.5	1.809e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
0.75	1.211e-01	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
1	8.502e-02	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
2	3.294e-02	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
3	1.751e-02	6.30 Mw	15.09	Mt Taylor Deterministic Random Earthquake	
4	1.074e-02	7.50 Mw	66.71	Mt Taylor Deterministic Intrabasin faults on the Llano de Albuquerque	

Largest Amplitudes of Ground Motions for Each Source

Source: Random Earthquake
Region: Mt Taylor Deterministic
  Closest Distance: 15.09 km
  Amplitude Units: Acceleration (g)
  Magnitude: 6.30 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
  Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
  Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
  Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
  Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	9.248e-02	8.560e-02	8.586e-02	1.183e-01	8.015e-02
0.05	1.448e-01	1.112e-01	1.307e-01	2.044e-01	1.330e-01
0.1	1.997e-01	1.690e-01	1.803e-01	2.594e-01	1.902e-01
0.2	1.987e-01	1.680e-01	2.075e-01	2.386e-01	1.809e-01
0.3	1.529e-01	1.250e-01	1.626e-01	1.850e-01	1.392e-01
0.4	1.192e-01	9.558e-02	1.261e-01	1.452e-01	1.102e-01
0.5	9.607e-02	7.845e-02	9.983e-02	1.158e-01	9.024e-02
0.75	6.452e-02	5.106e-02	6.853e-02	7.848e-02	6.000e-02
1	4.625e-02	3.751e-02	5.002e-02	5.536e-02	4.210e-02
2	2.025e-02	2.046e-02	2.062e-02	2.357e-02	1.634e-02
3	1.229e-02	1.295e-02	1.373e-02	1.375e-02	8.738e-03
4	8.305e-03	8.491e-03	1.004e-02	9.487e-03	5.200e-03

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
  Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
  Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
  Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
  Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	1.695e-01	1.642e-01	1.567e-01	2.123e-01	1.448e-01
0.05	2.768e-01	2.150e-01	2.574e-01	3.872e-01	2.478e-01
0.1	3.937e-01	3.321e-01	3.648e-01	5.153e-01	3.626e-01
0.2	3.815e-01	3.342e-01	3.848e-01	4.541e-01	3.529e-01
0.3	2.935e-01	2.517e-01	2.970e-01	3.504e-01	2.750e-01
0.4	2.308e-01	1.940e-01	2.328e-01	2.768e-01	2.195e-01
0.5	1.886e-01	1.606e-01	1.886e-01	2.243e-01	1.809e-01
0.75	1.301e-01	1.058e-01	1.343e-01	1.593e-01	1.211e-01
1	9.416e-02	7.872e-02	9.959e-02	1.133e-01	8.502e-02
2	4.145e-02	4.366e-02	4.137e-02	4.781e-02	3.294e-02
3	2.515e-02	2.740e-02	2.777e-02	2.793e-02	1.751e-02
4	1.680e-02	1.782e-02	2.030e-02	1.872e-02	1.038e-02

Source: Cat Mesa fault
Region: Mt Taylor Deterministic
  Closest Distance: 75.85 km
  Amplitude Units: Acceleration (g)
  Magnitude: 6.60 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
  Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
  Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
  Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
  Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	1.961e-02	1.853e-02	1.907e-02	2.448e-02	1.635e-02
0.05	2.815e-02	2.293e-02	2.623e-02	3.837e-02	2.507e-02
0.1	3.658e-02	3.182e-02	3.577e-02	4.577e-02	3.296e-02

0.2	3.847e-02	3.403e-02	4.376e-02	4.427e-02	3.182e-02
0.3	3.288e-02	2.948e-02	3.638e-02	3.977e-02	2.589e-02
0.4	2.723e-02	2.592e-02	2.898e-02	3.264e-02	2.137e-02
0.5	2.283e-02	2.303e-02	2.328e-02	2.689e-02	1.812e-02
0.75	1.628e-02	1.623e-02	1.625e-02	1.977e-02	1.288e-02
1	1.182e-02	1.215e-02	1.198e-02	1.361e-02	9.556e-03
2	5.878e-03	7.110e-03	5.516e-03	6.485e-03	4.400e-03
3	3.794e-03	4.665e-03	3.920e-03	3.983e-03	2.610e-03
4	2.670e-03	3.114e-03	3.069e-03	2.851e-03	1.647e-03

Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	3.568e-02	3.521e-02	3.481e-02	4.393e-02	2.876e-02
0.05	5.343e-02	4.390e-02	5.167e-02	7.267e-02	4.549e-02
0.1	7.162e-02	6.193e-02	7.239e-02	9.092e-02	6.124e-02
0.2	7.326e-02	6.706e-02	8.118e-02	8.426e-02	6.053e-02
0.3	6.263e-02	5.882e-02	6.646e-02	7.534e-02	4.993e-02
0.4	5.238e-02	5.215e-02	5.352e-02	6.224e-02	4.159e-02
0.5	4.457e-02	4.672e-02	4.398e-02	5.210e-02	3.550e-02
0.75	3.270e-02	3.334e-02	3.185e-02	4.013e-02	2.550e-02
1	2.400e-02	2.527e-02	2.386e-02	2.785e-02	1.900e-02
2	1.202e-02	1.505e-02	1.107e-02	1.315e-02	8.804e-03
3	7.749e-03	9.788e-03	7.928e-03	8.091e-03	5.191e-03

```
       4      5.393e-03      6.479e-03      6.206e-03      5.625e-03
3.261e-03



Source: Cebollita Mesa fault
Region: Mt Taylor Deterministic
  Closest Distance: 74.77 km
  Amplitude Units: Acceleration (g)
  Magnitude: 6.30 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
  Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS
2014
  Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
  Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2
USGS 2014
  Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS
2014

       1          2              3              4              5
6
     PGA      1.497e-02      1.339e-02      1.554e-02      1.895e-02
1.199e-02
    0.05      2.143e-02      1.658e-02      2.159e-02      2.914e-02
1.841e-02
     0.1      2.843e-02      2.305e-02      3.018e-02      3.635e-02
2.413e-02
     0.2      3.052e-02      2.418e-02      3.781e-02      3.654e-02
2.354e-02
     0.3      2.596e-02      2.052e-02      3.127e-02      3.279e-02
1.927e-02
     0.4      2.114e-02      1.778e-02      2.469e-02      2.614e-02
1.595e-02
     0.5      1.749e-02      1.559e-02      1.965e-02      2.120e-02
1.352e-02
    0.75      1.225e-02      1.058e-02      1.356e-02      1.533e-02
9.515e-03
       1      8.732e-03      7.770e-03      9.897e-03      1.030e-02
6.958e-03
       2      4.002e-03      4.392e-03      4.236e-03      4.390e-03
2.991e-03
       3      2.456e-03      2.763e-03      2.849e-03      2.530e-03
1.681e-03
       4      1.673e-03      1.788e-03      2.129e-03      1.761e-03
1.015e-03

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
  Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS
2014
  Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
```

Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	2.743e-02	2.569e-02	2.837e-02	3.400e-02	2.166e-02
0.05	4.101e-02	3.207e-02	4.252e-02	5.518e-02	3.429e-02
0.1	5.614e-02	4.530e-02	6.107e-02	7.220e-02	4.600e-02
0.2	5.843e-02	4.810e-02	7.013e-02	6.955e-02	4.592e-02
0.3	4.966e-02	4.131e-02	5.713e-02	6.211e-02	3.807e-02
0.4	4.083e-02	3.609e-02	4.559e-02	4.984e-02	3.178e-02
0.5	3.430e-02	3.190e-02	3.712e-02	4.109e-02	2.711e-02
0.75	2.470e-02	2.192e-02	2.658e-02	3.112e-02	1.920e-02
1	1.779e-02	1.631e-02	1.970e-02	2.109e-02	1.405e-02
2	8.201e-03	9.374e-03	8.499e-03	8.904e-03	6.029e-03
3	5.029e-03	5.847e-03	5.761e-03	5.140e-03	3.368e-03
4	3.389e-03	3.753e-03	4.304e-03	3.475e-03	2.025e-03

Source: Continental Divide fault
Region: Mt Taylor Deterministic
Closest Distance: 91.82 km
Amplitude Units: Acceleration (g)
Magnitude: 6.50 Mw
Fractile: 0.50
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	1.364e-02	1.250e-02	1.326e-02	1.732e-02	1.147e-02

0.05	1.918e-02	1.527e-02	1.778e-02	2.653e-02	1.714e-02
0.1	2.462e-02	2.069e-02	2.439e-02	3.140e-02	2.201e-02
0.2	2.656e-02	2.232e-02	3.108e-02	3.132e-02	2.153e-02
0.3	2.334e-02	1.991e-02	2.650e-02	2.898e-02	1.799e-02
0.4	1.966e-02	1.804e-02	2.136e-02	2.410e-02	1.514e-02
0.5	1.664e-02	1.624e-02	1.725e-02	2.007e-02	1.302e-02
0.75	1.202e-02	1.144e-02	1.213e-02	1.505e-02	9.435e-03
1	8.736e-03	8.511e-03	8.970e-03	1.039e-02	7.071e-03
2	4.306e-03	4.976e-03	4.086e-03	4.867e-03	3.293e-03
3	2.744e-03	3.230e-03	2.852e-03	2.944e-03	1.951e-03
4	1.910e-03	2.141e-03	2.202e-03	2.080e-03	1.218e-03

Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	2.482e-02	2.383e-02	2.419e-02	3.108e-02	2.017e-02
0.05	3.642e-02	2.934e-02	3.502e-02	5.025e-02	3.109e-02
0.1	4.835e-02	4.040e-02	4.975e-02	6.237e-02	4.088e-02
0.2	5.060e-02	4.412e-02	5.771e-02	5.961e-02	4.096e-02
0.3	4.446e-02	3.984e-02	4.841e-02	5.489e-02	3.469e-02
0.4	3.781e-02	3.639e-02	3.945e-02	4.595e-02	2.946e-02
0.5	3.250e-02	3.305e-02	3.257e-02	3.888e-02	2.551e-02
0.75	2.414e-02	2.357e-02	2.378e-02	3.055e-02	1.868e-02
1	1.774e-02	1.776e-02	1.786e-02	2.127e-02	1.406e-02

2	8.805e-03	1.056e-02	8.197e-03	9.872e-03	6.589e-03
3	5.606e-03	6.798e-03	5.767e-03	5.981e-03	3.879e-03
4	3.859e-03	4.468e-03	4.452e-03	4.104e-03	2.413e-03

Source: County Dump fault [2038]
Region: USGS 2014 New Mexico
  Closest Distance: 76.53 km
  Amplitude Units: Acceleration (g)
  Magnitude: 6.89 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
  Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
  Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
  Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
  Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	2.424e-02	2.444e-02	2.228e-02	2.884e-02	2.140e-02
0.05	3.458e-02	3.022e-02	3.024e-02	4.514e-02	3.273e-02
0.1	4.438e-02	4.190e-02	4.024e-02	5.221e-02	4.318e-02
0.2	4.613e-02	4.553e-02	4.832e-02	4.918e-02	4.149e-02
0.3	3.989e-02	4.011e-02	4.050e-02	4.519e-02	3.374e-02
0.4	3.338e-02	3.568e-02	3.262e-02	3.737e-02	2.786e-02
0.5	2.833e-02	3.205e-02	2.646e-02	3.115e-02	2.364e-02
0.75	2.053e-02	2.329e-02	1.870e-02	2.321e-02	1.692e-02
1	1.509e-02	1.770e-02	1.394e-02	1.609e-02	1.264e-02
2	7.947e-03	1.067e-02	6.894e-03	8.163e-03	6.065e-03
3	5.382e-03	7.403e-03	5.170e-03	5.205e-03	3.750e-03
4	3.928e-03	5.181e-03	4.236e-03	3.832e-03	2.463e-03

  Fractile: 0.84
  Column 1: Spectral Period

Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	4.402e-02	4.600e-02	4.067e-02	5.176e-02	3.764e-02
0.05	6.544e-02	5.734e-02	5.955e-02	8.549e-02	5.938e-02
0.1	8.655e-02	8.082e-02	8.144e-02	1.037e-01	8.023e-02
0.2	8.777e-02	8.892e-02	8.962e-02	9.360e-02	7.893e-02
0.3	7.599e-02	7.933e-02	7.398e-02	8.560e-02	6.506e-02
0.4	6.422e-02	7.116e-02	6.024e-02	7.126e-02	5.421e-02
0.5	5.528e-02	6.447e-02	4.998e-02	6.036e-02	4.632e-02
0.75	4.117e-02	4.746e-02	3.664e-02	4.712e-02	3.349e-02
1	3.059e-02	3.653e-02	2.775e-02	3.294e-02	2.514e-02
2	1.623e-02	2.239e-02	1.383e-02	1.656e-02	1.213e-02
3	1.097e-02	1.541e-02	1.045e-02	1.057e-02	7.458e-03
4	7.924e-03	1.069e-02	8.564e-03	7.561e-03	4.877e-03

Source: Coyote Springs fault
Region: Mt Taylor Deterministic
Closest Distance: 93.44 km
Amplitude Units: Acceleration (g)
Magnitude: 6.50 Mw
Fractile: 0.50
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	1.329e-02	1.218e-02	1.292e-02	1.682e-02	1.123e-02
0.05	1.865e-02	1.485e-02	1.729e-02	2.571e-02	1.675e-02
0.1	2.390e-02	2.008e-02	2.371e-02	3.036e-02	2.146e-02
0.2	2.584e-02	2.169e-02	3.030e-02	3.036e-02	2.101e-02
0.3	2.278e-02	1.941e-02	2.591e-02	2.821e-02	1.760e-02
0.4	1.923e-02	1.765e-02	2.091e-02	2.350e-02	1.484e-02
0.5	1.630e-02	1.592e-02	1.690e-02	1.961e-02	1.278e-02
0.75	1.179e-02	1.122e-02	1.190e-02	1.475e-02	9.276e-03
1	8.577e-03	8.351e-03	8.804e-03	1.019e-02	6.960e-03
2	4.232e-03	4.887e-03	4.016e-03	4.777e-03	3.249e-03
3	2.698e-03	3.174e-03	2.803e-03	2.889e-03	1.926e-03
4	1.878e-03	2.105e-03	2.164e-03	2.041e-03	1.203e-03

Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	2.418e-02	2.320e-02	2.359e-02	3.019e-02	1.976e-02
0.05	3.542e-02	2.853e-02	3.405e-02	4.869e-02	3.039e-02
0.1	4.694e-02	3.920e-02	4.840e-02	6.031e-02	3.987e-02
0.2	4.925e-02	4.286e-02	5.637e-02	5.779e-02	3.997e-02
0.3	4.338e-02	3.885e-02	4.733e-02	5.343e-02	3.393e-02
0.4	3.698e-02	3.560e-02	3.862e-02	4.482e-02	2.888e-02
0.5	3.183e-02	3.239e-02	3.191e-02	3.799e-02	2.503e-02

0.75	2.369e-02	2.313e-02	2.332e-02	2.994e-02	1.836e-02
1	1.741e-02	1.743e-02	1.753e-02	2.087e-02	1.384e-02
2	8.655e-03	1.037e-02	8.056e-03	9.690e-03	6.501e-03
3	5.511e-03	6.678e-03	5.668e-03	5.869e-03	3.830e-03
4	3.794e-03	4.391e-03	4.376e-03	4.026e-03	2.382e-03

Source: Intrabasin faults on the Llano de Albuquerque
Region: Mt Taylor Deterministic
  Closest Distance: 66.71 km
  Amplitude Units: Acceleration (g)
  Magnitude: 7.50 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
  Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
  Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
  Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
  Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	4.438e-02	4.692e-02	4.020e-02	4.766e-02	4.274e-02
0.05	6.352e-02	5.847e-02	5.445e-02	7.537e-02	6.579e-02
0.1	8.064e-02	8.228e-02	6.913e-02	8.249e-02	8.867e-02
0.2	8.169e-02	9.076e-02	7.788e-02	7.334e-02	8.476e-02
0.3	7.066e-02	8.014e-02	6.502e-02	6.914e-02	6.833e-02
0.4	5.954e-02	7.095e-02	5.300e-02	5.806e-02	5.614e-02
0.5	5.117e-02	6.406e-02	4.365e-02	4.948e-02	4.751e-02
0.75	3.785e-02	4.850e-02	3.139e-02	3.763e-02	3.388e-02
1	2.839e-02	3.775e-02	2.387e-02	2.664e-02	2.528e-02
2	1.623e-02	2.364e-02	1.359e-02	1.542e-02	1.226e-02
3	1.179e-02	1.730e-02	1.140e-02	1.064e-02	7.841e-03

4 9.177e-03 1.270e-02 1.025e-02 8.331e-03
5.425e-03

Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS
2014
Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2
USGS 2014
Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS
2014

1	2	3	4	5	6
PGA	8.052e-02	8.801e-02	7.338e-02	8.552e-02	7.517e-02
0.05	1.200e-01	1.106e-01	1.072e-01	1.428e-01	1.194e-01
0.1	1.567e-01	1.582e-01	1.399e-01	1.639e-01	1.647e-01
0.2	1.555e-01	1.767e-01	1.445e-01	1.396e-01	1.613e-01
0.3	1.349e-01	1.580e-01	1.188e-01	1.310e-01	1.317e-01
0.4	1.147e-01	1.411e-01	9.787e-02	1.107e-01	1.093e-01
0.5	9.997e-02	1.285e-01	8.244e-02	9.587e-02	9.309e-02
0.75	7.587e-02	9.852e-02	6.151e-02	7.639e-02	6.706e-02
1	5.750e-02	7.767e-02	4.753e-02	5.454e-02	5.027e-02
2	3.314e-02	4.950e-02	2.726e-02	3.128e-02	2.453e-02
3	2.404e-02	3.591e-02	2.305e-02	2.161e-02	1.559e-02
4	1.851e-02	2.614e-02	2.072e-02	1.644e-02	1.074e-02

Source: Jemez-San Ysidro fault [2029ab]
Region: USGS 2014 New Mexico
Closest Distance: 77.26 km
Amplitude Units: Acceleration (g)
Magnitude: 7.09 Mw
Fractile: 0.50
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS
2014
Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014

Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	2.785e-02	2.851e-02	2.515e-02	3.223e-02	2.551e-02
0.05	3.959e-02	3.522e-02	3.386e-02	5.037e-02	3.889e-02
0.1	5.038e-02	4.878e-02	4.431e-02	5.702e-02	5.142e-02
0.2	5.201e-02	5.353e-02	5.244e-02	5.274e-02	4.933e-02
0.3	4.530e-02	4.766e-02	4.416e-02	4.925e-02	4.014e-02
0.4	3.816e-02	4.272e-02	3.581e-02	4.093e-02	3.317e-02
0.5	3.261e-02	3.864e-02	2.924e-02	3.440e-02	2.818e-02
0.75	2.389e-02	2.861e-02	2.082e-02	2.587e-02	2.024e-02
1	1.769e-02	2.194e-02	1.564e-02	1.802e-02	1.518e-02
2	9.630e-03	1.345e-02	8.123e-03	9.540e-03	7.406e-03
3	6.692e-03	9.531e-03	6.321e-03	6.242e-03	4.675e-03
4	5.001e-03	6.836e-03	5.343e-03	4.685e-03	3.141e-03

Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	5.052e-02	5.346e-02	4.591e-02	5.784e-02	4.486e-02
0.05	7.481e-02	6.661e-02	6.668e-02	9.540e-02	7.057e-02
0.1	9.807e-02	9.379e-02	8.967e-02	1.133e-01	9.554e-02
0.2	9.893e-02	1.042e-01	9.727e-02	1.004e-01	9.385e-02

0.3	8.633e-02	9.397e-02	8.067e-02	9.328e-02	7.739e-02
0.4	7.342e-02	8.494e-02	6.614e-02	7.806e-02	6.455e-02
0.5	6.364e-02	7.748e-02	5.523e-02	6.665e-02	5.521e-02
0.75	4.787e-02	5.811e-02	4.080e-02	5.252e-02	4.006e-02
1	3.583e-02	4.514e-02	3.114e-02	3.688e-02	3.018e-02
2	1.966e-02	2.816e-02	1.630e-02	1.935e-02	1.482e-02
3	1.364e-02	1.978e-02	1.278e-02	1.268e-02	9.298e-03
4	1.008e-02	1.407e-02	1.080e-02	9.244e-03	6.220e-03

Source: Calabacillas fault [2035]
Region: USGS 2014 New Mexico
  Closest Distance: 70.54 km
  Amplitude Units: Acceleration (g)
  Magnitude: 6.83 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
  Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
  Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
  Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
  Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	2.553e-02	2.583e-02	2.376e-02	3.035e-02	2.218e-02
0.05	3.669e-02	3.210e-02	3.263e-02	4.779e-02	3.423e-02
0.1	4.747e-02	4.490e-02	4.368e-02	5.583e-02	4.548e-02
0.2	4.924e-02	4.839e-02	5.216e-02	5.277e-02	4.363e-02
0.3	4.206e-02	4.194e-02	4.330e-02	4.778e-02	3.523e-02
0.4	3.495e-02	3.677e-02	3.465e-02	3.943e-02	2.893e-02
0.5	2.949e-02	3.275e-02	2.800e-02	3.276e-02	2.444e-02
0.75	2.120e-02	2.356e-02	1.967e-02	2.422e-02	1.735e-02

1	1.555e-02	1.785e-02	1.461e-02	1.683e-02 1.289e-02
2	8.067e-03	1.066e-02	7.091e-03	8.439e-03 6.078e-03
3	5.415e-03	7.344e-03	5.258e-03	5.346e-03 3.712e-03
4	3.904e-03	5.017e-03	4.265e-03	3.919e-03 2.416e-03

Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	4.639e-02	4.872e-02	4.337e-02	5.447e-02	3.901e-02
0.05	6.947e-02	6.101e-02	6.426e-02	9.052e-02	6.210e-02
0.1	9.264e-02	8.677e-02	8.840e-02	1.109e-01	8.450e-02
0.2	9.372e-02	9.468e-02	9.676e-02	1.004e-01	8.299e-02
0.3	8.016e-02	8.311e-02	7.910e-02	9.050e-02	6.793e-02
0.4	6.724e-02	7.348e-02	6.400e-02	7.520e-02	5.629e-02
0.5	5.756e-02	6.599e-02	5.288e-02	6.348e-02	4.788e-02
0.75	4.254e-02	4.809e-02	3.854e-02	4.918e-02	3.434e-02
1	3.152e-02	3.691e-02	2.909e-02	3.445e-02	2.563e-02
2	1.648e-02	2.242e-02	1.422e-02	1.712e-02	1.216e-02
3	1.105e-02	1.531e-02	1.063e-02	1.086e-02	7.382e-03
4	7.877e-03	1.037e-02	8.623e-03	7.732e-03	4.784e-03

Source: Mesa Prieta faults
Region: Mt Taylor Deterministic
Closest Distance: 47.05 km
Amplitude Units: Acceleration (g)
Magnitude: 6.30 Mw

Fractile: 0.50
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	2.745e-02	2.490e-02	2.973e-02	3.312e-02	2.206e-02
0.05	4.072e-02	3.152e-02	4.329e-02	5.266e-02	3.541e-02
0.1	5.525e-02	4.568e-02	6.048e-02	6.651e-02	4.834e-02
0.2	5.759e-02	4.674e-02	7.189e-02	6.556e-02	4.617e-02
0.3	4.661e-02	3.731e-02	5.712e-02	5.575e-02	3.627e-02
0.4	3.700e-02	3.050e-02	4.420e-02	4.420e-02	2.908e-02
0.5	3.010e-02	2.594e-02	3.485e-02	3.556e-02	2.407e-02
0.75	2.058e-02	1.726e-02	2.372e-02	2.506e-02	1.631e-02
1	1.463e-02	1.268e-02	1.719e-02	1.702e-02	1.164e-02
2	6.567e-03	7.050e-03	7.208e-03	7.287e-03	4.723e-03
3	4.014e-03	4.425e-03	4.842e-03	4.218e-03	2.569e-03
4	2.737e-03	2.861e-03	3.603e-03	2.951e-03	1.534e-03

Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	5.033e-02	4.777e-02	5.426e-02	5.944e-02	3.985e-02

0.05	7.798e-02	6.096e-02	8.527e-02	9.974e-02	6.597e-02
0.1	1.091e-01	8.976e-02	1.224e-01	1.321e-01	9.217e-02
0.2	1.103e-01	9.296e-02	1.334e-01	1.248e-01	9.008e-02
0.3	8.918e-02	7.512e-02	1.043e-01	1.056e-01	7.166e-02
0.4	7.145e-02	6.192e-02	8.162e-02	8.429e-02	5.796e-02
0.5	5.902e-02	5.308e-02	6.582e-02	6.891e-02	4.827e-02
0.75	4.151e-02	3.577e-02	4.647e-02	5.086e-02	3.291e-02
1	2.979e-02	2.661e-02	3.422e-02	3.483e-02	2.350e-02
2	1.345e-02	1.505e-02	1.446e-02	1.478e-02	9.522e-03
3	8.219e-03	9.365e-03	9.792e-03	8.569e-03	5.148e-03
4	5.543e-03	6.004e-03	7.284e-03	5.822e-03	3.062e-03

Source: Nacimiento fault [2002ab]
Region: USGS 2014 New Mexico
  Closest Distance: 72.30 km
  Amplitude Units: Acceleration (g)
  Magnitude: 7.30 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
  Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
  Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
  Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
  Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	3.497e-02	3.665e-02	3.134e-02	3.899e-02	3.290e-02
0.05	4.982e-02	4.546e-02	4.222e-02	6.121e-02	5.038e-02
0.1	6.327e-02	6.344e-02	5.437e-02	6.804e-02	6.721e-02
0.2	6.468e-02	6.987e-02	6.282e-02	6.167e-02	6.436e-02
0.3	5.622e-02	6.204e-02	5.274e-02	5.798e-02	5.212e-02

0.4	4.741e-02	5.534e-02	4.290e-02	4.845e-02	4.295e-02
0.5	4.067e-02	5.005e-02	3.519e-02	4.101e-02	3.642e-02
0.75	2.996e-02	3.754e-02	2.519e-02	3.101e-02	2.609e-02
1	2.235e-02	2.903e-02	1.905e-02	2.178e-02	1.953e-02
2	1.251e-02	1.802e-02	1.037e-02	1.208e-02	9.549e-03
3	8.905e-03	1.300e-02	8.389e-03	8.134e-03	6.099e-03
4	6.796e-03	9.445e-03	7.322e-03	6.244e-03	4.174e-03

Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	6.344e-02	6.873e-02	5.720e-02	6.997e-02	5.786e-02
0.05	9.411e-02	8.597e-02	8.315e-02	1.159e-01	9.141e-02
0.1	1.230e-01	1.220e-01	1.100e-01	1.352e-01	1.249e-01
0.2	1.231e-01	1.360e-01	1.165e-01	1.174e-01	1.224e-01
0.3	1.072e-01	1.223e-01	9.634e-02	1.098e-01	1.005e-01
0.4	9.130e-02	1.100e-01	7.923e-02	9.238e-02	8.358e-02
0.5	7.941e-02	1.004e-01	6.647e-02	7.946e-02	7.136e-02
0.75	6.006e-02	7.626e-02	4.937e-02	6.296e-02	5.165e-02
1	4.527e-02	5.972e-02	3.792e-02	4.458e-02	3.884e-02
2	2.554e-02	3.772e-02	2.081e-02	2.451e-02	1.910e-02
3	1.815e-02	2.698e-02	1.696e-02	1.652e-02	1.213e-02
4	1.371e-02	1.944e-02	1.480e-02	1.232e-02	8.266e-03

Source: San Felipe fault zone [2030a]
Region: USGS 2014 New Mexico
  Closest Distance: 93.24 km
  Amplitude Units: Acceleration (g)
  Magnitude: 6.97 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
  Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
  Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
  Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
  Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	1.984e-02	2.006e-02	1.803e-02	2.293e-02	1.835e-02
0.05	2.763e-02	2.447e-02	2.373e-02	3.497e-02	2.736e-02
0.1	3.473e-02	3.309e-02	3.126e-02	3.921e-02	3.537e-02
0.2	3.667e-02	3.664e-02	3.841e-02	3.744e-02	3.418e-02
0.3	3.277e-02	3.361e-02	3.307e-02	3.604e-02	2.837e-02
0.4	2.807e-02	3.105e-02	2.707e-02	3.036e-02	2.380e-02
0.5	2.423e-02	2.848e-02	2.218e-02	2.580e-02	2.045e-02
0.75	1.794e-02	2.110e-02	1.588e-02	1.981e-02	1.495e-02
1	1.330e-02	1.609e-02	1.194e-02	1.383e-02	1.134e-02
2	7.194e-03	9.864e-03	6.098e-03	7.162e-03	5.651e-03
3	4.936e-03	6.925e-03	4.643e-03	4.600e-03	3.578e-03
4	3.644e-03	4.938e-03	3.859e-03	3.398e-03	2.382e-03

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
  Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
  Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
  Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
  Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	3.600e-02	3.766e-02	3.291e-02	4.114e-02	3.228e-02
0.05	5.223e-02	4.632e-02	4.674e-02	6.624e-02	4.964e-02
0.1	6.777e-02	6.367e-02	6.381e-02	7.789e-02	6.571e-02
0.2	6.978e-02	7.139e-02	7.143e-02	7.127e-02	6.502e-02
0.3	6.243e-02	6.633e-02	6.041e-02	6.827e-02	5.471e-02
0.4	5.400e-02	6.178e-02	4.999e-02	5.790e-02	4.632e-02
0.5	4.728e-02	5.715e-02	4.189e-02	4.999e-02	4.008e-02
0.75	3.596e-02	4.289e-02	3.112e-02	4.022e-02	2.960e-02
1	2.694e-02	3.314e-02	2.377e-02	2.830e-02	2.255e-02
2	1.468e-02	2.067e-02	1.223e-02	1.453e-02	1.131e-02
3	1.006e-02	1.439e-02	9.388e-03	9.344e-03	7.115e-03
4	7.348e-03	1.017e-02	7.802e-03	6.704e-03	4.717e-03

Source: San Felipe fault zone (Algodones section)
Region: Mt Taylor Deterministic
  Closest Distance: 93.31 km
  Amplitude Units: Acceleration (g)
  Magnitude: 7.00 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
  Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
  Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
  Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
  Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	2.045e-02	2.058e-02	1.874e-02	2.338e-02	1.908e-02
0.05	2.848e-02	2.510e-02	2.469e-02	3.567e-02	2.845e-02
0.1	3.577e-02	3.394e-02	3.244e-02	3.987e-02	3.682e-02

0.2	3.770e-02	3.763e-02	3.967e-02	3.796e-02	3.553e-02
0.3	3.370e-02	3.458e-02	3.411e-02	3.664e-02	2.948e-02
0.4	2.887e-02	3.197e-02	2.792e-02	3.088e-02	2.471e-02
0.5	2.493e-02	2.935e-02	2.288e-02	2.624e-02	2.123e-02
0.75	1.847e-02	2.181e-02	1.639e-02	2.019e-02	1.550e-02
1	1.371e-02	1.666e-02	1.233e-02	1.409e-02	1.176e-02
2	7.444e-03	1.024e-02	6.338e-03	7.344e-03	5.858e-03
3	5.126e-03	7.209e-03	4.852e-03	4.734e-03	3.708e-03
4	3.796e-03	5.152e-03	4.051e-03	3.507e-03	2.474e-03

Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	3.708e-02	3.859e-02	3.420e-02	4.196e-02	3.356e-02
0.05	5.382e-02	4.747e-02	4.862e-02	6.757e-02	5.163e-02
0.1	6.975e-02	6.525e-02	6.617e-02	7.919e-02	6.840e-02
0.2	7.170e-02	7.327e-02	7.369e-02	7.224e-02	6.760e-02
0.3	6.418e-02	6.817e-02	6.232e-02	6.939e-02	5.683e-02
0.4	5.553e-02	6.357e-02	5.157e-02	5.888e-02	4.809e-02
0.5	4.863e-02	5.886e-02	4.322e-02	5.085e-02	4.159e-02
0.75	3.702e-02	4.430e-02	3.212e-02	4.099e-02	3.069e-02
1	2.776e-02	3.427e-02	2.455e-02	2.883e-02	2.338e-02
2	1.519e-02	2.143e-02	1.271e-02	1.490e-02	1.172e-02
3	1.044e-02	1.496e-02	9.812e-03	9.617e-03	7.375e-03

4	7.653e-03	1.060e-02	8.191e-03	6.919e-03	4.899e-03

Source: Sand Hill fault zone
Region: Mt Taylor Deterministic
  Closest Distance: 62.17 km
  Amplitude Units: Acceleration (g)
  Magnitude: 6.90 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
  Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
  Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
  Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
  Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	3.152e-02	3.191e-02	2.999e-02	3.638e-02	2.779e-02
0.05	4.574e-02	3.990e-02	4.176e-02	5.787e-02	4.343e-02
0.1	5.955e-02	5.653e-02	5.569e-02	6.751e-02	5.846e-02
0.2	6.119e-02	6.067e-02	6.510e-02	6.319e-02	5.579e-02
0.3	5.158e-02	5.181e-02	5.338e-02	5.657e-02	4.456e-02
0.4	4.257e-02	4.474e-02	4.253e-02	4.673e-02	3.628e-02
0.5	3.580e-02	3.957e-02	3.432e-02	3.883e-02	3.047e-02
0.75	2.564e-02	2.850e-02	2.407e-02	2.862e-02	2.139e-02
1	1.882e-02	2.166e-02	1.789e-02	1.995e-02	1.580e-02
2	9.811e-03	1.295e-02	8.769e-03	1.017e-02	7.348e-03
3	6.635e-03	8.986e-03	6.585e-03	6.505e-03	4.464e-03
4	4.856e-03	6.304e-03	5.390e-03	4.811e-03	2.917e-03

  Fractile: 0.84
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
  Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
  Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014

Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	5.723e-02	6.003e-02	5.473e-02	6.528e-02	4.888e-02
0.05	8.659e-02	7.569e-02	8.225e-02	1.096e-01	7.880e-02
0.1	1.161e-01	1.090e-01	1.127e-01	1.341e-01	1.086e-01
0.2	1.164e-01	1.185e-01	1.207e-01	1.203e-01	1.061e-01
0.3	9.826e-02	1.024e-01	9.752e-02	1.072e-01	8.592e-02
0.4	8.187e-02	8.920e-02	7.855e-02	8.910e-02	7.061e-02
0.5	6.983e-02	7.957e-02	6.483e-02	7.523e-02	5.969e-02
0.75	5.141e-02	5.804e-02	4.716e-02	5.810e-02	4.235e-02
1	3.814e-02	4.470e-02	3.561e-02	4.084e-02	3.141e-02
2	2.003e-02	2.719e-02	1.759e-02	2.063e-02	1.470e-02
3	1.353e-02	1.870e-02	1.332e-02	1.321e-02	8.879e-03
4	9.794e-03	1.301e-02	1.090e-02	9.492e-03	5.777e-03

Source: Santa Fe fault
Region: Mt Taylor Deterministic
Closest Distance: 67.79 km
Amplitude Units: Acceleration (g)
Magnitude: 6.80 Mw
Fractile: 0.50
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	2.652e-02	2.652e-02	2.526e-02	3.135e-02	2.295e-02

0.05	3.829e-02	3.302e-02	3.497e-02	4.955e-02	3.560e-02
0.1	4.976e-02	4.639e-02	4.697e-02	5.817e-02	4.750e-02
0.2	5.152e-02	4.979e-02	5.580e-02	5.504e-02	4.546e-02
0.3	4.372e-02	4.284e-02	4.601e-02	4.946e-02	3.656e-02
0.4	3.616e-02	3.730e-02	3.667e-02	4.076e-02	2.991e-02
0.5	3.041e-02	3.309e-02	2.956e-02	3.379e-02	2.520e-02
0.75	2.177e-02	2.369e-02	2.069e-02	2.492e-02	1.779e-02
1	1.592e-02	1.792e-02	1.534e-02	1.727e-02	1.317e-02
2	8.188e-03	1.065e-02	7.367e-03	8.603e-03	6.128e-03
3	5.455e-03	7.266e-03	5.432e-03	5.423e-03	3.700e-03
4	3.918e-03	4.934e-03	4.383e-03	3.965e-03	2.392e-03

Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	4.819e-02	5.006e-02	4.610e-02	5.625e-02	4.036e-02
0.05	7.254e-02	6.284e-02	6.887e-02	9.385e-02	6.460e-02
0.1	9.714e-02	8.973e-02	9.504e-02	1.155e-01	8.825e-02
0.2	9.807e-02	9.752e-02	1.035e-01	1.048e-01	8.649e-02
0.3	8.330e-02	8.495e-02	8.406e-02	9.369e-02	7.050e-02
0.4	6.957e-02	7.460e-02	6.773e-02	7.773e-02	5.821e-02
0.5	5.935e-02	6.673e-02	5.582e-02	6.546e-02	4.938e-02
0.75	4.368e-02	4.838e-02	4.055e-02	5.058e-02	3.521e-02
1	3.229e-02	3.707e-02	3.054e-02	3.536e-02	2.618e-02

2	1.673e-02	2.242e-02	1.478e-02	1.745e-02	1.226e-02
3	1.113e-02	1.516e-02	1.098e-02	1.102e-02	7.359e-03
4	7.907e-03	1.021e-02	8.861e-03	7.822e-03	4.737e-03

Source: unnamed fault of Bonita Canyon
Region: Mt Taylor Deterministic
  Closest Distance: 49.34 km
  Amplitude Units: Acceleration (g)
  Magnitude: 6.10 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
  Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
  Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
  Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
  Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	2.117e-02	1.905e-02	2.354e-02	2.570e-02	1.640e-02
0.05	3.109e-02	2.407e-02	3.425e-02	3.985e-02	2.617e-02
0.1	4.269e-02	3.477e-02	4.861e-02	5.186e-02	3.551e-02
0.2	4.528e-02	3.516e-02	5.899e-02	5.268e-02	3.430e-02
0.3	3.635e-02	2.782e-02	4.496e-02	4.544e-02	2.717e-02
0.4	2.806e-02	2.264e-02	3.264e-02	3.509e-02	2.188e-02
0.5	2.270e-02	1.912e-02	2.554e-02	2.800e-02	1.813e-02
0.75	1.527e-02	1.240e-02	1.697e-02	1.953e-02	1.219e-02
1	1.065e-02	8.986e-03	1.204e-02	1.300e-02	8.590e-03
2	4.502e-03	4.875e-03	4.755e-03	5.075e-03	3.305e-03
3	2.643e-03	2.966e-03	3.070e-03	2.789e-03	1.747e-03
4	1.759e-03	1.873e-03	2.232e-03	1.913e-03	1.019e-03

  Fractile: 0.84
  Column 1: Spectral Period

Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	3.908e-02	3.679e-02	4.296e-02	4.613e-02	3.042e-02
0.05	5.996e-02	4.686e-02	6.746e-02	7.548e-02	5.005e-02
0.1	8.490e-02	6.875e-02	9.838e-02	1.030e-01	6.948e-02
0.2	8.717e-02	7.036e-02	1.094e-01	1.003e-01	6.863e-02
0.3	6.989e-02	5.636e-02	8.214e-02	8.606e-02	5.500e-02
0.4	5.453e-02	4.625e-02	6.027e-02	6.692e-02	4.466e-02
0.5	4.477e-02	3.938e-02	4.824e-02	5.425e-02	3.721e-02
0.75	3.096e-02	2.585e-02	3.326e-02	3.965e-02	2.509e-02
1	2.179e-02	1.897e-02	2.397e-02	2.660e-02	1.762e-02
2	9.253e-03	1.047e-02	9.539e-03	1.029e-02	6.716e-03
3	5.429e-03	6.313e-03	6.209e-03	5.665e-03	3.528e-03
4	3.573e-03	3.955e-03	4.513e-03	3.774e-03	2.050e-03

Source: unnamed faults near Albuquerque Volcanoes
Region: Mt Taylor Deterministic
Closest Distance: 73.60 km
Amplitude Units: Acceleration (g)
Magnitude: 6.90 Mw
Fractile: 0.50
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	2.586e-02	2.591e-02	2.422e-02	3.036e-02	2.293e-02
0.05	3.703e-02	3.211e-02	3.309e-02	4.768e-02	3.525e-02
0.1	4.767e-02	4.472e-02	4.404e-02	5.520e-02	4.672e-02
0.2	4.940e-02	4.849e-02	5.244e-02	5.189e-02	4.478e-02
0.3	4.247e-02	4.247e-02	4.368e-02	4.748e-02	3.626e-02
0.4	3.543e-02	3.756e-02	3.508e-02	3.924e-02	2.983e-02
0.5	3.000e-02	3.364e-02	2.842e-02	3.268e-02	2.525e-02
0.75	2.169e-02	2.442e-02	2.003e-02	2.432e-02	1.797e-02
1	1.593e-02	1.857e-02	1.493e-02	1.684e-02	1.339e-02
2	8.372e-03	1.118e-02	7.375e-03	8.567e-03	6.369e-03
3	5.672e-03	7.764e-03	5.540e-03	5.471e-03	3.915e-03
4	4.150e-03	5.453e-03	4.544e-03	4.034e-03	2.567e-03

Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	4.694e-02	4.876e-02	4.420e-02	5.449e-02	4.033e-02
0.05	7.009e-02	6.092e-02	6.517e-02	9.031e-02	6.395e-02
0.1	9.296e-02	8.624e-02	8.913e-02	1.097e-01	8.681e-02
0.2	9.398e-02	9.469e-02	9.728e-02	9.876e-02	8.519e-02
0.3	8.090e-02	8.397e-02	7.980e-02	8.993e-02	6.991e-02
0.4	6.814e-02	7.489e-02	6.478e-02	7.484e-02	5.805e-02
0.5	5.853e-02	6.764e-02	5.368e-02	6.332e-02	4.946e-02

0.75	4.349e-02	4.974e-02	3.926e-02	4.937e-02	3.557e-02
1	3.228e-02	3.831e-02	2.971e-02	3.448e-02	2.663e-02
2	1.709e-02	2.346e-02	1.480e-02	1.738e-02	1.274e-02
3	1.157e-02	1.616e-02	1.120e-02	1.111e-02	7.785e-03
4	8.370e-03	1.125e-02	9.187e-03	7.960e-03	5.084e-03

Source: unnamed faults near Picuda Peak
Region: Mt Taylor Deterministic
  Closest Distance: 78.81 km
  Amplitude Units: Acceleration (g)
  Magnitude: 6.40 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
  Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
  Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
  Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
  Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	1.557e-02	1.393e-02	1.584e-02	1.980e-02	1.269e-02
0.05	2.226e-02	1.720e-02	2.183e-02	3.065e-02	1.938e-02
0.1	2.922e-02	2.376e-02	3.026e-02	3.753e-02	2.531e-02
0.2	3.121e-02	2.518e-02	3.780e-02	3.724e-02	2.462e-02
0.3	2.671e-02	2.169e-02	3.145e-02	3.350e-02	2.021e-02
0.4	2.196e-02	1.904e-02	2.496e-02	2.707e-02	1.677e-02
0.5	1.829e-02	1.684e-02	1.995e-02	2.210e-02	1.425e-02
0.75	1.292e-02	1.161e-02	1.385e-02	1.612e-02	1.011e-02
1	9.281e-03	8.582e-03	1.015e-02	1.094e-02	7.454e-03
2	4.389e-03	4.921e-03	4.459e-03	4.873e-03	3.303e-03
3	2.742e-03	3.143e-03	3.055e-03	2.879e-03	1.892e-03

4	1.889e-03	2.058e-03	2.319e-03	2.021e-03 1.158e-03

Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	2.843e-02	2.664e-02	2.891e-02	3.553e-02	2.262e-02
0.05	4.245e-02	3.314e-02	4.300e-02	5.804e-02	3.563e-02
0.1	5.749e-02	4.654e-02	6.124e-02	7.455e-02	4.764e-02
0.2	5.959e-02	4.992e-02	7.012e-02	7.088e-02	4.744e-02
0.3	5.097e-02	4.354e-02	5.745e-02	6.345e-02	3.945e-02
0.4	4.232e-02	3.853e-02	4.609e-02	5.162e-02	3.302e-02
0.5	3.578e-02	3.436e-02	3.769e-02	4.283e-02	2.825e-02
0.75	2.601e-02	2.398e-02	2.713e-02	3.273e-02	2.021e-02
1	1.887e-02	1.796e-02	2.020e-02	2.239e-02	1.494e-02
2	8.984e-03	1.047e-02	8.946e-03	9.884e-03	6.633e-03
3	5.609e-03	6.633e-03	6.178e-03	5.849e-03	3.776e-03
4	3.821e-03	4.306e-03	4.689e-03	3.988e-03	2.302e-03

Source: unnamed faults near Star Heights
Region: Mt Taylor Deterministic
Closest Distance: 78.56 km
Amplitude Units: Acceleration (g)
Magnitude: 6.50 Mw
Fractile: 0.50
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014

Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	1.726e-02	1.572e-02	1.701e-02	2.213e-02	1.416e-02
0.05	2.475e-02	1.941e-02	2.338e-02	3.460e-02	2.163e-02
0.1	3.223e-02	2.683e-02	3.213e-02	4.166e-02	2.830e-02
0.2	3.413e-02	2.860e-02	3.981e-02	4.071e-02	2.743e-02
0.3	2.921e-02	2.477e-02	3.316e-02	3.646e-02	2.244e-02
0.4	2.417e-02	2.182e-02	2.640e-02	2.986e-02	1.859e-02
0.5	2.021e-02	1.937e-02	2.116e-02	2.452e-02	1.580e-02
0.75	1.437e-02	1.352e-02	1.474e-02	1.798e-02	1.124e-02
1	1.039e-02	1.006e-02	1.084e-02	1.234e-02	8.323e-03
2	5.060e-03	5.833e-03	4.880e-03	5.752e-03	3.775e-03
3	3.218e-03	3.778e-03	3.405e-03	3.486e-03	2.204e-03
4	2.241e-03	2.498e-03	2.626e-03	2.469e-03	1.371e-03

Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	3.141e-02	2.996e-02	3.105e-02	3.970e-02	2.491e-02
0.05	4.702e-02	3.728e-02	4.604e-02	6.553e-02	3.925e-02
0.1	6.318e-02	5.238e-02	6.502e-02	8.274e-02	5.257e-02
0.2	6.500e-02	5.652e-02	7.384e-02	7.748e-02	5.218e-02

0.3	5.562e-02	4.957e-02	6.058e-02	6.906e-02	4.328e-02
0.4	4.647e-02	4.403e-02	4.875e-02	5.694e-02	3.618e-02
0.5	3.946e-02	3.941e-02	3.998e-02	4.751e-02	3.095e-02
0.75	2.887e-02	2.785e-02	2.888e-02	3.650e-02	2.224e-02
1	2.109e-02	2.098e-02	2.158e-02	2.526e-02	1.655e-02
2	1.035e-02	1.238e-02	9.789e-03	1.167e-02	7.553e-03
3	6.575e-03	7.949e-03	6.886e-03	7.081e-03	4.383e-03
4	4.527e-03	5.213e-03	5.309e-03	4.872e-03	2.714e-03

Source: unnamed faults of El Malpais lava field
Region: Mt Taylor Deterministic
  Closest Distance: 60.45 km
  Amplitude Units: Acceleration (g)
  Magnitude: 6.70 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
  Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
  Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
  Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
  Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	2.774e-02	2.784e-02	2.643e-02	3.334e-02	2.335e-02
0.05	4.041e-02	3.487e-02	3.705e-02	5.310e-02	3.661e-02
0.1	5.305e-02	4.953e-02	5.019e-02	6.325e-02	4.921e-02
0.2	5.484e-02	5.254e-02	5.952e-02	6.022e-02	4.709e-02
0.3	4.586e-02	4.424e-02	4.862e-02	5.298e-02	3.760e-02
0.4	3.760e-02	3.780e-02	3.848e-02	4.353e-02	3.059e-02
0.5	3.139e-02	3.314e-02	3.086e-02	3.591e-02	2.565e-02
0.75	2.223e-02	2.336e-02	2.146e-02	2.616e-02	1.795e-02

1	1.621e-02	1.758e-02	1.583e-02	1.822e-02	1.320e-02
2	8.154e-03	1.030e-02	7.393e-03	8.907e-03	6.011e-03
3	5.330e-03	6.833e-03	5.351e-03	5.559e-03	3.577e-03
4	3.790e-03	4.597e-03	4.247e-03	4.034e-03	2.282e-03

Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	5.047e-02	5.272e-02	4.823e-02	5.984e-02	4.107e-02
0.05	7.663e-02	6.656e-02	7.296e-02	1.006e-01	6.642e-02
0.1	1.037e-01	9.610e-02	1.016e-01	1.256e-01	9.143e-02
0.2	1.045e-01	1.032e-01	1.104e-01	1.146e-01	8.958e-02
0.3	8.741e-02	8.799e-02	8.882e-02	1.003e-01	7.249e-02
0.4	7.236e-02	7.582e-02	7.106e-02	8.302e-02	5.952e-02
0.5	6.129e-02	6.704e-02	5.828e-02	6.958e-02	5.026e-02
0.75	4.464e-02	4.785e-02	4.206e-02	5.310e-02	3.554e-02
1	3.289e-02	3.648e-02	3.152e-02	3.730e-02	2.625e-02
2	1.667e-02	2.175e-02	1.483e-02	1.807e-02	1.203e-02
3	1.088e-02	1.430e-02	1.082e-02	1.129e-02	7.114e-03
4	7.651e-03	9.538e-03	8.587e-03	7.959e-03	4.519e-03

Source: unnamed intrabasin faults west of the Rio Puerco
Region: Mt Taylor Deterministic
Closest Distance: 87.30 km
Amplitude Units: Acceleration (g)
Magnitude: 6.60 Mw

Fractile: 0.50
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	1.619e-02	1.519e-02	1.563e-02	2.013e-02	1.380e-02
0.05	2.290e-02	1.862e-02	2.110e-02	3.107e-02	2.079e-02
0.1	2.941e-02	2.540e-02	2.872e-02	3.660e-02	2.693e-02
0.2	3.134e-02	2.745e-02	3.589e-02	3.588e-02	2.615e-02
0.3	2.737e-02	2.439e-02	3.037e-02	3.307e-02	2.164e-02
0.4	2.297e-02	2.197e-02	2.443e-02	2.740e-02	1.808e-02
0.5	1.944e-02	1.976e-02	1.972e-02	2.278e-02	1.547e-02
0.75	1.402e-02	1.404e-02	1.387e-02	1.703e-02	1.115e-02
1	1.021e-02	1.051e-02	1.027e-02	1.173e-02	8.350e-03
2	5.120e-03	6.192e-03	4.768e-03	5.600e-03	3.920e-03
3	3.309e-03	4.070e-03	3.390e-03	3.431e-03	2.344e-03
4	2.327e-03	2.722e-03	2.657e-03	2.449e-03	1.482e-03

Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	2.945e-02	2.886e-02	2.853e-02	3.613e-02	2.427e-02

0.05	4.345e-02	3.566e-02	4.155e-02	5.885e-02	3.773e-02
0.1	5.764e-02	4.944e-02	5.837e-02	7.271e-02	5.003e-02
0.2	5.967e-02	5.409e-02	6.658e-02	6.829e-02	4.974e-02
0.3	5.212e-02	4.865e-02	5.548e-02	6.264e-02	4.172e-02
0.4	4.418e-02	4.419e-02	4.511e-02	5.225e-02	3.519e-02
0.5	3.795e-02	4.009e-02	3.726e-02	4.414e-02	3.032e-02
0.75	2.817e-02	2.884e-02	2.718e-02	3.458e-02	2.208e-02
1	2.073e-02	2.186e-02	2.044e-02	2.402e-02	1.660e-02
2	1.047e-02	1.311e-02	9.565e-03	1.136e-02	7.843e-03
3	6.757e-03	8.541e-03	6.855e-03	6.970e-03	4.661e-03
4	4.700e-03	5.664e-03	5.372e-03	4.831e-03	2.934e-03

Source: Zia fault [2046]
Region: USGS 2014 New Mexico
  Closest Distance: 73.74 km
  Amplitude Units: Acceleration (g)
  Magnitude: 6.84 Mw
  Fractile: 0.50
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
  Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
  Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
  Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
  Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	2.441e-02	2.461e-02	2.261e-02	2.912e-02	2.129e-02
0.05	3.494e-02	3.049e-02	3.088e-02	4.570e-02	3.270e-02
0.1	4.506e-02	4.245e-02	4.128e-02	5.323e-02	4.327e-02
0.2	4.682e-02	4.590e-02	4.952e-02	5.032e-02	4.155e-02
0.3	4.023e-02	4.009e-02	4.131e-02	4.585e-02	3.369e-02

0.4	3.354e-02	3.540e-02	3.315e-02	3.786e-02	2.774e-02
0.5	2.836e-02	3.165e-02	2.682e-02	3.148e-02	2.349e-02
0.75	2.046e-02	2.284e-02	1.888e-02	2.335e-02	1.674e-02
1	1.501e-02	1.732e-02	1.404e-02	1.620e-02	1.247e-02
2	7.818e-03	1.037e-02	6.847e-03	8.134e-03	5.922e-03
3	5.257e-03	7.155e-03	5.087e-03	5.155e-03	3.632e-03
4	3.798e-03	4.909e-03	4.134e-03	3.780e-03	2.368e-03

Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	4.434e-02	4.638e-02	4.127e-02	5.226e-02	3.744e-02
0.05	6.616e-02	5.795e-02	6.081e-02	8.655e-02	5.933e-02
0.1	8.792e-02	8.201e-02	8.354e-02	1.057e-01	8.039e-02
0.2	8.912e-02	8.979e-02	9.186e-02	9.578e-02	7.905e-02
0.3	7.667e-02	7.941e-02	7.546e-02	8.685e-02	6.495e-02
0.4	6.453e-02	7.071e-02	6.121e-02	7.220e-02	5.398e-02
0.5	5.536e-02	6.375e-02	5.066e-02	6.101e-02	4.603e-02
0.75	4.104e-02	4.661e-02	3.700e-02	4.741e-02	3.314e-02
1	3.043e-02	3.579e-02	2.796e-02	3.316e-02	2.480e-02
2	1.597e-02	2.180e-02	1.374e-02	1.650e-02	1.185e-02
3	1.072e-02	1.491e-02	1.029e-02	1.047e-02	7.223e-03
4	7.663e-03	1.014e-02	8.359e-03	7.458e-03	4.690e-03

APPENDIX D
PROBABILISTIC ANALYSES

APPENDIX D.1
SUMMARY OF PROBABILISTIC CHARACTERISTICS

Appendix D.1 Probabilistic Characteristics of Quaternary Faults and Folds Capable of Generating a PGA of 0.05g or Greater

Name of Faults	ID Number	Age of Most Recent Prehistoric Deformation (ya)[1]	Probability of Activity	Dip[2] (Degrees)	Maximum Seismogenic Depth[2] (km)	Rate of Activity[2] (mm/yr)	MCE[3,4]
Intrabasin faults on the Llano de Albuquerque	2121	<750,000	1	60	15	0.02	7.5
Jemez-San Ysidro fault (Jemez and San Ysidro sections)[(4)]	2029ab	<1,600,000	1	35 (0.2) 50 (0.4) 65 (0.2)	15	(4)	7.09
Jemez-San Ysidro fault (Calabacillas section)[(4)]	2029c	<15,000	1	35 (0.2) 50 (0.4) 65 (0.2)	15	(4)	6.83
Mesa Prieta faults	1985	<1,600,000	0.5	60	15	0.02	6.3
Nacimiento fault (northern and southern sections)[(4)]	2002ab	<1,600,000	1	35 (0.2) 50 (0.4) 65 (0.2)	15	(4)	7.3
Sand Hill fault zone	2039	<1,600,000	0.5	60	15	0.02	6.9
Santa Fe fault	2123	<1,600,000	0.5	60	15	0.02	6.8
unnamed faults near Albuquerque Volcanoes	2049	<750,000	1	60	15	0.02	6.9
unnamed faults of El Malpais lava field	2146	<1,600,000	0.5	60	15	0.02	6.7

1) Years ago
2) Number in parentheses represents weights for each parameter
3) The middle number is the magnitude of the Maximum Credible Earthquake as calculated by Wells and Coppersmith (1994), an additional minimum and maximum of MCE +0.3 and MCE -0.3 are entered for each model in the analysis of the fault to account for standard error in their equation.
4) The parameters included in the EZ Frisk program from the USGS Hazard mapping used for analysis.

APPENDIX D.2
PROBABILISTIC EZ-FRISK SOFTWARE INPUT

```
*********************************************
*****              EZ-FRISK              *****
***** SEISMIC HAZARD ANALYSIS DEFINITION *****
*****               FUGRO                *****
*****        WALNUT CREEK, CA  USA       *****
*********************************************
```

PROGRAM VERSION
  EZ-FRISK 8.11 Build 019

ANALYSIS TITLE:
  Mt Taylor - 10,000 yr

ANALYSIS TYPE:
  Single Site Analysis

SITE COORDINATES
  Latitude 35.3409
  Longitude -107.635

INTENSITY TYPE: Spectral Response @ 5% Damping

HAZARD DEAGGREGATION
  Status: ON
  Deagregation Scenario 1
    Period: PGA
    Amplitude: 0.02 Acceleration (g)
  Bin Configuration
    Magnitude
      Scale: Moment Magnitude
      Lowest Value: 4 Mw
      Highest Value: 9 Mw
      Bin Size: 0.1
    Distance
      Lowest Value: 0 km
      Highest Value: 300 km
      Bin Size: 2.5 km
    Epsilon
      Lowest Value: -2.2
      Highest Value: 4.2
      Bin Size: 0.2

SOIL AMPLIFICATION
  Method: Do not use soil amplification

ATTENUATION EQUATION SITE PARAMETERS
  Depth[Vs=1,000m/s] (m): 5
  Depth[Vs=1000m/s] (m): -1
  Estimate Z1 from Vs30 for CY NGA: 1
  Regional Code: Default
  Subduction Zone Setting: Unknown
  Vs30 (m/s): 1200
  Vs30 Is Measured: 0
  Z25 (km): 0.79

AMPLITUDES - Acceleration (g)
  0.0001
  0.001
  0.01
  0.02
  0.05
  0.07
  0.1
  0.2
  0.3
  0.4
  0.5
  0.7
  1
  2
  3

PERIODS (s)
  PGA
  0.05
  0.1
  0.2
  0.3
  0.4
  0.5
  0.75
  1
  2
  3
  4

DETERMINISTIC FRACTILES

PLOTTING PARAMETERS
  Period at which to plot PGA: 0.0001

CALCULATIONAL PARAMETERS
  Fault Seismic Sources -
    Maximum inclusion distance   :   1000 km
    Down dip integration increment   :   1 km
    Horizontal integration increment   :   1 km
    Number rupture length per earthquake :   4
  Subduction Interface Seismic Sources -
    Maximum inclusion distance   :   1000 km
    Down dip integration increment   :   5 km
    Horizontal integration increment   :   20 km
    Number rupture length per earthquake :   1
  Subduction Slab Seismic Sources -
    Maximum inclusion distance   :   1000 km
    Down dip integration increment   :   5 km
    Horizontal integration increment   :   20 km
    Number rupture length per earthquake :   1
  Area Seismic Sources -

```
    Maximum inclusion distance           :   1000 km
    Vertical integration increment       :   3 km
    Number of rupture azimuths           :   3
    Minimum epicentral distance step     :   0.5 km
    Maximum epicentral distance step     :   10 km
  Gridded Seismic Sources -
    Maximum inclusion distance           :   400 km
    Default number of rupture azimuths   :   10
    Maximum distance for default azimuths :   20 km
    Minimum distance for one azimuth     :   70
    Use binned calcuations if possible   :   true
    Bins per decade in distance (km)     :   20
  All Seismic Sources -
    Magnitude integration step           :   0.1 M
    Apply magnitude scaling              :   NO
    Include near-source directivity      :   NO

ATTENUATION EQUATIONS

  Name: Abrahamson-et al (2014) NGA West 2 USGS 2014
  Database: C:\Program Files (x86)\EZ-FRISK 8.11\Files\standard.bin-
attendb
  Base: Abrahamson-et al 2014 NGA West 2
  Truncation Type: USGS 2008 NSHM Truncation
  Truncation Value: 3
  Magnitude Scale: Moment Magnitude
  Distance Type: Distance To Rupture

  Name: Boore-et al (2014) NGA West 2 USGS 2014
  Database: C:\Program Files (x86)\EZ-FRISK 8.11\Files\standard.bin-
attendb
  Base: Boore-et al 2014 NGA West 2
  Truncation Type: USGS 2008 NSHM Truncation
  Truncation Value: 3
  Magnitude Scale: Moment Magnitude
  Distance Type: Horizontal Distance To Rupture

  Name: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
  Database: C:\Program Files (x86)\EZ-FRISK 8.11\Files\standard.bin-
attendb
  Base: Campbell-Bozorgnia 2014 NGA West 2
  Truncation Type: USGS 2008 NSHM Truncation
  Truncation Value: 3
  Magnitude Scale: Moment Magnitude
  Distance Type: Distance To Rupture

  Name: Chiou-Youngs (2014) NGA West 2 USGS 2014
  Database: C:\Program Files (x86)\EZ-FRISK 8.11\Files\standard.bin-
attendb
  Base: Chiou-Youngs 2014 NGA West 2
  Truncation Type: USGS 2008 NSHM Truncation
  Truncation Value: 3
  Magnitude Scale: Moment Magnitude
  Distance Type: Distance To Rupture
```

SEISMIC SOURCE SUMMARY TABLE

Closest Deterministic Fault Source	Distance	Magnitude	Mechanism	Dip Angle	Dips To	Site Region Lies
CEUS Gridded Source	0.00	0.0000	Strike Slip	90.0000	--	USGS 2014 CEUS Gridded Source Above
Shallow - Extensional Gridded	0.00	8.0000	N|SS	90.0000	--	USGS 2014 WUS Gridded Source Above
Intrabasin faults on the Llano de Albuquerque	66.68	7.5000	Normal	60.0000	W	Mt Taylor Deterministic W
Jemez-San Ysidro fault [2029ab]	77.22	7.0900	Normal	35-65	E	USGS 2014 New Mexico W
Calabacillas fault [2035]	70.51	6.8300	Normal	35-65	E	USGS 2014 New Mexico W
Mesa Prieta faults	47.03	6.3000	Normal	60.0000	W	Mt Taylor Deterministic W
Nacimiento fault [2002ab]	72.26	7.3000	Normal	35-65	E	USGS 2014 New Mexico W
Sand Hill fault zone	62.14	6.9000	Normal	60.0000	W	Mt Taylor Deterministic W
Santa Fe fault	67.75	6.8000	Normal	60.0000	W	Mt Taylor Deterministic NW
unnamed faults near Albuquerque Volcanoes	73.56	6.9000	Normal	60.0000	W	Mt Taylor Deterministic W
unnamed faults of El Malpais lava field	60.42	6.7000	Normal	60.0000	W	Mt Taylor Deterministic NE

SEISMIC SOURCES

Name: CEUS Gridded Source
Region: USGS 2014 CEUS Gridded Source
Category:Composite Seismic Source
Database: C:\Users\dgarcia\AppData\Local\Fugro\EZ-FRISK\Regions\EZ-FRISK USGS2014 Lower 48 v1.00\Files\USGS 2014 Lower 48.bin-ssdb
Magnitude Scale: Moment Magnitude
Probability of Activity: 1
------ Start Nested Sources forCEUS Gridded Source -------
Name: CEUS_adGridded_2014_2zone_Mmax 6.5-6.8
Region: USGS 2014 Central and Eastern US
Category:Gridded
FileType: USGS2008

General Parameters
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.2
Latitude Increment, degrees: 0.1
Longitude Increment, degrees: 0.1
Magnitude Threshold for Weighting: 4.7

```
Earthquake Model Parameters                (Varies point to point?)
  Cell Weight: 1                                    Yes
  Fault Mechanism: Strike Slip
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 4.7
  Maximum Magnitude: 0                              Yes
  Rate at Minimum Magnitude, events per year: 0     Yes
  Beta: 2.3025
  Horizontal Rupture Length, A parameter: -2.0325
  Horizontal Rupture Length, B parameter: 0.5
  Rupture Strike Azimuth Model: Random Strike

Name: CEUS_adGridded_2014_2zone_Mmax 7.0-7.2
Region: USGS 2014 Central and Eastern US
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.2
  Latitude Increment, degrees:   0.1
  Longitude Increment, degrees:  0.1
  Magnitude Threshold for Weighting: 4.7

Earthquake Model Parameters                (Varies point to point?)
  Cell Weight: 1                                    Yes
  Fault Mechanism: Strike Slip
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 4.7
  Maximum Magnitude: 0                              Yes
  Rate at Minimum Magnitude, events per year: 0     Yes
  Beta: 2.3025
  Horizontal Rupture Length, A parameter: -2.0325
  Horizontal Rupture Length, B parameter: 0.5
  Rupture Strike Azimuth Model: Random Strike

Name: CEUS_adGridded_2014_2zone_Mmax 7.5-7.6
Region: USGS 2014 Central and Eastern US
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.2
  Latitude Increment, degrees:   0.1
  Longitude Increment, degrees:  0.1
  Magnitude Threshold for Weighting: 4.7

Earthquake Model Parameters                (Varies point to point?)
  Cell Weight: 1                                    Yes
  Fault Mechanism: Strike Slip
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 4.7
  Maximum Magnitude: 0                              Yes
```

```
  Rate at Minimum Magnitude, events per year: 0   Yes
  Beta: 2.3025
  Horizontal Rupture Length, A parameter: -2.0325
  Horizontal Rupture Length, B parameter: 0.5
  Rupture Strike Azimuth Model: Random Strike

Name: CEUS_adGridded_2014_2zone_Mmax 8.0
Region: USGS 2014 Central and Eastern US
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.2
  Latitude Increment, degrees:   0.1
  Longitude Increment, degrees:  0.1
  Magnitude Threshold for Weighting: 4.7

Earthquake Model Parameters               (Varies point to point?)
  Cell Weight: 1                                  Yes
  Fault Mechanism: Strike Slip
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 4.7
  Maximum Magnitude: 0                            Yes
  Rate at Minimum Magnitude, events per year: 0   Yes
  Beta: 2.3025
  Horizontal Rupture Length, A parameter: -2.0325
  Horizontal Rupture Length, B parameter: 0.5
  Rupture Strike Azimuth Model: Random Strike

Name: CEUS_adGridded_2014_4zone_Mmax 6.5-6.8
Region: USGS 2014 Central and Eastern US
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.2
  Latitude Increment, degrees:   0.1
  Longitude Increment, degrees:  0.1
  Magnitude Threshold for Weighting: 4.7

Earthquake Model Parameters               (Varies point to point?)
  Cell Weight: 1                                  Yes
  Fault Mechanism: Strike Slip
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 4.7
  Maximum Magnitude: 0                            Yes
  Rate at Minimum Magnitude, events per year: 0   Yes
  Beta: 2.3025
  Horizontal Rupture Length, A parameter: -2.0325
  Horizontal Rupture Length, B parameter: 0.5
  Rupture Strike Azimuth Model: Random Strike
```

Name: CEUS_adGridded_2014_4zone_Mmax 7.0-7.2
Region: USGS 2014 Central and Eastern US
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.2
  Latitude Increment, degrees: 0.1
  Longitude Increment, degrees: 0.1
  Magnitude Threshold for Weighting: 4.7

Earthquake Model Parameters (Varies point to point?)
  Cell Weight: 1 Yes
  Fault Mechanism: Strike Slip
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 4.7
  Maximum Magnitude: 0 Yes
  Rate at Minimum Magnitude, events per year: 0 Yes
  Beta: 2.3025
  Horizontal Rupture Length, A parameter: -2.0325
  Horizontal Rupture Length, B parameter: 0.5
  Rupture Strike Azimuth Model: Random Strike

Name: CEUS_adGridded_2014_4zone_Mmax 7.5-7.6
Region: USGS 2014 Central and Eastern US
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.2
  Latitude Increment, degrees: 0.1
  Longitude Increment, degrees: 0.1
  Magnitude Threshold for Weighting: 4.7

Earthquake Model Parameters (Varies point to point?)
  Cell Weight: 1 Yes
  Fault Mechanism: Strike Slip
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 4.7
  Maximum Magnitude: 0 Yes
  Rate at Minimum Magnitude, events per year: 0 Yes
  Beta: 2.3025
  Horizontal Rupture Length, A parameter: -2.0325
  Horizontal Rupture Length, B parameter: 0.5
  Rupture Strike Azimuth Model: Random Strike

Name: CEUS_adGridded_2014_4zone_Mmax 8.0
Region: USGS 2014 Central and Eastern US
Category:Gridded
  FileType: USGS2008

General Parameters

```
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.2
  Latitude Increment, degrees:   0.1
  Longitude Increment, degrees:  0.1
  Magnitude Threshold for Weighting: 4.7

Earthquake Model Parameters               (Varies point to point?)
  Cell Weight: 1                                  Yes
  Fault Mechanism: Strike Slip
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 4.7
  Maximum Magnitude: 0                            Yes
  Rate at Minimum Magnitude, events per year: 0   Yes
  Beta: 2.3025
  Horizontal Rupture Length, A parameter: -2.0325
  Horizontal Rupture Length, B parameter: 0.5
  Rupture Strike Azimuth Model: Random Strike

Name: CEUS_fixGridded_2014_2zone_Mmax 6.5-6.8
Region: USGS 2014 Central and Eastern US
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.3
  Latitude Increment, degrees:   0.1
  Longitude Increment, degrees:  0.1
  Magnitude Threshold for Weighting: 4.7

Earthquake Model Parameters               (Varies point to point?)
  Cell Weight: 1                                  Yes
  Fault Mechanism: Strike Slip
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 4.7
  Maximum Magnitude: 0                            Yes
  Rate at Minimum Magnitude, events per year: 0   Yes
  Beta: 2.3025                                    Yes
  Horizontal Rupture Length, A parameter: -2.0325
  Horizontal Rupture Length, B parameter: 0.5
  Rupture Strike Azimuth Model: Random Strike

Name: CEUS_fixGridded_2014_2zone_Mmax 7.0-7.2
Region: USGS 2014 Central and Eastern US
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.3
  Latitude Increment, degrees:   0.1
  Longitude Increment, degrees:  0.1
  Magnitude Threshold for Weighting: 4.7
```

```
Earthquake Model Parameters                (Varies point to point?)
  Cell Weight: 1                                    Yes
  Fault Mechanism: Strike Slip
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 4.7
  Maximum Magnitude: 0                              Yes
  Rate at Minimum Magnitude, events per year: 0     Yes
  Beta: 2.3025                                      Yes
  Horizontal Rupture Length, A parameter: -2.0325
  Horizontal Rupture Length, B parameter: 0.5
  Rupture Strike Azimuth Model: Random Strike

Name: CEUS_fixGridded_2014_2zone_Mmax 7.5-7.6
Region: USGS 2014 Central and Eastern US
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.3
  Latitude Increment, degrees:   0.1
  Longitude Increment, degrees:  0.1
  Magnitude Threshold for Weighting: 4.7

Earthquake Model Parameters                (Varies point to point?)
  Cell Weight: 1                                    Yes
  Fault Mechanism: Strike Slip
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 4.7
  Maximum Magnitude: 0                              Yes
  Rate at Minimum Magnitude, events per year: 0     Yes
  Beta: 2.3025                                      Yes
  Horizontal Rupture Length, A parameter: -2.0325
  Horizontal Rupture Length, B parameter: 0.5
  Rupture Strike Azimuth Model: Random Strike

Name: CEUS_fixGridded_2014_2zone_Mmax 8.0
Region: USGS 2014 Central and Eastern US
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.3
  Latitude Increment, degrees:   0.1
  Longitude Increment, degrees:  0.1
  Magnitude Threshold for Weighting: 4.7

Earthquake Model Parameters                (Varies point to point?)
  Cell Weight: 1                                    Yes
  Fault Mechanism: Strike Slip
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 4.7
  Maximum Magnitude: 0                              Yes
```

```
  Rate at Minimum Magnitude, events per year: 0   Yes
  Beta: 2.3025                                    Yes
  Horizontal Rupture Length, A parameter: -2.0325
  Horizontal Rupture Length, B parameter: 0.5
  Rupture Strike Azimuth Model: Random Strike

Name: CEUS_fixGridded_2014_4zone_Mmax 6.5-6.8
Region: USGS 2014 Central and Eastern US
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.3
  Latitude Increment, degrees:   0.1
  Longitude Increment, degrees:  0.1
  Magnitude Threshold for Weighting: 4.7

Earthquake Model Parameters               (Varies point to point?)
  Cell Weight: 1                                  Yes
  Fault Mechanism: Strike Slip
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 4.7
  Maximum Magnitude: 0                            Yes
  Rate at Minimum Magnitude, events per year: 0   Yes
  Beta: 2.3025                                    Yes
  Horizontal Rupture Length, A parameter: -2.0325
  Horizontal Rupture Length, B parameter: 0.5
  Rupture Strike Azimuth Model: Random Strike

Name: CEUS_fixGridded_2014_4zone_Mmax 7.0-7.2
Region: USGS 2014 Central and Eastern US
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.3
  Latitude Increment, degrees:   0.1
  Longitude Increment, degrees:  0.1
  Magnitude Threshold for Weighting: 4.7

Earthquake Model Parameters               (Varies point to point?)
  Cell Weight: 1                                  Yes
  Fault Mechanism: Strike Slip
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 4.7
  Maximum Magnitude: 0                            Yes
  Rate at Minimum Magnitude, events per year: 0   Yes
  Beta: 2.3025                                    Yes
  Horizontal Rupture Length, A parameter: -2.0325
  Horizontal Rupture Length, B parameter: 0.5
  Rupture Strike Azimuth Model: Random Strike
```

Name: CEUS_fixGridded_2014_4zone_Mmax 7.5-7.6
Region: USGS 2014 Central and Eastern US
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.3
  Latitude Increment, degrees: 0.1
  Longitude Increment, degrees: 0.1
  Magnitude Threshold for Weighting: 4.7

Earthquake Model Parameters (Varies point to point?)
  Cell Weight: 1 Yes
  Fault Mechanism: Strike Slip
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 4.7
  Maximum Magnitude: 0 Yes
  Rate at Minimum Magnitude, events per year: 0 Yes
  Beta: 2.3025 Yes
  Horizontal Rupture Length, A parameter: -2.0325
  Horizontal Rupture Length, B parameter: 0.5
  Rupture Strike Azimuth Model: Random Strike

Name: CEUS_fixGridded_2014_4zone_Mmax 8.0
Region: USGS 2014 Central and Eastern US
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.3
  Latitude Increment, degrees: 0.1
  Longitude Increment, degrees: 0.1
  Magnitude Threshold for Weighting: 4.7

Earthquake Model Parameters (Varies point to point?)
  Cell Weight: 1 Yes
  Fault Mechanism: Strike Slip
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 4.7
  Maximum Magnitude: 0 Yes
  Rate at Minimum Magnitude, events per year: 0 Yes
  Beta: 2.3025 Yes
  Horizontal Rupture Length, A parameter: -2.0325
  Horizontal Rupture Length, B parameter: 0.5
  Rupture Strike Azimuth Model: Random Strike

 ------ End Nested Sources for CEUS Gridded Source -------

Attenuation Equations for Source:
  Raw Weight Normalized Weight Name
      0.25   0.250000   Abrahamson-et al (2014) NGA West 2 USGS
2014

```
      0.25      0.250000          Boore-et al (2014) NGA West 2 USGS 2014
      0.25      0.250000          Campbell-Bozorgnia (2014) NGA West 2
USGS 2014
      0.25      0.250000          Chiou-Youngs (2014) NGA West 2 USGS
2014

****************************************

Name: Shallow - Extensional Gridded
Region: USGS 2014 WUS Gridded Source
Category:Composite Seismic Source
Database: C:\Users\dgarcia\AppData\Local\Fugro\EZ-FRISK\Regions\EZ-FRISK
USGS2014 Lower 48 v1.00\Files\USGS 2014 Lower 48.bin-ssdb
Magnitude Scale: Moment Magnitude
Probability of Activity: 1
 ------ Start Nested Sources forShallow - Extensional Gridded -------
Name: Extensional Gridded, adSm, Tapered_M7.95, Strike Slip
Region: USGS 2014 Western US
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.0133333
  Latitude Increment, degrees:   0.1
  Longitude Increment, degrees:  0.1
  Magnitude Threshold for Weighting: 5

Earthquake Model Parameters               (Varies point to point?)
  Cell Weight: 1
  Fault Mechanism: Strike Slip
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 5
  Maximum Magnitude: 8
  Rate at Minimum Magnitude, events per year: 0   Yes
  Beta: 1.842
  Horizontal Rupture Length, A parameter: -3.22
  Horizontal Rupture Length, B parameter: 0.69
  Rupture Strike Azimuth Model: Random Strike

Name: Extensional Gridded, adSm, Tapered_M7.95, Normal
Region: USGS 2014 Western US
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.0266667
  Latitude Increment, degrees:   0.1
  Longitude Increment, degrees:  0.1
  Magnitude Threshold for Weighting: 5

Earthquake Model Parameters               (Varies point to point?)
  Cell Weight: 1
```

```
  Fault Mechanism: Normal
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 5
  Maximum Magnitude: 8
  Rate at Minimum Magnitude, events per year: 0   Yes
  Beta: 1.842
  Horizontal Rupture Length, A parameter: -3.22
  Horizontal Rupture Length, B parameter: 0.69
  Rupture Strike Azimuth Model: Random Strike

Name: Extensional Gridded, adSm, Truncated_M7.5, Char, Normal
Region: USGS 2014 Western US
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.16
  Latitude Increment, degrees:   0.1
  Longitude Increment, degrees:  0.1
  Magnitude Threshold for Weighting: 5

Earthquake Model Parameters               (Varies point to point?)
  Cell Weight: 1
  Fault Mechanism: Normal
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 5
  Maximum Magnitude: 7                              Yes
  Rate at Minimum Magnitude, events per year: 0   Yes
  Beta: 1.842
  Horizontal Rupture Length, A parameter: -3.22
  Horizontal Rupture Length, B parameter: 0.69
  Rupture Strike Azimuth Model: Random Strike

Name: Extensional Gridded, adSm, Truncated_M7.5, Char, Strike Slip
Region: USGS 2014 Western US
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.08
  Latitude Increment, degrees:   0.1
  Longitude Increment, degrees:  0.1
  Magnitude Threshold for Weighting: 5

Earthquake Model Parameters               (Varies point to point?)
  Cell Weight: 1
  Fault Mechanism: Strike Slip
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 5
  Maximum Magnitude: 7                              Yes
  Rate at Minimum Magnitude, events per year: 0   Yes
  Beta: 1.842
```

```
  Horizontal Rupture Length, A parameter: -3.22
  Horizontal Rupture Length, B parameter: 0.69
  Rupture Strike Azimuth Model: Random Strike

Name: Extensional Gridded, adSm, Truncated_M7.5, GR, Normal
Region: USGS 2014 Western US
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.08
  Latitude Increment, degrees:   0.1
  Longitude Increment, degrees:  0.1
  Magnitude Threshold for Weighting: 5

Earthquake Model Parameters               (Varies point to point?)
  Cell Weight: 1
  Fault Mechanism: Normal
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 5
  Maximum Magnitude: 7                                Yes
  Rate at Minimum Magnitude, events per year: 0   Yes
  Beta: 1.842
  Horizontal Rupture Length, A parameter: -3.22
  Horizontal Rupture Length, B parameter: 0.69
  Rupture Strike Azimuth Model: Random Strike

Name: Extensional Gridded, adSm, Truncated_M7.5, GR, Strike Slip
Region: USGS 2014 Western US
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.04
  Latitude Increment, degrees:   0.1
  Longitude Increment, degrees:  0.1
  Magnitude Threshold for Weighting: 5

Earthquake Model Parameters               (Varies point to point?)
  Cell Weight: 1
  Fault Mechanism: Strike Slip
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 5
  Maximum Magnitude: 7                                Yes
  Rate at Minimum Magnitude, events per year: 0   Yes
  Beta: 1.842
  Horizontal Rupture Length, A parameter: -3.22
  Horizontal Rupture Length, B parameter: 0.69
  Rupture Strike Azimuth Model: Random Strike

Name: Extensional Gridded, fixSm, Tapered_M7.95, Normal
Region: USGS 2014 Western US
```

Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.04
  Latitude Increment, degrees: 0.1
  Longitude Increment, degrees: 0.1
  Magnitude Threshold for Weighting: 5

Earthquake Model Parameters (Varies point to point?)
  Cell Weight: 1
  Fault Mechanism: Normal
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 5
  Maximum Magnitude: 8
  Rate at Minimum Magnitude, events per year: 0 Yes
  Beta: 1.842
  Horizontal Rupture Length, A parameter: -3.22
  Horizontal Rupture Length, B parameter: 0.69
  Rupture Strike Azimuth Model: Random Strike

Name: Extensional Gridded, fixSm, Tapered_M7.95, Strike Slip
Region: USGS 2014 Western US
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.02
  Latitude Increment, degrees: 0.1
  Longitude Increment, degrees: 0.1
  Magnitude Threshold for Weighting: 5

Earthquake Model Parameters (Varies point to point?)
  Cell Weight: 1
  Fault Mechanism: Strike Slip
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 5
  Maximum Magnitude: 8
  Rate at Minimum Magnitude, events per year: 0 Yes
  Beta: 1.842
  Horizontal Rupture Length, A parameter: -3.22
  Horizontal Rupture Length, B parameter: 0.69
  Rupture Strike Azimuth Model: Random Strike

Name: Extensional Gridded, fixSm, Truncated_M7.5, Char, Normal
Region: USGS 2014 Western US
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.24

```
  Latitude Increment, degrees:   0.1
  Longitude Increment, degrees:  0.1
  Magnitude Threshold for Weighting: 5

Earthquake Model Parameters               (Varies point to point?)
  Cell Weight: 1
  Fault Mechanism: Normal
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 5
  Maximum Magnitude: 7                                Yes
  Rate at Minimum Magnitude, events per year: 0   Yes
  Beta: 1.842
  Horizontal Rupture Length, A parameter: -3.22
  Horizontal Rupture Length, B parameter: 0.69
  Rupture Strike Azimuth Model: Random Strike

Name: Extensional Gridded, fixSm, Truncated_M7.5, Char, Strike Slip
Region: USGS 2014 Western US
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.12
  Latitude Increment, degrees:   0.1
  Longitude Increment, degrees:  0.1
  Magnitude Threshold for Weighting: 5

Earthquake Model Parameters               (Varies point to point?)
  Cell Weight: 1
  Fault Mechanism: Strike Slip
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 5
  Maximum Magnitude: 7                                Yes
  Rate at Minimum Magnitude, events per year: 0   Yes
  Beta: 1.842
  Horizontal Rupture Length, A parameter: -3.22
  Horizontal Rupture Length, B parameter: 0.69
  Rupture Strike Azimuth Model: Random Strike

Name: Extensional Gridded, fixSm, Truncated_M7.5, GR, Normal
Region: USGS 2014 Western US
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.12
  Latitude Increment, degrees:   0.1
  Longitude Increment, degrees:  0.1
  Magnitude Threshold for Weighting: 5

Earthquake Model Parameters               (Varies point to point?)
  Cell Weight: 1
```

```
  Fault Mechanism: Normal
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 5
  Maximum Magnitude: 7                              Yes
  Rate at Minimum Magnitude, events per year: 0   Yes
  Beta: 1.842
  Horizontal Rupture Length, A parameter: -3.22
  Horizontal Rupture Length, B parameter: 0.69
  Rupture Strike Azimuth Model: Random Strike

Name: Extensional Gridded, fixSm, Truncated_M7.5, GR, Strike Slip
Region: USGS 2014 Western US
Category:Gridded
  FileType: USGS2008

General Parameters
  Magnitude Scale: Moment Magnitude
  Probability of Activity: 0.06
  Latitude Increment, degrees:   0.1
  Longitude Increment, degrees:  0.1
  Magnitude Threshold for Weighting: 5

Earthquake Model Parameters               (Varies point to point?)
  Cell Weight: 1
  Fault Mechanism: Strike Slip
  Depth to Top of Rupture, km: 5
  Minimum Magnitude: 5
  Maximum Magnitude: 7                              Yes
  Rate at Minimum Magnitude, events per year: 0   Yes
  Beta: 1.842
  Horizontal Rupture Length, A parameter: -3.22
  Horizontal Rupture Length, B parameter: 0.69
  Rupture Strike Azimuth Model: Random Strike

 ------ End Nested Sources for Shallow - Extensional Gridded -------

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
      0.25      0.250000          Abrahamson-et al (2014) NGA West 2 USGS
2014
      0.25      0.250000          Boore-et al (2014) NGA West 2 USGS 2014
      0.25      0.250000          Campbell-Bozorgnia (2014) NGA West 2
USGS 2014
      0.25      0.250000          Chiou-Youngs (2014) NGA West 2 USGS
2014

*****************************************

Name: Intrabasin faults on the Llano de Albuquerque
Region: Mt Taylor Deterministic
Category:Fault
Database: C:\Users\dgarcia\AppData\Local\Fugro\EZ-FRISK\Files\user.xml-
ssdb
Fault Mechanism: Normal
```

Magnitude Scale: Moment Magnitude
Probability of Activity: 1.00000000
Deterministic Magnitude: 7.5

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
60	60	0	0.1	15

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	1	Slip	2.000e-02	7.200000	7.800000	0.000000	7.500000	0.120000	0.000000	0.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.100000	4.000000	0.000000	0.100000	--	--	--

Trace Coordinates:

Latitude	Longitude
35.1810	-106.8520
34.4930	-106.8350

Attenuation Equations for Source:

Raw Weight	Normalized Weight	Name
0.25	0.250000	Abrahamson-et al (2014) NGA West 2 USGS 2014
0.25	0.250000	Boore-et al (2014) NGA West 2 USGS 2014
0.25	0.250000	Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
0.25	0.250000	Chiou-Youngs (2014) NGA West 2 USGS 2014

****

Name: Jemez-San Ysidro fault [2029ab]
Region: USGS 2014 New Mexico
Category:Composite Seismic Source
Database: C:\Users\dgarcia\AppData\Local\Fugro\EZ-FRISK\Regions\EZ-FRISK USGS2014 Lower 48 v1.00\Files\USGS 2014 Lower 48.bin-ssdb
Magnitude Scale: Moment Magnitude
Probability of Activity: 1
 ------ Start Nested Sources forJemez-San Ysidro fault [2029ab] -------
Name: 2029ab Jemez-San Ysidro fault (dip 35)
Region: USGS 2014 New Mexico
Category:Fault
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.20000000
Deterministic Magnitude: 7.09

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	35	0	0.001	15

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.013334	Activity	1.815e-05	6.650000	7.130000	2.300000	6.890000	0.120000	0.010000	10.000000
Normal	0.040002	Activity	1.815e-05	6.850000	7.330000	2.300000	7.090000	0.120000	0.010000	10.000000
Normal	0.013334	Activity	1.815e-05	7.050000	7.530000	2.300000	7.290000	0.120000	0.010000	10.000000
Exponential	0.006666	Activity	4.237e-05	6.500000	6.890000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.019998	Activity	5.479e-05	6.500000	7.090000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.006666	Activity	6.339e-05	6.500000	7.290000	1.842068	0.000000	0.000000	0.000000	0.000000
Normal	0.106666	Activity	1.582e-05	6.650000	7.130000	2.300000	6.890000	0.120000	0.010000	10.000000
Normal	0.319998	Activity	1.582e-05	6.850000	7.330000	2.300000	7.090000	0.120000	0.010000	10.000000
Normal	0.106666	Activity	1.582e-05	7.050000	7.530000	2.300000	7.290000	0.120000	0.010000	10.000000
Exponential	0.053334	Activity	3.687e-05	6.500000	6.890000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.160002	Activity	4.768e-05	6.500000	7.090000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.053334	Activity	5.516e-05	6.500000	7.290000	1.842068	0.000000	0.000000	0.000000	0.000000
Normal	0.013334	Activity	2.420e-05	6.650000	7.130000	2.300000	6.890000	0.120000	0.010000	10.000000
Normal	0.040002	Activity	2.420e-05	6.850000	7.330000	2.300000	7.090000	0.120000	0.010000	10.000000
Normal	0.013334	Activity	2.420e-05	7.050000	7.530000	2.300000	7.290000	0.120000	0.010000	10.000000
Exponential	0.006666	Activity	5.650e-05	6.500000	6.890000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.019998	Activity	7.306e-05	6.500000	7.090000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.006666	Activity	8.452e-05	6.500000	7.290000	1.842068	0.000000	0.000000	0.000000	0.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--

```
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
```

Trace Coordinates:

Latitude	Longitude
35.4204	-106.7887
35.4846	-106.7821
35.5444	-106.7889
35.5588	-106.7854
35.5980	-106.7870
35.6099	-106.7896
35.6472	-106.8137
35.6645	-106.8166
35.6864	-106.8126
35.7072	-106.7940
35.7251	-106.7645
35.7443	-106.7555
35.7529	-106.7401
35.7737	-106.7198
35.7876	-106.6880
35.8181	-106.6576
35.8332	-106.6346

Name: 2029ab Jemez-San Ysidro fault (dip 50)
Region: USGS 2014 New Mexico
Category:Fault
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude

Probability of Activity: 0.60000000
Deterministic Magnitude: 7.09

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	50	0	0.001	15

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.013334	Activity	1.815e-05	6.650000	7.130000	2.300000	6.890000	0.120000	0.010000	10.000000
Normal	0.040002	Activity	1.815e-05	6.850000	7.330000	2.300000	7.090000	0.120000	0.010000	10.000000
Normal	0.013334	Activity	1.815e-05	7.050000	7.530000	2.300000	7.290000	0.120000	0.010000	10.000000
Exponential	0.006666	Activity	4.237e-05	6.500000	6.890000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.019998	Activity	5.479e-05	6.500000	7.090000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.006666	Activity	6.339e-05	6.500000	7.290000	1.842068	0.000000	0.000000	0.000000	0.000000
Normal	0.106666	Activity	1.582e-05	6.650000	7.130000	2.300000	6.890000	0.120000	0.010000	10.000000
Normal	0.319998	Activity	1.582e-05	6.850000	7.330000	2.300000	7.090000	0.120000	0.010000	10.000000
Normal	0.106666	Activity	1.582e-05	7.050000	7.530000	2.300000	7.290000	0.120000	0.010000	10.000000
Exponential	0.053334	Activity	3.687e-05	6.500000	6.890000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.160002	Activity	4.768e-05	6.500000	7.090000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.053334	Activity	5.516e-05	6.500000	7.290000	1.842068	0.000000	0.000000	0.000000	0.000000
Normal	0.013334	Activity	2.420e-05	6.650000	7.130000	2.300000	6.890000	0.120000	0.010000	10.000000
Normal	0.040002	Activity	2.420e-05	6.850000	7.330000	2.300000	7.090000	0.120000	0.010000	10.000000
Normal	0.013334	Activity	2.420e-05	7.050000	7.530000	2.300000	7.290000	0.120000	0.010000	10.000000
Exponential	0.006666	Activity	5.650e-05	6.500000	6.890000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.019998	Activity	7.306e-05	6.500000	7.090000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.006666	Activity	8.452e-05	6.500000	7.290000	1.842068	0.000000	0.000000	0.000000	0.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

```
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    35.4204  -106.7887
    35.4846  -106.7821
    35.5444  -106.7889
    35.5588  -106.7854
    35.5980  -106.7870
    35.6099  -106.7896
    35.6472  -106.8137
    35.6645  -106.8166
    35.6864  -106.8126
    35.7072  -106.7940
    35.7251  -106.7645
    35.7443  -106.7555
    35.7529  -106.7401
    35.7737  -106.7198
    35.7876  -106.6880
    35.8181  -106.6576
    35.8332  -106.6346

Name: 2029ab Jemez-San Ysidro fault (dip 65)
```

Region: USGS 2014 New Mexico
Category:Fault
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.20000000
Deterministic Magnitude: 7.09

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	65	0	0.001	15

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.013334	Activity	1.815e-05	6.650000	7.130000	2.300000	6.890000	0.120000	0.010000	10.000000
Normal	0.040002	Activity	1.815e-05	6.850000	7.330000	2.300000	7.090000	0.120000	0.010000	10.000000
Normal	0.013334	Activity	1.815e-05	7.050000	7.530000	2.300000	7.290000	0.120000	0.010000	10.000000
Exponential	0.006666	Activity	4.237e-05	6.500000	6.890000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.019998	Activity	5.479e-05	6.500000	7.090000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.006666	Activity	6.339e-05	6.500000	7.290000	1.842068	0.000000	0.000000	0.000000	0.000000
Normal	0.106666	Activity	1.582e-05	6.650000	7.130000	2.300000	6.890000	0.120000	0.010000	10.000000
Normal	0.319998	Activity	1.582e-05	6.850000	7.330000	2.300000	7.090000	0.120000	0.010000	10.000000
Normal	0.106666	Activity	1.582e-05	7.050000	7.530000	2.300000	7.290000	0.120000	0.010000	10.000000
Exponential	0.053334	Activity	3.687e-05	6.500000	6.890000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.160002	Activity	4.768e-05	6.500000	7.090000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.053334	Activity	5.516e-05	6.500000	7.290000	1.842068	0.000000	0.000000	0.000000	0.000000
Normal	0.013334	Activity	2.420e-05	6.650000	7.130000	2.300000	6.890000	0.120000	0.010000	10.000000
Normal	0.040002	Activity	2.420e-05	6.850000	7.330000	2.300000	7.090000	0.120000	0.010000	10.000000
Normal	0.013334	Activity	2.420e-05	7.050000	7.530000	2.300000	7.290000	0.120000	0.010000	10.000000
Exponential	0.006666	Activity	5.650e-05	6.500000	6.890000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.019998	Activity	7.306e-05	6.500000	7.090000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.006666	Activity	8.452e-05	6.500000	7.290000	1.842068	0.000000	0.000000	0.000000	0.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw

Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--

Trace Coordinates:

Latitude	Longitude
35.4204	-106.7887
35.4846	-106.7821
35.5444	-106.7889
35.5588	-106.7854
35.5980	-106.7870
35.6099	-106.7896
35.6472	-106.8137
35.6645	-106.8166
35.6864	-106.8126
35.7072	-106.7940
35.7251	-106.7645
35.7443	-106.7555
35.7529	-106.7401
35.7737	-106.7198
35.7876	-106.6880

```
    35.8181  -106.6576
    35.8332  -106.6346

 ------ End Nested Sources for Jemez-San Ysidro fault [2029ab] -------

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
      0.25      0.250000          Abrahamson-et al (2014) NGA West 2 USGS
2014
      0.25      0.250000          Boore-et al (2014) NGA West 2 USGS 2014
      0.25      0.250000          Campbell-Bozorgnia (2014) NGA West 2
USGS 2014
      0.25      0.250000          Chiou-Youngs (2014) NGA West 2 USGS
2014

*****************************************

Name: Calabacillas fault [2035]
Region: USGS 2014 New Mexico
Category:Composite Seismic Source
Database: C:\Users\dgarcia\AppData\Local\Fugro\EZ-FRISK\Regions\EZ-FRISK
USGS2014 Lower 48 v1.00\Files\USGS 2014 Lower 48.bin-ssdb
Magnitude Scale: Moment Magnitude
Probability of Activity: 1
 ------ Start Nested Sources forCalabacillas fault [2035] -------
Name: 2035 Calabacillas fault (dip 35)
Region: USGS 2014 New Mexico
Category:Fault
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.20000000
Deterministic Magnitude: 6.83

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        35         0     0.001        15

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag    MaxMag
Beta      Mean     Sigma    Delta1    Delta2
           Normal  0.013334    Activity   1.984e-04  6.390000  6.870000
2.300000  6.630000  0.120000  0.010000 10.000000
           Normal  0.040002    Activity   1.984e-04  6.590000  7.070000
2.300000  6.830000  0.120000  0.010000 10.000000
           Normal  0.013334    Activity   1.984e-04  6.790000  7.270000
2.300000  7.030000  0.120000  0.010000 10.000000
      Exponential  0.006666    Activity   1.770e-04  6.500000  6.630000
1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.019998    Activity   3.787e-04  6.500000  6.830000
1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.006666    Activity   5.181e-04  6.500000  7.030000
1.842068  0.000000  0.000000  0.000000  0.000000
           Normal  0.106666    Activity   8.097e-06  6.390000  6.870000
2.300000  6.630000  0.120000  0.010000 10.000000
```

	Normal	0.319998	Activity	8.097e-06	6.590000	7.070000	2.300000	6.830000	0.120000	0.010000	10.000000	
	Normal	0.106666	Activity	8.097e-06	6.790000	7.270000	2.300000	7.030000	0.120000	0.010000	10.000000	
	Exponential	0.053334	Activity	7.248e-06	6.500000	6.630000	1.842068	0.000000	0.000000	0.000000	0.000000	
	Exponential	0.160002	Activity	1.550e-05	6.500000	6.830000	1.842068	0.000000	0.000000	0.000000	0.000000	
	Exponential	0.053334	Activity	2.121e-05	6.500000	7.030000	1.842068	0.000000	0.000000	0.000000	0.000000	
	Normal	0.013334	Activity	9.028e-06	6.390000	6.870000	2.300000	6.630000	0.120000	0.010000	10.000000	
	Normal	0.040002	Activity	9.028e-06	6.590000	7.070000	2.300000	6.830000	0.120000	0.010000	10.000000	
	Normal	0.013334	Activity	9.028e-06	6.790000	7.270000	2.300000	7.030000	0.120000	0.010000	10.000000	
	Exponential	0.006666	Activity	8.047e-06	6.500000	6.630000	1.842068	0.000000	0.000000	0.000000	0.000000	
	Exponential	0.019998	Activity	1.721e-05	6.500000	6.830000	1.842068	0.000000	0.000000	0.000000	0.000000	
	Exponential	0.006666	Activity	2.355e-05	6.500000	7.030000	1.842068	0.000000	0.000000	0.000000	0.000000	

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

```
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    35.1404  -106.8390
    35.2034  -106.8526
    35.2416  -106.8654
    35.2671  -106.8632
    35.3315  -106.8350
    35.4192  -106.7898

Name: 2035 Calabacillas fault (dip 50)
Region: USGS 2014 New Mexico
Category:Fault
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.60000000
Deterministic Magnitude: 6.83

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        50         0     0.001        15

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag    MaxMag
Beta      Mean     Sigma    Delta1    Delta2
           Normal  0.013334    Activity   1.984e-04  6.390000  6.870000
2.300000  6.630000  0.120000  0.010000 10.000000
           Normal  0.040002    Activity   1.984e-04  6.590000  7.070000
2.300000  6.830000  0.120000  0.010000 10.000000
           Normal  0.013334    Activity   1.984e-04  6.790000  7.270000
2.300000  7.030000  0.120000  0.010000 10.000000
      Exponential  0.006666    Activity   1.770e-04  6.500000  6.630000
1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.019998    Activity   3.787e-04  6.500000  6.830000
1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.006666    Activity   5.181e-04  6.500000  7.030000
1.842068  0.000000  0.000000  0.000000  0.000000
           Normal  0.106666    Activity   8.097e-06  6.390000  6.870000
2.300000  6.630000  0.120000  0.010000 10.000000
           Normal  0.319998    Activity   8.097e-06  6.590000  7.070000
2.300000  6.830000  0.120000  0.010000 10.000000
           Normal  0.106666    Activity   8.097e-06  6.790000  7.270000
2.300000  7.030000  0.120000  0.010000 10.000000
      Exponential  0.053334    Activity   7.248e-06  6.500000  6.630000
1.842068  0.000000  0.000000  0.000000  0.000000
```

Exponential	0.160002	Activity	1.550e-05	6.500000	6.830000	1.842068	0.000000
0.000000	0.000000	0.000000					
Exponential	0.053334	Activity	2.121e-05	6.500000	7.030000	1.842068	0.000000
0.000000	0.000000	0.000000					
Normal	0.013334	Activity	9.028e-06	6.390000	6.870000	2.300000	6.630000
0.120000	0.010000	10.000000					
Normal	0.040002	Activity	9.028e-06	6.590000	7.070000	2.300000	6.830000
0.120000	0.010000	10.000000					
Normal	0.013334	Activity	9.028e-06	6.790000	7.270000	2.300000	7.030000
0.120000	0.010000	10.000000					
Exponential	0.006666	Activity	8.047e-06	6.500000	6.630000	1.842068	0.000000
0.000000	0.000000	0.000000					
Exponential	0.019998	Activity	1.721e-05	6.500000	6.830000	1.842068	0.000000
0.000000	0.000000	0.000000					
Exponential	0.006666	Activity	2.355e-05	6.500000	7.030000	1.842068	0.000000
0.000000	0.000000	0.000000					

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--

Length and width -3.220000 0.690000 0.220000 -3.220000 0.690000 0.220000 -- -- --

Trace Coordinates:

Latitude	Longitude
35.1404	-106.8390
35.2034	-106.8526
35.2416	-106.8654
35.2671	-106.8632
35.3315	-106.8350
35.4192	-106.7898

Name: 2035 Calabacillas fault (dip 65)
Region: USGS 2014 New Mexico
Category:Fault
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.20000000
Deterministic Magnitude: 6.83

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	65	0	0.001	15

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.013334	Activity	1.984e-04	6.390000	6.870000	2.300000	6.630000	0.120000	0.010000	10.000000
Normal	0.040002	Activity	1.984e-04	6.590000	7.070000	2.300000	6.830000	0.120000	0.010000	10.000000
Normal	0.013334	Activity	1.984e-04	6.790000	7.270000	2.300000	7.030000	0.120000	0.010000	10.000000
Exponential	0.006666	Activity	1.770e-04	6.500000	6.630000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.019998	Activity	3.787e-04	6.500000	6.830000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.006666	Activity	5.181e-04	6.500000	7.030000	1.842068	0.000000	0.000000	0.000000	0.000000
Normal	0.106666	Activity	8.097e-06	6.390000	6.870000	2.300000	6.630000	0.120000	0.010000	10.000000
Normal	0.319998	Activity	8.097e-06	6.590000	7.070000	2.300000	6.830000	0.120000	0.010000	10.000000
Normal	0.106666	Activity	8.097e-06	6.790000	7.270000	2.300000	7.030000	0.120000	0.010000	10.000000
Exponential	0.053334	Activity	7.248e-06	6.500000	6.630000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.160002	Activity	1.550e-05	6.500000	6.830000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.053334	Activity	2.121e-05	6.500000	7.030000	1.842068	0.000000	0.000000	0.000000	0.000000
Normal	0.013334	Activity	9.028e-06	6.390000	6.870000	2.300000	6.630000	0.120000	0.010000	10.000000

```
           Normal  0.040002    Activity   9.028e-06  6.590000  7.070000
2.300000  6.830000  0.120000  0.010000 10.000000
           Normal  0.013334    Activity   9.028e-06  6.790000  7.270000
2.300000  7.030000  0.120000  0.010000 10.000000
      Exponential  0.006666    Activity   8.047e-06  6.500000  6.630000
1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.019998    Activity   1.721e-05  6.500000  6.830000
1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.006666    Activity   2.355e-05  6.500000  7.030000
1.842068  0.000000  0.000000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw        Bw
Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    35.1404  -106.8390
```

```
    35.2034  -106.8526
    35.2416  -106.8654
    35.2671  -106.8632
    35.3315  -106.8350
    35.4192  -106.7898

 ------ End Nested Sources for Calabacillas fault [2035] -------

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
      0.25      0.250000          Abrahamson-et al (2014) NGA West 2 USGS
2014
      0.25      0.250000          Boore-et al (2014) NGA West 2 USGS 2014
      0.25      0.250000          Campbell-Bozorgnia (2014) NGA West 2
USGS 2014
      0.25      0.250000          Chiou-Youngs (2014) NGA West 2 USGS
2014

*****************************************

Name: Mesa Prieta faults
Region: Mt Taylor Deterministic
Category:Fault
Database: C:\Users\dgarcia\AppData\Local\Fugro\EZ-FRISK\Files\user.xml-
ssdb
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.50000000
Deterministic Magnitude: 6.3

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          60        60         0       0.1        15

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag    MaxMag
Beta      Mean     Sigma    Delta1    Delta2
          Normal         1        Slip   2.000e-02  6.000000  6.600000
0.000000  6.300000  0.120000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw        Bw
Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.100000  4.000000  0.000000
0.100000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    35.5190  -107.0400
    35.4360  -107.0760

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
```

```
      0.25      0.250000          Abrahamson-et al (2014) NGA West 2 USGS
2014
      0.25      0.250000          Boore-et al (2014) NGA West 2 USGS 2014
      0.25      0.250000          Campbell-Bozorgnia (2014) NGA West 2
USGS 2014
      0.25      0.250000          Chiou-Youngs (2014) NGA West 2 USGS
2014

****************************************

Name: Nacimiento fault [2002ab]
Region: USGS 2014 New Mexico
Category:Composite Seismic Source
Database: C:\Users\dgarcia\AppData\Local\Fugro\EZ-FRISK\Regions\EZ-FRISK
USGS2014 Lower 48 v1.00\Files\USGS 2014 Lower 48.bin-ssdb
Magnitude Scale: Moment Magnitude
Probability of Activity: 1
 ------ Start Nested Sources forNacimiento fault [2002ab] -------
Name: 2002ab Nacimiento fault (dip 35)
Region: USGS 2014 New Mexico
Category:Fault
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.20000000
Deterministic Magnitude: 7.3

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          90        35         0     0.001        15

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag    MaxMag
Beta      Mean     Sigma    Delta1    Delta2
           Normal  0.013334    Activity   1.041e-04  6.860000  7.340000
2.300000  7.100000  0.120000  0.010000 10.000000
           Normal  0.040002    Activity   1.041e-04  7.060000  7.540000
2.300000  7.300000  0.120000  0.010000 10.000000
           Normal  0.013334    Activity   1.041e-04  7.260000  7.740000
2.300000  7.500000  0.120000  0.010000 10.000000
      Exponential  0.006666    Activity   3.949e-04  6.500000  7.100000
1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.019998    Activity   4.551e-04  6.500000  7.300000
1.842068  0.000000  0.000000  0.000000  0.000000
      Exponential  0.006666    Activity   4.968e-04  6.500000  7.500000
1.842068  0.000000  0.000000  0.000000  0.000000
           Normal  0.106666    Activity   1.182e-05  6.860000  7.340000
2.300000  7.100000  0.120000  0.010000 10.000000
           Normal  0.319998    Activity   1.182e-05  7.060000  7.540000
2.300000  7.300000  0.120000  0.010000 10.000000
           Normal  0.106666    Activity   1.182e-05  7.260000  7.740000
2.300000  7.500000  0.120000  0.010000 10.000000
      Exponential  0.053334    Activity   4.483e-05  6.500000  7.100000
1.842068  0.000000  0.000000  0.000000  0.000000
```

Exponential	0.160002	Activity	5.167e-05	6.500000	7.300000	1.842068	0.000000	0.000000	0.000000	0.000000	
Exponential	0.053334	Activity	5.640e-05	6.500000	7.500000	1.842068	0.000000	0.000000	0.000000	0.000000	
Normal	0.013334	Activity	1.815e-05	6.860000	7.340000	2.300000	7.100000	0.120000	0.010000	10.000000	
Normal	0.040002	Activity	1.815e-05	7.060000	7.540000	2.300000	7.300000	0.120000	0.010000	10.000000	
Normal	0.013334	Activity	1.815e-05	7.260000	7.740000	2.300000	7.500000	0.120000	0.010000	10.000000	
Exponential	0.006666	Activity	6.868e-05	6.500000	7.100000	1.842068	0.000000	0.000000	0.000000	0.000000	
Exponential	0.019998	Activity	7.916e-05	6.500000	7.300000	1.842068	0.000000	0.000000	0.000000	0.000000	
Exponential	0.006666	Activity	8.640e-05	6.500000	7.500000	1.842068	0.000000	0.000000	0.000000	0.000000	

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--

Length and width -3.220000 0.690000 0.220000 -3.220000 0.690000
0.220000   --   --   --

Trace Coordinates:

Latitude	Longitude
35.4853	-106.8574
35.5849	-106.8557
35.6246	-106.8577
35.6777	-106.8687
35.7441	-106.8701
35.7740	-106.8782
35.7902	-106.8878
35.8244	-106.8941
35.8730	-106.8830
35.8874	-106.8885
35.8967	-106.8886
35.9087	-106.8936
35.9475	-106.8926
35.9999	-106.9014
36.0348	-106.8992
36.0541	-106.9073
36.0739	-106.9093
36.0917	-106.9093
36.1155	-106.9015
36.1908	-106.9112
36.1985	-106.9056
36.2198	-106.9021

Name: 2002ab Nacimiento fault (dip 50)
Region: USGS 2014 New Mexico
Category:Fault
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.60000000
Deterministic Magnitude: 7.3

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	50	0	0.001	15

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	0.013334	Activity	1.041e-04	6.860000	7.340000	2.300000	7.100000	0.120000	0.010000	10.000000
Normal	0.040002	Activity	1.041e-04	7.060000	7.540000	2.300000	7.300000	0.120000	0.010000	10.000000
Normal	0.013334	Activity	1.041e-04	7.260000	7.740000	2.300000	7.500000	0.120000	0.010000	10.000000
Exponential	0.006666	Activity	3.949e-04	6.500000	7.100000	1.842068	0.000000	0.000000	0.000000	0.000000
Exponential	0.019998	Activity	4.551e-04	6.500000	7.300000	1.842068	0.000000	0.000000	0.000000	0.000000

Exponential	0.006666	Activity	4.968e-04	6.500000	7.500000	1.842068
0.000000	0.000000	0.000000	0.000000			
Normal	0.106666	Activity	1.182e-05	6.860000	7.340000	2.300000
7.100000	0.120000	0.010000	10.000000			
Normal	0.319998	Activity	1.182e-05	7.060000	7.540000	2.300000
7.300000	0.120000	0.010000	10.000000			
Normal	0.106666	Activity	1.182e-05	7.260000	7.740000	2.300000
7.500000	0.120000	0.010000	10.000000			
Exponential	0.053334	Activity	4.483e-05	6.500000	7.100000	1.842068
0.000000	0.000000	0.000000	0.000000			
Exponential	0.160002	Activity	5.167e-05	6.500000	7.300000	1.842068
0.000000	0.000000	0.000000	0.000000			
Exponential	0.053334	Activity	5.640e-05	6.500000	7.500000	1.842068
0.000000	0.000000	0.000000	0.000000			
Normal	0.013334	Activity	1.815e-05	6.860000	7.340000	2.300000
7.100000	0.120000	0.010000	10.000000			
Normal	0.040002	Activity	1.815e-05	7.060000	7.540000	2.300000
7.300000	0.120000	0.010000	10.000000			
Normal	0.013334	Activity	1.815e-05	7.260000	7.740000	2.300000
7.500000	0.120000	0.010000	10.000000			
Exponential	0.006666	Activity	6.868e-05	6.500000	7.100000	1.842068
0.000000	0.000000	0.000000	0.000000			
Exponential	0.019998	Activity	7.916e-05	6.500000	7.300000	1.842068
0.000000	0.000000	0.000000	0.000000			
Exponential	0.006666	Activity	8.640e-05	6.500000	7.500000	1.842068
0.000000	0.000000	0.000000	0.000000			

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--

Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--

Trace Coordinates:

Latitude	Longitude
35.4853	-106.8574
35.5849	-106.8557
35.6246	-106.8577
35.6777	-106.8687
35.7441	-106.8701
35.7740	-106.8782
35.7902	-106.8878
35.8244	-106.8941
35.8730	-106.8830
35.8874	-106.8885
35.8967	-106.8886
35.9087	-106.8936
35.9475	-106.8926
35.9999	-106.9014
36.0348	-106.8992
36.0541	-106.9073
36.0739	-106.9093
36.0917	-106.9093
36.1155	-106.9015
36.1908	-106.9112
36.1985	-106.9056
36.2198	-106.9021

Name: 2002ab Nacimiento fault (dip 65)
Region: USGS 2014 New Mexico
Category:Fault
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.20000000
Deterministic Magnitude: 7.3

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
90	65	0	0.001	15

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2

	Normal	0.013334	Activity	1.041e-04	6.860000	7.340000	2.300000	7.100000	0.120000	0.010000	10.000000	
	Normal	0.040002	Activity	1.041e-04	7.060000	7.540000	2.300000	7.300000	0.120000	0.010000	10.000000	
	Normal	0.013334	Activity	1.041e-04	7.260000	7.740000	2.300000	7.500000	0.120000	0.010000	10.000000	
	Exponential	0.006666	Activity	3.949e-04	6.500000	7.100000	1.842068	0.000000	0.000000	0.000000	0.000000	
	Exponential	0.019998	Activity	4.551e-04	6.500000	7.300000	1.842068	0.000000	0.000000	0.000000	0.000000	
	Exponential	0.006666	Activity	4.968e-04	6.500000	7.500000	1.842068	0.000000	0.000000	0.000000	0.000000	
	Normal	0.106666	Activity	1.182e-05	6.860000	7.340000	2.300000	7.100000	0.120000	0.010000	10.000000	
	Normal	0.319998	Activity	1.182e-05	7.060000	7.540000	2.300000	7.300000	0.120000	0.010000	10.000000	
	Normal	0.106666	Activity	1.182e-05	7.260000	7.740000	2.300000	7.500000	0.120000	0.010000	10.000000	
	Exponential	0.053334	Activity	4.483e-05	6.500000	7.100000	1.842068	0.000000	0.000000	0.000000	0.000000	
	Exponential	0.160002	Activity	5.167e-05	6.500000	7.300000	1.842068	0.000000	0.000000	0.000000	0.000000	
	Exponential	0.053334	Activity	5.640e-05	6.500000	7.500000	1.842068	0.000000	0.000000	0.000000	0.000000	
	Normal	0.013334	Activity	1.815e-05	6.860000	7.340000	2.300000	7.100000	0.120000	0.010000	10.000000	
	Normal	0.040002	Activity	1.815e-05	7.060000	7.540000	2.300000	7.300000	0.120000	0.010000	10.000000	
	Normal	0.013334	Activity	1.815e-05	7.260000	7.740000	2.300000	7.500000	0.120000	0.010000	10.000000	
	Exponential	0.006666	Activity	6.868e-05	6.500000	7.100000	1.842068	0.000000	0.000000	0.000000	0.000000	
	Exponential	0.019998	Activity	7.916e-05	6.500000	7.300000	1.842068	0.000000	0.000000	0.000000	0.000000	
	Exponential	0.006666	Activity	8.640e-05	6.500000	7.500000	1.842068	0.000000	0.000000	0.000000	0.000000	

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	-3.220000	0.690000	0.220000	-3.220000	0.690000	0.220000	--	--	--
Length and width	4.000000	0.000000	0.001000	4.000000	0.000000	0.001000	--	--	--

```
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width  4.000000  0.000000  0.001000  4.000000  0.000000
0.001000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --
      Length and width -3.220000  0.690000  0.220000 -3.220000  0.690000
0.220000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    35.4853  -106.8574
    35.5849  -106.8557
    35.6246  -106.8577
    35.6777  -106.8687
    35.7441  -106.8701
    35.7740  -106.8782
    35.7902  -106.8878
    35.8244  -106.8941
    35.8730  -106.8830
    35.8874  -106.8885
    35.8967  -106.8886
    35.9087  -106.8936
    35.9475  -106.8926
    35.9999  -106.9014
    36.0348  -106.8992
    36.0541  -106.9073
    36.0739  -106.9093
    36.0917  -106.9093
    36.1155  -106.9015
    36.1908  -106.9112
    36.1985  -106.9056
    36.2198  -106.9021

 ------ End Nested Sources for Nacimiento fault [2002ab] -------

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
      0.25      0.250000          Abrahamson-et al (2014) NGA West 2 USGS
2014
```

```
      0.25      0.250000          Boore-et al (2014) NGA West 2 USGS 2014
      0.25      0.250000          Campbell-Bozorgnia (2014) NGA West 2
USGS 2014
      0.25      0.250000          Chiou-Youngs (2014) NGA West 2 USGS
2014

****************************************

Name: Sand Hill fault zone
Region: Mt Taylor Deterministic
Category:Fault
Database: C:\Users\dgarcia\AppData\Local\Fugro\EZ-FRISK\Files\user.xml-
ssdb
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.50000000
Deterministic Magnitude: 6.9

Fault Profile Parameters:
        Dip1      Dip2    Depth1    Depth2    Depth3
          60        60         0       0.1        15

Magnitude Recurrence Distributions:
        ModelType    Weight    RateType        Rate    MinMag    MaxMag
Beta      Mean     Sigma    Delta1    Delta2
           Normal         1        Slip   2.000e-02  6.600000  7.200000
0.000000  6.900000  0.120000  0.000000  0.000000

Rupture Length Parameters
  Rupture Dimensioning        Al        Bl      Sigl        Aw        Bw
Sigw        Aa        Ba      Sigw
      Length and width  4.000000  0.000000  0.100000  4.000000  0.000000
0.100000        --        --        --

Trace Coordinates:
  Latitude   Longitude
    35.4440  -106.8690
    35.1400  -106.8840

Attenuation Equations for Source:
  Raw Weight  Normalized Weight  Name
      0.25      0.250000          Abrahamson-et al (2014) NGA West 2 USGS
2014
      0.25      0.250000          Boore-et al (2014) NGA West 2 USGS 2014
      0.25      0.250000          Campbell-Bozorgnia (2014) NGA West 2
USGS 2014
      0.25      0.250000          Chiou-Youngs (2014) NGA West 2 USGS
2014

****************************************

Name: Santa Fe fault
Region: Mt Taylor Deterministic
Category:Fault
```

Database: C:\Users\dgarcia\AppData\Local\Fugro\EZ-FRISK\Files\user.xml-ssdb
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.50000000
Deterministic Magnitude: 6.8

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
60	60	0	0.1	15

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	1	Slip	2.000e-02	6.500000	7.100000	0.000000	6.800000	0.120000	0.000000	0.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.100000	4.000000	0.000000	0.100000	--	--	--

Trace Coordinates:

Latitude	Longitude
34.8880	-107.0530
34.6360	-107.1040

Attenuation Equations for Source:

Raw Weight	Normalized Weight	Name
0.25	0.250000	Abrahamson-et al (2014) NGA West 2 USGS 2014
0.25	0.250000	Boore-et al (2014) NGA West 2 USGS 2014
0.25	0.250000	Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
0.25	0.250000	Chiou-Youngs (2014) NGA West 2 USGS 2014

****

Name: unnamed faults near Albuquerque Volcanoes
Region: Mt Taylor Deterministic
Category:Fault
Database: C:\Users\dgarcia\AppData\Local\Fugro\EZ-FRISK\Files\user.xml-ssdb
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 1.00000000
Deterministic Magnitude: 6.9

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
60	60	0	0.1	15

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	1	Slip	2.000e-02	6.600000	7.200000	0.000000	6.900000	0.120000	0.000000	0.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.100000	4.000000	0.000000	0.100000	--	--	--

Trace Coordinates:

Latitude	Longitude
35.2180	-106.7620
35.0650	-106.7500

Attenuation Equations for Source:

Raw Weight	Normalized Weight	Name
0.25	0.250000	Abrahamson-et al (2014) NGA West 2 USGS 2014
0.25	0.250000	Boore-et al (2014) NGA West 2 USGS 2014
0.25	0.250000	Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
0.25	0.250000	Chiou-Youngs (2014) NGA West 2 USGS 2014

****

Name: unnamed faults of El Malpais lava field
Region: Mt Taylor Deterministic
Category:Fault
Database: C:\Users\dgarcia\AppData\Local\Fugro\EZ-FRISK\Files\user.xml-ssdb
Fault Mechanism: Normal
Magnitude Scale: Moment Magnitude
Probability of Activity: 0.50000000
Deterministic Magnitude: 6.7

Fault Profile Parameters:

Dip1	Dip2	Depth1	Depth2	Depth3
60	60	0	0.1	15

Magnitude Recurrence Distributions:

ModelType	Weight	RateType	Rate	MinMag	MaxMag	Beta	Mean	Sigma	Delta1	Delta2
Normal	1	Slip	2.000e-02	6.400000	7.000000	0.000000	6.700000	0.120000	0.000000	0.000000

Rupture Length Parameters

Rupture Dimensioning	Al	Bl	Sigl	Aw	Bw	Sigw	Aa	Ba	Sigw
Length and width	4.000000	0.000000	0.100000	4.000000	0.000000	0.100000	--	--	--

Trace Coordinates:

Latitude	Longitude
34.8880	-108.0030
34.5720	-108.1560

Attenuation Equations for Source:

Raw Weight	Normalized Weight	Name
0.25	0.250000	Abrahamson-et al (2014) NGA West 2 USGS 2014
0.25	0.250000	Boore-et al (2014) NGA West 2 USGS 2014
0.25	0.250000	Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
0.25	0.250000	Chiou-Youngs (2014) NGA West 2 USGS 2014

****

MAGNITUDE CONVERSIONS

This analysis does not require any magnitude conversions.
Note: Your analysis may indirectly use magnitude conversions that are not listed here.

Echo File Creation Time: 13:37:53 Monday, September 22, 2025

APPENDIX D.3
PROBABILISTIC RESULTS

Probabilistic Spectra results for EZ-FRISK 8.11 Build 019

ANNUAL FREQUENCY OF EXCEEDANCE: 2.107e-03
RETURN PERIOD: 474.6
PROBABILITY OF EXCEEDENCE: 10.0% IN 50.0 YEARS
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Mean
  Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
  Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
  Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
  Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	3.221e-02	3.542e-02	3.142e-02	3.253e-02	2.962e-02
0.05	4.864e-02	4.533e-02	4.809e-02	5.292e-02	4.798e-02
0.1	6.812e-02	6.553e-02	7.097e-02	7.013e-02	6.546e-02
0.2	6.633e-02	6.606e-02	6.668e-02	6.829e-02	6.413e-02
0.3	5.274e-02	5.281e-02	4.827e-02	5.902e-02	5.068e-02
0.4	4.168e-02	4.400e-02	3.698e-02	4.595e-02	4.001e-02
0.5	3.446e-02	3.807e-02	2.999e-02	3.716e-02	3.271e-02
0.75	2.402e-02	2.537e-02	2.134e-02	2.724e-02	2.190e-02
1	1.717e-02	1.862e-02	1.561e-02	1.891e-02	1.558e-02
2	7.695e-03	1.044e-02	6.584e-03	7.387e-03	6.514e-03
3	4.401e-03	5.989e-03	4.309e-03	4.002e-03	3.414e-03
4	3.004e-03	3.756e-03	3.351e-03	2.773e-03	2.148e-03

ANNUAL FREQUENCY OF EXCEEDANCE: 1.026e-03
RETURN PERIOD: 974.8
PROBABILITY OF EXCEEDENCE: 5.0% IN 50.0 YEARS
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Mean
  Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
  Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
  Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014

Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	5.520e-02	6.152e-02	5.269e-02	5.580e-02	5.090e-02
0.05	8.401e-02	7.893e-02	8.150e-02	9.218e-02	8.367e-02
0.1	1.180e-01	1.156e-01	1.186e-01	1.213e-01	1.162e-01
0.2	1.125e-01	1.152e-01	1.084e-01	1.144e-01	1.123e-01
0.3	8.747e-02	8.956e-02	7.714e-02	9.652e-02	8.686e-02
0.4	6.871e-02	7.258e-02	5.922e-02	7.467e-02	6.798e-02
0.5	5.636e-02	6.199e-02	4.778e-02	6.035e-02	5.483e-02
0.75	3.800e-02	4.053e-02	3.293e-02	4.298e-02	3.522e-02
1	2.696e-02	2.929e-02	2.427e-02	2.923e-02	2.481e-02
2	1.271e-02	1.661e-02	1.107e-02	1.220e-02	1.096e-02
3	7.598e-03	1.077e-02	7.301e-03	6.769e-03	5.531e-03
4	5.019e-03	6.658e-03	5.589e-03	4.553e-03	3.322e-03

ANNUAL FREQUENCY OF EXCEEDANCE: 4.041e-04
RETURN PERIOD: 2474.9
PROBABILITY OF EXCEEDENCE: 2.0% IN 50.0 YEARS
Column 1: Spectral Period
Column 2: Acceleration (g) for: Mean
Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	1.006e-01	1.121e-01	9.326e-02	1.012e-01	9.412e-02
0.05	1.553e-01	1.449e-01	1.469e-01	1.728e-01	1.570e-01
0.1	2.236e-01	2.215e-01	2.168e-01	2.304e-01	2.264e-01
0.2	2.091e-01	2.186e-01	1.924e-01	2.090e-01	2.167e-01

0.3	1.567e-01	1.622e-01	1.337e-01	1.678e-01	1.631e-01
0.4	1.212e-01	1.264e-01	1.028e-01	1.289e-01	1.257e-01
0.5	9.956e-02	1.068e-01	8.280e-02	1.048e-01	1.013e-01
0.75	6.687e-02	7.048e-02	5.733e-02	7.409e-02	6.409e-02
1	4.724e-02	5.157e-02	4.174e-02	5.090e-02	4.404e-02
2	2.197e-02	2.824e-02	1.870e-02	2.106e-02	1.849e-02
3	1.382e-02	1.864e-02	1.326e-02	1.257e-02	1.025e-02
4	9.757e-03	1.256e-02	1.065e-02	8.652e-03	5.844e-03

ANNUAL FREQUENCY OF EXCEEDANCE: 1.000e-04
RETURN PERIOD: 10000.0
PROBABILITY OF EXCEEDENCE: 0.5% IN 50.0 YEARS
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Mean
  Column 3: Acceleration (g) for: Abrahamson-et al (2014) NGA West 2 USGS 2014
  Column 4: Acceleration (g) for: Boore-et al (2014) NGA West 2 USGS 2014
  Column 5: Acceleration (g) for: Campbell-Bozorgnia (2014) NGA West 2 USGS 2014
  Column 6: Acceleration (g) for: Chiou-Youngs (2014) NGA West 2 USGS 2014

1	2	3	4	5	6
PGA	2.096e-01	2.360e-01	1.893e-01	2.094e-01	2.013e-01
0.05	3.382e-01	3.129e-01	3.135e-01	3.834e-01	3.443e-01
0.1	4.875e-01	4.824e-01	4.564e-01	5.061e-01	5.047e-01
0.2	4.482e-01	4.756e-01	4.024e-01	4.322e-01	4.839e-01
0.3	3.359e-01	3.483e-01	2.839e-01	3.406e-01	3.666e-01
0.4	2.579e-01	2.634e-01	2.186e-01	2.635e-01	2.837e-01
0.5	2.097e-01	2.170e-01	1.770e-01	2.131e-01	2.264e-01
0.75	1.395e-01	1.407e-01	1.238e-01	1.489e-01	1.420e-01
1	1.009e-01	1.050e-01	9.197e-02	1.056e-01	9.857e-02
2	4.668e-02	5.845e-02	4.032e-02	4.488e-02	3.920e-02

3	2.922e-02	3.772e-02	2.850e-02	2.727e-02	2.085e-02
4	2.090e-02	2.569e-02	2.291e-02	1.954e-02	1.286e-02

APPENDIX D
Technical Memorandum – Frost Depth Analysis

Technical Memorandum

To:	Rio Grande Resources Ltd.	From:	Jason Andrews P.E., Larry Coons P.E.
Company:	Rio Grande Resources Ltd.	Date:	October 9, 2025
EA No.:	111360		
Re:	Mt. Taylor Uranium Mine - Frost Depth Analysis		

1.0 INTRODUCTION

This technical memorandum provides the frost depth analysis and results to support the design of the proposed expanded disposal cell. The radon barrier should be located below the calculated frost depth to protect against freeze-thaw impacts.

2.0 FROST DEPTH ANALYSIS

The frost depth penetration into the final reclamation cover (cover) for the proposed expanded disposal cell was determined using the procedure adopted by the U.S. Department of Energy and accepted by the Nuclear Regulatory Commission (DOE, 1989). The depth of freezing into the cover (depth of frost penetration) is governed by the local climate, soil material and soil moisture content expected during the operational life of the cover. The procedure used includes a computational procedure to predict frost depth which was initially proposed by Berggren (1943). Smith and Rager (2002) apply these previous studies to determine an adequate thickness of a protective soil layer to protect underlying compacted soil. The freezing depth was calculated for a 200-year recurrence interval (0.5% probability of occurrence in any given year).

2.1 Analyzed Final Reclamation Cover Configuration

The following cover system is proposed to overlay the clay layer (radon barrier) and was analyzed for frost penetration. The proposed cover system is presented on Figure D-1.

- 12-inches of rock mulch (erosion protection) consisting of gravel mixed with onsite soil used as Soil Cover.
- 28-inches of onsite soil cover (biointrusion and frost protection.)

2.2 Input parameters

Calculations

- ***Step 1 Determine freeze-index parameters.***
  Fifty years of historic temperature data consisting of maximum and minimum daily air temperatures was obtained from Grants, New Mexico Municipal Airport for the main data source, additional alternative data sources included the on-site meteorological station at the Mt. Taylor Mine, and the historical weather records of San Mateo, New Mexico. The historic climate data sources and data used in the calculations are presented in Attachment D1.

  The degree day calculation was used to compute the duration of freeze. The duration of freeze is defined as length of time in days that the cumulative degree day is below freezing (Smith and Rager, 2002). The degree day, defined as the mean daily temperature minus 32 degrees Fahrenheit (freezing point of water) (Smith and Rager, 2002) was calculated and presented in Attachment D1. The cumulative degree-days versus the days in the freeze year are plotted. The cumulative degree day plots are provided in Attachment D2.1 and are used to determine the duration of freeze. The selection of points for the duration of freeze calculation is provided in Attachment D2.2

- ***Step 2 Determine surface temperature correction factor.***
  A surface correction factor, N, is applied to the daily temperature data used to correct for difference between air temperature and ground temperature. A surface correction factor of 0.7 for bare soil was chosen from Table 1 of Smith and Rager (2002).

- ***Step 3 Determine thermal properties.***
  Soil thermal properties: thermal conductivity, heat capacity, and latent heat of fusion are products of empirical relationships between the dry unit weight (pcf) and gravimetric moisture content (%). For the purpose of these calculations, the relationships presented by Bianchini and Gonzalez (2012) were used. The thermal conductivity, volumetric heat capacity and latent heat of fusion for each of the soil types for the respective layer are presented in Table 1 below. The thermal ratio and fusion parameter for each of the soil types are presented in Table 2 below. The parameters presented in Tables 1 and 2 were calculated with the following equations from Bianchini and Gonzalez (2012) presented below.

Thermal conductivity equations:

$$K_f = \frac{0.076(10)^{0.013\gamma_d} + 0.032(10)^{0.013\gamma_d * w}}{12}$$

$$K_u = \frac{(0.07\log(w) + 0.04)(10)^{0.01\gamma_d}}{12}$$

Where:

K_u = Thermal Conductivity of unfrozen soil
K_f = Thermal Conductivity of frozen soil
γ_d = soil dry unit weight
w = soil water content as percentage

Volumetric heat capacity equation:

$$C_{avg} = \gamma_d(c + 0.75\frac{w}{100})$$

Where:

C_{avg} = Average volumetric heat capacity
γ_d = soil dry unit weight
w = soil water content as percentage
c = specific heat of the soil solids

Volumetric latent heat of fusion equation:

$$L = 144\gamma_d\frac{w}{100}$$

Where:

L= Volumetric latent heat of fusion
γ_d = soil dry unit weight
w = soil water content as percentage

Thermal ratio equation:

$$\alpha = \frac{v_0}{v_s}$$

Where:

α = Thermal Ratio
v_0 =absolute value of the difference between the mean annual temperature below the ground surface and 32° F.
v_s =the term is computed in two different ways in relation to problem analysis.

Term v_s equation:

$$v_s = \frac{nF}{t}$$

Where:

n = conversion factor from air index to surface index
F = air-freezing index

t = length of the freezing season

Fusion parameter equation:

$$\mu = \frac{C}{L} v_s$$

Where

C= Volumetric Heat Capacity
L = Volumetric latent heat of fusion

Table 1 – Thermal Properties

Layer	Depth (Inches)	Optimum Dry Density (PCF)	Water Content (%)	Dry Density (85% of Proctor) (PCF)	Thermal Conductivity Kf (BTU/ Ft hr °F)	Thermal Conductivity Ku (BTU/ Ft hr °F)	Average Thermal Conductivity (1/2*(Ku+Kf)) (BTU/ Ft hr °F)	Volumetric Heat Capacity (Cavg) (BTU/ft^3 °F)	Latent Heat of Fusion (BTU/ft^3)
Mulch	12	115	10	97.8	0.83	0.87	0.85	23.9	1407.6
Soil Cover	33	110.7	11	94.1	0.80	0.82	0.81	23.8	1490.46

Table 2 – Thermal Parameters

Layer	Average Temperature (°F)	Freeze Index (Degree-Day)	Duration (Days)	Vs	Vo	Thermal Ratio	Fusion Parameter
Mulch	63.1	927.5	173	3.8	31.1	8.25	0.06
Soil Cover	63.1	927.5	173	3.8	31.1	8.25	0.06

- ***Step 4 Determine 200-year recurrence interval.***
  NRC, 10 CFR Appendix A to Part 40, Criterion 6, Paragraph 1 states that the design life should be 1,000 years when reasonably achievable and at a minimum, 200 years. As discussed in Smith and Rager (2002) the use of a 200-year recurrence interval for frost depth analysis meets the requirements of 40 Code of Federal Regulations Part 40. Mean annual temperature was calculated for each year in the data set. The mean annual temperature was plotted and projected to develop the mean minimum temperature for 200 years using the method presented in Smith and Rager (2002). The results of this are presented in Attachment D3.1.

  In addition to the mean annual temperature, the frost index and duration of freeze were calculated for each year in the data set as stated in Step 1. These data were plotted and projected to develop the 200-year maximum frost index and duration of freeze using the method presented in Smith and Rager (2002). The results are presented in Attachments D3.2 and D3.3, respectively.

- ***Step 5 Determine freezing depth.***
  To determine the frost depth of 200-year recurrence interval the method for manual solution of the Modberg Equation presented in Bianchini and Gonzalez (2012) was applied using the parameters calculated in Step 4 to determine the depth of the freezing front inside of the cover system. The depth of the freezing front is presented in Attachment D4.

3.0 CONCLUSIONS

The frost penetration depth into the final cover for the 200-year recurrence interval was calculated to be 28 inches. The total thickness of material over the radon barrier is proposed to be 40 inches. Thus, the radon barrier is not anticipated to experience any impacts from freezing.

4.0 REFERENCES

Berggren, W.P. (1943). Prediction of temperature distribution in frozen soils. *Proceedings of the 11th Annual Western Interstate Snow Survey Conference, Trans. Am. Geophys. Union*. 71-77.

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Figure D-1 Final Reclamation Cover System

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Attachment D3.3 Duration of Freeze Season at 200-year Recurrence Interval
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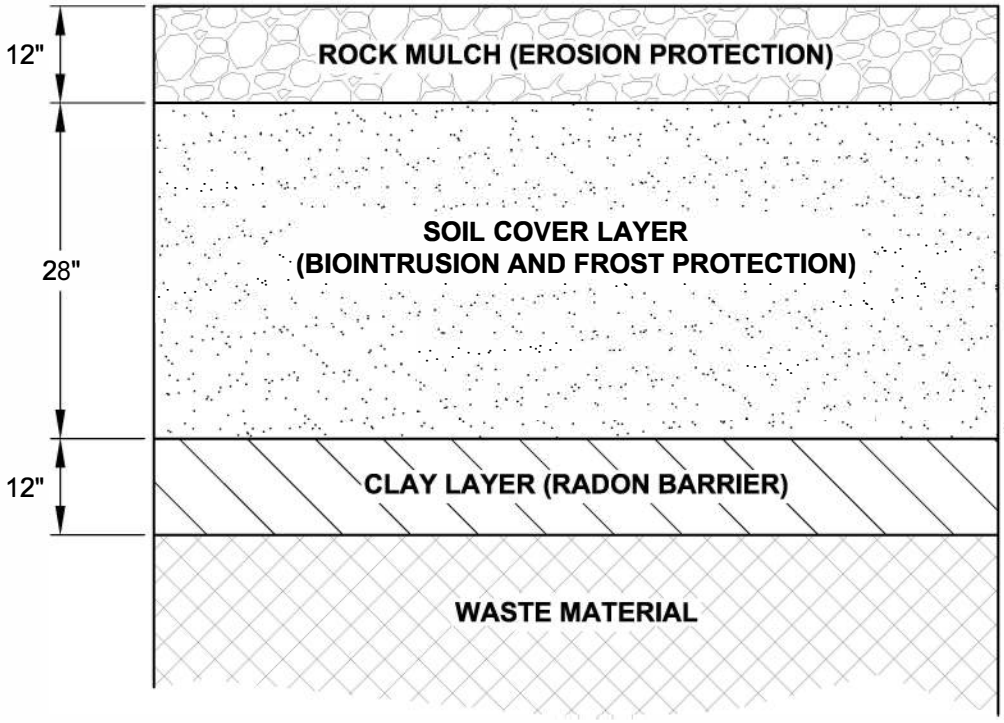
FIGURE



NOT TO SCALE

T:\111360 Mt. Taylor\Reclamation Liner.dwg SAVED:8/21/25 PRINTED:8/25/25

Project No. 111360

October 2025

Engineering Analytics, Inc.

FIGURE D-1
FINAL RECLAMATION COVER SYSTEM
MT. TAYLOR MINE

ATTACHMENT D1
HISTORICAL TEMPERATURE DATA

Attachment D1 - Summary of Historical Weather Data

Location	Site ID	Distance from Site	Elevation (Mt. Taylor, El 6454 ft)	Start Date	End Date	Missing Data?	Weather Categories Used	Notes
Gallup Municipal Airport, Gallup, NM.	KNMGA19	64 miles	6467 ft	1/1/1975	6/23/2023	• 8/12/2000 – 8/21/2000 • 8/23/2000 – 8/26/2000 • 8/28/2000-8/30/2000 • 2/20/2007-2/25/2007 • 3/1/2014-3/3/2014 • 12/11/2022-01/23/2023 • 9/26/2023-9/30/2023 • 01/25/2024-01/28/2024 • 05/29/2025-06/04/2025	• Temperature • Relative Humidity • Avg Daily Wind Speed • Precipitation	• **Main data source** • Gaps in data filled with Alternative data from Albuquerque, NM .
Albuquerque, NM.	KNMALBUQ1093)	58 miles	5312 ft	2/20/2007	6/04/2025		• Temperature • Relative Humidity • Average Wind Speed • Precipitation	• **Alternative data source** • Used for 5/29/2025-6/4/2025 • 01/26/2025-01/28/2025 • 9/26/2025-9/30/2025 • 12/11/2022-01/23/2023

								• 2/20/2007-2/25/2007 • 2/23/2000-2/28/2000 • •

111360 Mt. Taylor Uranium Mine | Grants, NM Municipal Airport Data

Date	Year	MO	Day	Day in frost Year	Minimum Temperature (Deg F)	Maximum Temperature (Deg F)	Average Temperature (Deg F)	Degree Day	Cum. Degree Day
6/1/1975	1975	6	1	1	38	80	59	27	27
6/2/1975	1975	6	2	2	42	83	62.5	30.5	57.5
6/3/1975	1975	6	3	3	48	84	66	34	91.5
6/4/1975	1975	6	4	4	49	82	65.5	33.5	125
6/5/1975	1975	6	5	5	45	83	64	32	157
6/6/1975	1975	6	6	6	47	81	64	32	189
6/7/1975	1975	6	7	7	50	80	65	33	222
6/8/1975	1975	6	8	8	48	79	63.5	31.5	253.5
6/9/1975	1975	6	9	9	43	77	60	28	281.5
6/10/1975	1975	6	10	10	36	77	56.5	24.5	306
6/11/1975	1975	6	11	11	35	75	55	23	329
6/12/1975	1975	6	12	12	40	80	60	28	357
6/13/1975	1975	6	13	13	43	86	64.5	32.5	389.5
6/14/1975	1975	6	14	14	51	85	68	36	425.5
6/15/1975	1975	6	15	15	50	80	65	33	458.5
6/16/1975	1975	6	16	16	51	84	67.5	35.5	494
6/17/1975	1975	6	17	17	53	84	68.5	36.5	530.5
6/18/1975	1975	6	18	18	52	81	66.5	34.5	565
6/19/1975	1975	6	19	19	43	77	60	28	593
6/20/1975	1975	6	20	20	45	74	59.5	27.5	620.5
6/21/1975	1975	6	21	21	43	79	61	29	649.5
6/22/1975	1975	6	22	22	46	84	65	33	682.5
6/23/1975	1975	6	23	23	48	84	66	34	716.5
6/24/1975	1975	6	24	24	52	84	68	36	752.5
6/25/1975	1975	6	25	25	43	83	63	31	783.5
6/26/1975	1975	6	26	26	48	85	66.5	34.5	818
6/27/1975	1975	6	27	27	49	85	67	35	853
6/28/1975	1975	6	28	28	49	88	68.5	36.5	889.5
6/29/1975	1975	6	29	29	52	90	71	39	928.5
6/30/1975	1975	6	30	30	53	91	72	40	968.5
7/1/1975	1975	7	1	31	59	90	74.5	42.5	1011
7/2/1975	1975	7	2	32	62	84	73	41	1052
7/3/1975	1975	7	3	33	53	82	67.5	35.5	1087.5
7/4/1975	1975	7	4	34	56	80	68	36	1123.5
7/5/1975	1975	7	5	35	54	85	69.5	37.5	1161
7/6/1975	1975	7	6	36	52	81	66.5	34.5	1195.5
7/7/1975	1975	7	7	37	51	78	64.5	32.5	1228
7/8/1975	1975	7	8	38	50	79	64.5	32.5	1260.5
7/9/1975	1975	7	9	39	54	80	67	35	1295.5
7/10/1975	1975	7	10	40	59	86	72.5	40.5	1336
7/11/1975	1975	7	11	41	56	81	68.5	36.5	1372.5
7/12/1975	1975	7	12	42	54	81	67.5	35.5	1408
7/13/1975	1975	7	13	43	52	79	65.5	33.5	1441.5
7/14/1975	1975	7	14	44	50	79	64.5	32.5	1474
7/15/1975	1975	7	15	45	49	80	64.5	32.5	1506.5
7/16/1975	1975	7	16	46	55	78	66.5	34.5	1541
7/17/1975	1975	7	17	47	52	76	64	32	1573
7/18/1975	1975	7	18	48	53	81	67	35	1608
7/19/1975	1975	7	19	49	56	84	70	38	1646
7/20/1975	1975	7	20	50	57	82	69.5	37.5	1683.5
7/21/1975	1975	7	21	51	50	84	67	35	1718.5
7/22/1975	1975	7	22	52	50	82	66	34	1752.5
7/23/1975	1975	7	23	53	53	87	70	38	1790.5
7/24/1975	1975	7	24	54	54	90	72	40	1830.5
7/25/1975	1975	7	25	55	49	86	67.5	35.5	1866
7/26/1975	1975	7	26	56	52	79	65.5	33.5	1899.5
7/27/1975	1975	7	27	57	53	78	65.5	33.5	1933
7/28/1975	1975	7	28	58	53	77	65	33	1966
7/29/1975	1975	7	29	59	50	70	60	28	1994
7/30/1975	1975	7	30	60	51	78	64.5	32.5	2026.5
7/31/1975	1975	7	31	61	53	80	66.5	34.5	2061
8/1/1975	1975	8	1	62	53	83	68	36	2097
8/2/1975	1975	8	2	63	55	84	69.5	37.5	2134.5
8/3/1975	1975	8	3	64	52	84	68	36	2170.5
8/4/1975	1975	8	4	65	51	85	68	36	2206.5
8/5/1975	1975	8	5	66	53	84	68.5	36.5	2243
8/6/1975	1975	8	6	67	56	85	70.5	38.5	2281.5
8/7/1975	1975	8	7	68	57	80	68.5	36.5	2318
8/8/1975	1975	8	8	69	56	80	68	36	2354
8/9/1975	1975	8	9	70	54	78	66	34	2388
8/10/1975	1975	8	10	71	53	77	65	33	2421
8/11/1975	1975	8	11	72	47	78	62.5	30.5	2451.5
8/12/1975	1975	8	12	73	53	76	64.5	32.5	2484
8/13/1975	1975	8	13	74	49	73	61	29	2513
8/14/1975	1975	8	14	75	50	79	64.5	32.5	2545.5
8/15/1975	1975	8	15	76	50	83	66.5	34.5	2580
8/16/1975	1975	8	16	77	55	84	69.5	37.5	2617.5
8/17/1975	1975	8	17	78	50	82	66	34	2651.5
8/18/1975	1975	8	18	79	55	83	69	37	2688.5
8/19/1975	1975	8	19	80	50	82	66	34	2722.5
8/20/1975	1975	8	20	81	53	79	66	34	2756.5
8/21/1975	1975	8	21	82	54	70	62	30	2786.5
8/22/1975	1975	8	22	83	53	77	65	33	2819.5
8/23/1975	1975	8	23	84	51	73	62	30	2849.5
8/24/1975	1975	8	24	85	53	87	70	38	2887.5
8/25/1975	1975	8	25	86	48	83	65.5	33.5	2921
8/26/1975	1975	8	26	87	47	82	64.5	32.5	2953.5
8/27/1975	1975	8	27	88	56	81	68.5	36.5	2990
8/28/1975	1975	8	28	89	49	81	65	33	3023
8/29/1975	1975	8	29	90	51	83	67	35	3058
8/30/1975	1975	8	30	91	50	80	65	33	3091

8/31/1975	1975	8	31	92	51	81	66	34	3125
9/1/1975	1975	9	1	93	50	85	67.5	35.5	3160.5
9/2/1975	1975	9	2	94	54	79	66.5	34.5	3195
9/3/1975	1975	9	3	95	53	78	65.5	33.5	3228.5
9/4/1975	1975	9	4	96	54	73	63.5	31.5	3260
9/5/1975	1975	9	5	97	49	69	59	27	3287
9/6/1975	1975	9	6	98	50	63	56.5	24.5	3311.5
9/7/1975	1975	9	7	99	50	69	59.5	27.5	3339
9/8/1975	1975	9	8	100	50	73	61.5	29.5	3368.5
9/9/1975	1975	9	9	101	43	62	52.5	20.5	3389
9/10/1975	1975	9	10	102	42	61	51.5	19.5	3408.5
9/11/1975	1975	9	11	103	40	69	54.5	22.5	3431
9/12/1975	1975	9	12	104	40	59	49.5	17.5	3448.5
9/13/1975	1975	9	13	105	43	67	55	23	3471.5
9/14/1975	1975	9	14	106	44	69	56.5	24.5	3496
9/15/1975	1975	9	15	107	42	69	55.5	23.5	3519.5
9/16/1975	1975	9	16	108	46	70	58	26	3545.5
9/17/1975	1975	9	17	109	48	73	60.5	28.5	3574
9/18/1975	1975	9	18	110	50	73	61.5	29.5	3603.5
9/19/1975	1975	9	19	111	46	73	59.5	27.5	3631
9/20/1975	1975	9	20	112	45	72	58.5	26.5	3657.5
9/21/1975	1975	9	21	113	40	72	56	24	3681.5
9/22/1975	1975	9	22	114	40	70	55	23	3704.5
9/23/1975	1975	9	23	115	42	69	55.5	23.5	3728
9/24/1975	1975	9	24	116	41	68	54.5	22.5	3750.5
9/25/1975	1975	9	25	117	40	69	54.5	22.5	3773
9/26/1975	1975	9	26	118	42	70	56	24	3797
9/27/1975	1975	9	27	119	43	70	56.5	24.5	3821.5
9/28/1975	1975	9	28	120	40	69	54.5	22.5	3844
9/29/1975	1975	9	29	121	41	68	54.5	22.5	3866.5
9/30/1975	1975	9	30	122	40	69	54.5	22.5	3889
10/1/1975	1975	10	1	123	36	76	56	24	3913
10/2/1975	1975	10	2	124	39	71	55	23	3936
10/3/1975	1975	10	3	125	41	72	56.5	24.5	3960.5
10/4/1975	1975	10	4	126	42	68	55	23	3983.5
10/5/1975	1975	10	5	127	42	72	57	25	4008.5
10/6/1975	1975	10	6	128	42	78	60	28	4036.5
10/7/1975	1975	10	7	129	48	73	60.5	28.5	4065
10/8/1975	1975	10	8	130	41	69	55	23	4088
10/9/1975	1975	10	9	131	37	70	53.5	21.5	4109.5
10/10/1975	1975	10	10	132	40	69	54.5	22.5	4132
10/11/1975	1975	10	11	133	41	70	55.5	23.5	4155.5
10/12/1975	1975	10	12	134	39	69	54	22	4177.5
10/13/1975	1975	10	13	135	40	68	54	22	4199.5
10/14/1975	1975	10	14	136	29	56	42.5	10.5	4210
10/15/1975	1975	10	15	137	25	52	38.5	6.5	4216.5
10/16/1975	1975	10	16	138	30	66	48	16	4232.5
10/17/1975	1975	10	17	139	35	66	50.5	18.5	4251
10/18/1975	1975	10	18	140	37	69	53	21	4272
10/19/1975	1975	10	19	141	40	68	54	22	4294
10/20/1975	1975	10	20	142	40	68	54	22	4316
10/21/1975	1975	10	21	143	35	66	50.5	18.5	4334.5
10/22/1975	1975	10	22	144	34	62	48	16	4350.5
10/23/1975	1975	10	23	145	35	61	48	16	4366.5
10/24/1975	1975	10	24	146	15	44	29.5	-2.5	4364
10/25/1975	1975	10	25	147	17	60	38.5	6.5	4370.5
10/26/1975	1975	10	26	148	28	59	43.5	11.5	4382
10/27/1975	1975	10	27	149	29	60	44.5	12.5	4394.5
10/28/1975	1975	10	28	150	34	65	60.5	28.5	4423
10/29/1975	1975	10	29	151	33	69	51	19	4442
10/30/1975	1975	10	30	152	41	68	54.5	22.5	4464.5
10/31/1975	1975	10	31	153	40	61	50.5	18.5	4483
11/1/1975	1975	11	1	154	30	53	41.5	9.5	4492.5
11/2/1975	1975	11	2	155	32	58	45	13	4505.5
11/3/1975	1975	11	3	156	30	61	45.5	13.5	4519
11/4/1975	1975	11	4	157	34	60	47	15	4534
11/5/1975	1975	11	5	158	30	69	49.5	17.5	4551.5
11/6/1975	1975	11	6	159	32	64	48	16	4567.5
11/7/1975	1975	11	7	160	31	67	49	17	4584.5
11/8/1975	1975	11	8	161	33	65	49	17	4601.5
11/9/1975	1975	11	9	162	32	60	46	14	4615.5
11/10/1975	1975	11	10	163	23	64	43.5	11.5	4627
11/11/1975	1975	11	11	164	27	58	42.5	10.5	4637.5
11/12/1975	1975	11	12	165	19	53	36	4	4641.5
11/13/1975	1975	11	13	166	18	58	38	6	4647.5
11/14/1975	1975	11	14	167	17	69	43	11	4658.5
11/15/1975	1975	11	15	168	19	68	43.5	11.5	4670
11/16/1975	1975	11	16	169	15	71	43	11	4681
11/17/1975	1975	11	17	170	10	67	38.5	6.5	4687.5
11/18/1975	1975	11	18	171	11	58	34.5	2.5	4690
11/19/1975	1975	11	19	172	20	44	32	0	4690
11/20/1975	1975	11	20	173	10	45	27.5	-4.5	4685.5
11/21/1975	1975	11	21	174	9	45	27	-5	4680.5
11/22/1975	1975	11	22	175	10	45	27.5	-4.5	4676
11/23/1975	1975	11	23	176	12	56	34	2	4678
11/24/1975	1975	11	24	177	19	54	36.5	4.5	4682.5
11/25/1975	1975	11	25	178	18	47	32.5	0.5	4683
11/26/1975	1975	11	26	179	4	44	24	-8	4675
11/27/1975	1975	11	27	180	10	56	33	1	4676
11/28/1975	1975	11	28	181	29	55	42	10	4686
11/29/1975	1975	11	29	182	10	37	23.5	-8.5	4677.5
11/30/1975	1975	11	30	183	1	36	18.5	-13.5	4664
12/1/1975	1975	12	1	184	8	44	26	-6	4658

12/2/1975	1975	12	2	185	10	46	28	-4	4654
12/3/1975	1975	12	3	186	19	39	29	-3	4651
12/4/1975	1975	12	4	187	18	40	29	-3	4648
12/5/1975	1975	12	5	188	17	45	31	-1	4647
12/6/1975	1975	12	6	189	20	46	33	1	4648
12/7/1975	1975	12	7	190	19	50	34.5	2.5	4650.5
12/8/1975	1975	12	8	191	20	50	35	3	4653.5
12/9/1975	1975	12	9	192	19	56	37.5	5.5	4659
12/10/1975	1975	12	10	193	27	46	36.5	4.5	4663.5
12/11/1975	1975	12	11	194	23	50	36.5	4.5	4668
12/12/1975	1975	12	12	195	24	52	38	6	4674
12/13/1975	1975	12	13	196	6	44	25	-7	4667
12/14/1975	1975	12	14	197	6	25	15.5	-16.5	4650.5
12/15/1975	1975	12	15	198	8	39	23.5	-8.5	4642
12/16/1975	1975	12	16	199	12	49	30.5	-1.5	4640.5
12/17/1975	1975	12	17	200	17	45	31	-1	4639.5
12/18/1975	1975	12	18	201	16	46	31	-1	4638.5
12/19/1975	1975	12	19	202	18	51	34.5	2.5	4641
12/20/1975	1975	12	20	203	18	40	29	-3	4638
12/21/1975	1975	12	21	204	17	37	27	-5	4633
12/22/1975	1975	12	22	205	18	36	27	-5	4628
12/23/1975	1975	12	23	206	7	32	19.5	-12.5	4615.5
12/24/1975	1975	12	24	207	8	31	19.5	-12.5	4603
12/25/1975	1975	12	25	208	6	30	18	-14	4589
12/26/1975	1975	12	26	209	11	39	25	-7	4582
12/27/1975	1975	12	27	210	10	40	25	-7	4575
12/28/1975	1975	12	28	211	14	36	25	-7	4568
12/29/1975	1975	12	29	212	8	26	17	-15	4553
12/30/1975	1975	12	30	213	10	30	20	-12	4541
12/31/1975	1975	12	31	214	11	36	23.5	-8.5	4532.5
1/1/1976	1976	1	1	215	0	23	11.5	-20.5	4512
1/2/1976	1976	1	2	216	0	20	10	-22	4490
1/3/1976	1976	1	3	217	5	30	17.5	-14.5	4475.5
1/4/1976	1976	1	4	218	-10	33	11.5	-20.5	4455
1/5/1976	1976	1	5	219	-5	39	17	-15	4440
1/6/1976	1976	1	6	220	5	39	22	-10	4430
1/7/1976	1976	1	7	221	6	40	23	-9	4421
1/8/1976	1976	1	8	222	10	34	22	-10	4411
1/9/1976	1976	1	9	223	17	44	30.5	-1.5	4409.5
1/10/1976	1976	1	10	224	27	43	35	3	4412.5
1/11/1976	1976	1	11	225	13	39	26	-6	4406.5
1/12/1976	1976	1	12	226	18	40	29	-3	4403.5
1/13/1976	1976	1	13	227	17	40	28.5	-3.5	4400
1/14/1976	1976	1	14	228	16	40	28	-4	4396
1/15/1976	1976	1	15	229	21	41	31	-1	4395
1/16/1976	1976	1	16	230	22	40	31	-1	4394
1/17/1976	1976	1	17	231	20	42	31	-1	4393
1/18/1976	1976	1	18	232	26	48	37	5	4398
1/19/1976	1976	1	19	233	25	47	36	4	4402
1/20/1976	1976	1	20	234	13	43	28	-4	4398
1/21/1976	1976	1	21	235	14	49	31.5	-0.5	4397.5
1/22/1976	1976	1	22	236	21	48	34.5	2.5	4400
1/23/1976	1976	1	23	237	26	49	37.5	5.5	4405.5
1/24/1976	1976	1	24	238	25	44	34.5	2.5	4408
1/25/1976	1976	1	25	239	24	43	33.5	1.5	4409.5
1/26/1976	1976	1	26	240	0	32	16	-16	4393.5
1/27/1976	1976	1	27	241	6	36	21	-11	4382.5
1/28/1976	1976	1	28	242	10	35	22.5	-9.5	4373
1/29/1976	1976	1	29	243	15	40	27.5	-4.5	4368.5
1/30/1976	1976	1	30	244	17	44	30.5	-1.5	4367
1/31/1976	1976	1	31	245	20	48	34	2	4369
2/1/1976	1976	2	1	246	19	57	38	6	4375
2/2/1976	1976	2	2	247	24	51	37.5	5.5	4380.5
2/3/1976	1976	2	3	248	26	52	39	7	4387.5
2/4/1976	1976	2	4	249	32	46	39	7	4394.5
2/5/1976	1976	2	5	250	36	49	42.5	10.5	4405
2/6/1976	1976	2	6	251	35	44	39.5	7.5	4412.5
2/7/1976	1976	2	7	252	26	50	38	6	4418.5
2/8/1976	1976	2	8	253	29	59	44	12	4430.5
2/9/1976	1976	2	9	254	20	56	38	6	4436.5
2/10/1976	1976	2	10	255	23	52	37.5	5.5	4442
2/11/1976	1976	2	11	256	26	48	37	5	4447
2/12/1976	1976	2	12	257	30	57	43.5	11.5	4458.5
2/13/1976	1976	2	13	258	30	59	44.5	12.5	4471
2/14/1976	1976	2	14	259	30	42	36	4	4475
2/15/1976	1976	2	15	260	29	41	35	3	4478
2/16/1976	1976	2	16	261	20	40	30	-2	4476
2/17/1976	1976	2	17	262	20	41	30.5	-1.5	4474.5
2/18/1976	1976	2	18	263	21	39	30	-2	4472.5
2/19/1976	1976	2	19	264	24	50	37	5	4477.5
2/20/1976	1976	2	20	265	17	50	33.5	1.5	4479
2/21/1976	1976	2	21	266	25	37	31	-1	4478
2/22/1976	1976	2	22	267	12	39	25.5	-6.5	4471.5
2/23/1976	1976	2	23	268	19	42	30.5	-1.5	4470
2/24/1976	1976	2	24	269	19	49	34	2	4472
2/25/1976	1976	2	25	270	22	50	36	4	4476
2/26/1976	1976	2	26	271	20	56	38	6	4482
2/27/1976	1976	2	27	272	19	56	37.5	5.5	4487.5
2/28/1976	1976	2	28	273	27	64	45.5	13.5	4501
2/29/1976	1976	2	29	274	30	55	42.5	10.5	4511.5
3/1/1976	1976	3	1	275	29	60	44.5	12.5	4524
3/2/1976	1976	3	2	276	30	50	40	8	4532
3/3/1976	1976	3	3	277	25	55	40	8	4540

3/4/1976	1976	3	4	278	0	46	23	-9	4531
3/5/1976	1976	3	5	279	1	45	23	-9	4522
3/6/1976	1976	3	6	280	0	40	20	-12	4510
3/7/1976	1976	3	7	281	3	39	21	-11	4499
3/8/1976	1976	3	8	282	4	35	19.5	-12.5	4486.5
3/9/1976	1976	3	9	283	4	32	18	-14	4472.5
3/10/1976	1976	3	10	284	9	36	22.5	-9.5	4463
3/11/1976	1976	3	11	285	10	40	25	-7	4456
3/12/1976	1976	3	12	286	26	49	37.5	5.5	4461.5
3/13/1976	1976	3	13	287	29	45	37	5	4466.5
3/14/1976	1976	3	14	288	27	44	35.5	3.5	4470
3/15/1976	1976	3	15	289	13	38	25.5	-6.5	4463.5
3/16/1976	1976	3	16	290	12	39	25.5	-6.5	4457
3/17/1976	1976	3	17	291	22	40	31	-1	4456
3/18/1976	1976	3	18	292	23	45	34	2	4458
3/19/1976	1976	3	19	293	29	46	37.5	5.5	4463.5
3/20/1976	1976	3	20	294	30	49	39.5	7.5	4471
3/21/1976	1976	3	21	295	12	50	31	-1	4470
3/22/1976	1976	3	22	296	15	50	32.5	0.5	4470.5
3/23/1976	1976	3	23	297	20	50	35	3	4473.5
3/24/1976	1976	3	24	298	23	54	38.5	6.5	4480
3/25/1976	1976	3	25	299	37	50	43.5	11.5	4491.5
3/26/1976	1976	3	26	300	32	56	44	12	4503.5
3/27/1976	1976	3	27	301	25	59	42	10	4513.5
3/28/1976	1976	3	28	302	20	56	38	6	4519.5
3/29/1976	1976	3	29	303	19	36	27.5	-4.5	4515
3/30/1976	1976	3	30	304	15	40	27.5	-4.5	4510.5
3/31/1976	1976	3	31	305	23	45	34	2	4512.5
4/1/1976	1976	4	1	306	29	66	47.5	15.5	4528
4/2/1976	1976	4	2	307	39	65	52	20	4548
4/3/1976	1976	4	3	308	34	61	47.5	15.5	4563.5
4/4/1976	1976	4	4	309	20	58	39	7	4570.5
4/5/1976	1976	4	5	310	20	50	35	3	4573.5
4/6/1976	1976	4	6	311	19	51	35	3	4576.5
4/7/1976	1976	4	7	312	18	56	37	5	4581.5
4/8/1976	1976	4	8	313	17	48	32.5	0.5	4582
4/9/1976	1976	4	9	314	30	50	40	8	4590
4/10/1976	1976	4	10	315	32	59	45.5	13.5	4603.5
4/11/1976	1976	4	11	316	35	59	47	15	4618.5
4/12/1976	1976	4	12	317	34	60	47	15	4633.5
4/13/1976	1976	4	13	318	38	69	53.5	21.5	4655
4/14/1976	1976	4	14	319	43	66	54.5	22.5	4677.5
4/15/1976	1976	4	15	320	40	60	50	18	4695.5
4/16/1976	1976	4	16	321	39	57	48	16	4711.5
4/17/1976	1976	4	17	322	30	59	44.5	12.5	4724
4/18/1976	1976	4	18	323	20	45	32.5	0.5	4724.5
4/19/1976	1976	4	19	324	20	40	30	-2	4722.5
4/20/1976	1976	4	20	325	19	42	30.5	-1.5	4721
4/21/1976	1976	4	21	326	18	49	33.5	1.5	4722.5
4/22/1976	1976	4	22	327	27	60	43.5	11.5	4734
4/23/1976	1976	4	23	328	41	69	55	23	4757
4/24/1976	1976	4	24	329	42	67	54.5	22.5	4779.5
4/25/1976	1976	4	25	330	38	69	53.5	21.5	4801
4/26/1976	1976	4	26	331	33	70	51.5	19.5	4820.5
4/27/1976	1976	4	27	332	41	69	55	23	4843.5
4/28/1976	1976	4	28	333	39	69	54	22	4865.5
4/29/1976	1976	4	29	334	36	69	52.5	20.5	4886
4/30/1976	1976	4	30	335	42	68	55	23	4909
5/1/1976	1976	5	1	336	26	69	47.5	15.5	4924.5
5/2/1976	1976	5	2	337	35	70	52.5	20.5	4945
5/3/1976	1976	5	3	338	42	72	57	25	4970
5/4/1976	1976	5	4	339	41	64	52.5	20.5	4990.5
5/5/1976	1976	5	5	340	40	66	53	21	5011.5
5/6/1976	1976	5	6	341	30	65	47.5	15.5	5027
5/7/1976	1976	5	7	342	39	64	51.5	19.5	5046.5
5/8/1976	1976	5	8	343	30	51	40.5	8.5	5055
5/9/1976	1976	5	9	344	31	68	49.5	17.5	5072.5
5/10/1976	1976	5	10	345	32	69	50.5	18.5	5091
5/11/1976	1976	5	11	346	30	68	49	17	5108
5/12/1976	1976	5	12	347	40	70	55	23	5131
5/13/1976	1976	5	13	348	39	74	56.5	24.5	5155.5
5/14/1976	1976	5	14	349	42	79	60.5	28.5	5184
5/15/1976	1976	5	15	350	48	80	64	32	5216
5/16/1976	1976	5	16	351	44	80	62	30	5246
5/17/1976	1976	5	17	352	40	79	59.5	27.5	5273.5
5/18/1976	1976	5	18	353	45	79	62	30	5303.5
5/19/1976	1976	5	19	354	42	74	58	26	5329.5
5/20/1976	1976	5	20	355	43	70	56.5	24.5	5354
5/21/1976	1976	5	21	356	42	70	56	24	5378
5/22/1976	1976	5	22	357	44	69	56.5	24.5	5402.5
5/23/1976	1976	5	23	358	42	70	56	24	5426.5
5/24/1976	1976	5	24	359	47	75	61	29	5455.5
5/25/1976	1976	5	25	360	42	74	58	26	5481.5
5/26/1976	1976	5	26	361	40	72	56	24	5505.5
5/27/1976	1976	5	27	362	42	70	56	24	5529.5
5/28/1976	1976	5	28	363	42	70	56	24	5553.5
5/29/1976	1976	5	29	364	51	79	65	33	5586.5
5/30/1976	1976	5	30	365	49	80	64.5	32.5	5619
5/31/1976	1976	5	31	366	47	76	61.5	29.5	5648.5
6/1/1976	1976	6	1	1	42	84	63	31	31
6/2/1976	1976	6	2	2	51	84	67.5	35.5	66.5
6/3/1976	1976	6	3	3	53	84	68.5	36.5	103
6/4/1976	1976	6	4	4	50	85	67.5	35.5	138.5

6/5/1976	1976	6	5	5	48	85	66.5	34.5	173
6/6/1976	1976	6	6	6	48	76	62	30	203
6/7/1976	1976	6	7	7	53	82	67.5	35.5	238.5
6/8/1976	1976	6	8	8	44	83	63.5	31.5	270
6/9/1976	1976	6	9	9	49	82	65.5	33.5	303.5
6/10/1976	1976	6	10	10	48	82	65	33	336.5
6/11/1976	1976	6	11	11	51	83	67	35	371.5
6/12/1976	1976	6	12	12	43	80	61.5	29.5	401
6/13/1976	1976	6	13	13	40	80	60	28	429
6/14/1976	1976	6	14	14	45	81	63	31	460
6/15/1976	1976	6	15	15	45	74	59.5	27.5	487.5
6/16/1976	1976	6	16	16	44	75	59.5	27.5	515
6/17/1976	1976	6	17	17	40	80	60	28	543
6/18/1976	1976	6	18	18	56	81	68.5	36.5	579.5
6/19/1976	1976	6	19	19	49	84	66.5	34.5	614
6/20/1976	1976	6	20	20	48	87	67.5	35.5	649.5
6/21/1976	1976	6	21	21	54	89	71.5	39.5	689
6/22/1976	1976	6	22	22	59	84	71.5	39.5	728.5
6/23/1976	1976	6	23	23	41	78	59.5	27.5	756
6/24/1976	1976	6	24	24	45	79	62	30	786
6/25/1976	1976	6	25	25	49	79	64	32	818
6/26/1976	1976	6	26	26	50	79	64.5	32.5	850.5
6/27/1976	1976	6	27	27	52	89	70.5	38.5	889
6/28/1976	1976	6	28	28	53	90	71.5	39.5	928.5
6/29/1976	1976	6	29	29	56	89	72.5	40.5	969
6/30/1976	1976	6	30	30	61	84	72.5	40.5	1009.5
7/1/1976	1976	7	1	31	55	84	69.5	37.5	1047
7/2/1976	1976	7	2	32	57	86	71.5	39.5	1086.5
7/3/1976	1976	7	3	33	55	90	72.5	40.5	1127
7/4/1976	1976	7	4	34	58	90	74	42	1169
7/5/1976	1976	7	5	35	53	91	72	40	1209
7/6/1976	1976	7	6	36	56	88	72	40	1249
7/7/1976	1976	7	7	37	55	89	72	40	1289
7/8/1976	1976	7	8	38	56	91	73.5	41.5	1330.5
7/9/1976	1976	7	9	39	57	90	73.5	41.5	1372
7/10/1976	1976	7	10	40	58	90	74	42	1414
7/11/1976	1976	7	11	41	57	90	73.5	41.5	1455.5
7/12/1976	1976	7	12	42	52	85	68.5	36.5	1492
7/13/1976	1976	7	13	43	55	85	70	38	1530
7/14/1976	1976	7	14	44	52	85	68.5	36.5	1566.5
7/15/1976	1976	7	15	45	53	86	69.5	37.5	1604
7/16/1976	1976	7	16	46	56	86	71	39	1643
7/17/1976	1976	7	17	47	56	82	69	37	1680
7/18/1976	1976	7	18	48	57	83	70	38	1718
7/19/1976	1976	7	19	49	56	84	70	38	1756
7/20/1976	1976	7	20	50	57	80	68.5	36.5	1792.5
7/21/1976	1976	7	21	51	50	79	64.5	32.5	1825
7/22/1976	1976	7	22	52	52	80	66	34	1859
7/23/1976	1976	7	23	53	56	72	64	32	1891
7/24/1976	1976	7	24	54	51	81	66	34	1925
7/25/1976	1976	7	25	55	52	76	64	32	1957
7/26/1976	1976	7	26	56	52	78	65	33	1990
7/27/1976	1976	7	27	57	51	81	66	34	2024
7/28/1976	1976	7	28	58	50	76	63	31	2055
7/29/1976	1976	7	29	59	52	77	64.5	32.5	2087.5
7/30/1976	1976	7	30	60	54	86	70	38	2125.5
7/31/1976	1976	7	31	61	53.5	70	61.75	29.75	2155.25
8/1/1976	1976	8	1	62	53	66	59.5	27.5	2182.75
8/2/1976	1976	8	2	63	49	80	64.5	32.5	2215.25
8/3/1976	1976	8	3	64	50	76	63	31	2246.25
8/4/1976	1976	8	4	65	46	68	57	25	2271.25
8/5/1976	1976	8	5	66	48	81	64.5	32.5	2303.75
8/6/1976	1976	8	6	67	49	82	65.5	33.5	2337.25
8/7/1976	1976	8	7	68	58	85	71.5	39.5	2376.75
8/8/1976	1976	8	8	69	50	72	61	29	2405.75
8/9/1976	1976	8	9	70	51	73	62	30	2435.75
8/10/1976	1976	8	10	71	52	80	66	34	2469.75
8/11/1976	1976	8	11	72	50	82	66	34	2503.75
8/12/1976	1976	8	12	73	54	85	69.5	37.5	2541.25
8/13/1976	1976	8	13	74	55	87	71	39	2580.25
8/14/1976	1976	8	14	75	52	83	67.5	35.5	2615.75
8/15/1976	1976	8	15	76	53	82	67.5	35.5	2651.25
8/16/1976	1976	8	16	77	49	83	66	34	2685.25
8/17/1976	1976	8	17	78	60	79	69.5	37.5	2722.75
8/18/1976	1976	8	18	79	52	69	60.5	28.5	2751.25
8/19/1976	1976	8	19	80	53	70	61.5	29.5	2780.75
8/20/1976	1976	8	20	81	52	74	63	31	2811.75
8/21/1976	1976	8	21	82	51	83	67	35	2846.75
8/22/1976	1976	8	22	83	54	82	68	36	2882.75
8/23/1976	1976	8	23	84	52	81	66.5	34.5	2917.25
8/24/1976	1976	8	24	85	50	79	64.5	32.5	2949.75
8/25/1976	1976	8	25	86	49	81	65	33	2982.75
8/26/1976	1976	8	26	87	54	83	68.5	36.5	3019.25
8/27/1976	1976	8	27	88	53	78	65.5	33.5	3052.75
8/28/1976	1976	8	28	89	51	77	64	32	3084.75
8/29/1976	1976	8	29	90	47	79	63	31	3115.75
8/30/1976	1976	8	30	91	47	79	63	31	3146.75
8/31/1976	1976	8	31	92	50	80	65	33	3179.75
9/1/1976	1976	9	1	93	49	78	63.5	31.5	3211.25
9/2/1976	1976	9	2	94	45	75	60	28	3239.25
9/3/1976	1976	9	3	95	48	84	66	34	3273.25
9/4/1976	1976	9	4	96	54	83	68.5	36.5	3309.75
9/5/1976	1976	9	5	97	52	81	66.5	34.5	3344.25

9/6/1976	1976	9	6	98	55	73	64	32	3376.25
9/7/1976	1976	9	7	99	51	74	62.5	30.5	3406.75
9/8/1976	1976	9	8	100	52	76	64	32	3438.75
9/9/1976	1976	9	9	101	53	74	63.5	31.5	3470.25
9/10/1976	1976	9	10	102	49	67	58	26	3496.25
9/11/1976	1976	9	11	103	42	69	55.5	23.5	3519.75
9/12/1976	1976	9	12	104	46	75	60.5	28.5	3548.25
9/13/1976	1976	9	13	105	47	79	63	31	3579.25
9/14/1976	1976	9	14	106	52	78	65	33	3612.25
9/15/1976	1976	9	15	107	50	77	63.5	31.5	3643.75
9/16/1976	1976	9	16	108	49	76	62.5	30.5	3674.25
9/17/1976	1976	9	17	109	48	75	61.5	29.5	3703.75
9/18/1976	1976	9	18	110	49	70	59.5	27.5	3731.25
9/19/1976	1976	9	19	111	48	71	59.5	27.5	3758.75
9/20/1976	1976	9	20	112	45	70	57.5	25.5	3784.25
9/21/1976	1976	9	21	113	46	76	61	29	3813.25
9/22/1976	1976	9	22	114	44	67	55.5	23.5	3836.75
9/23/1976	1976	9	23	115	43	72	57.5	25.5	3862.25
9/24/1976	1976	9	24	116	48	67	57.5	25.5	3887.75
9/25/1976	1976	9	25	117	46	65	55.5	23.5	3911.25
9/26/1976	1976	9	26	118	45	64	54.5	22.5	3933.75
9/27/1976	1976	9	27	119	42	61	51.5	19.5	3953.25
9/28/1976	1976	9	28	120	35	65	50	18	3971.25
9/29/1976	1976	9	29	121	40	70	55	23	3994.25
9/30/1976	1976	9	30	122	41	74	57.5	25.5	4019.75
10/1/1976	1976	10	1	123	45	69	57	25	4044.75
10/2/1976	1976	10	2	124	51	65	58	26	4070.75
10/3/1976	1976	10	3	125	43	64	53.5	21.5	4092.25
10/4/1976	1976	10	4	126	36	66	51	19	4111.25
10/5/1976	1976	10	5	127	38	67	52.5	20.5	4131.75
10/6/1976	1976	10	6	128	30	64	47	15	4146.75
10/7/1976	1976	10	7	129	28	66	47	15	4161.75
10/8/1976	1976	10	8	130	34	69	51.5	19.5	4181.25
10/9/1976	1976	10	9	131	39	75	57	25	4206.25
10/10/1976	1976	10	10	132	36	74	55	23	4229.25
10/11/1976	1976	10	11	133	39	69	54	22	4251.25
10/12/1976	1976	10	12	134	37	67	52	20	4271.25
10/13/1976	1976	10	13	135	35	68	51.5	19.5	4290.75
10/14/1976	1976	10	14	136	36	67	51.5	19.5	4310.25
10/15/1976	1976	10	15	137	38	61	49.5	17.5	4327.75
10/16/1976	1976	10	16	138	25	50	37.5	5.5	4333.25
10/17/1976	1976	10	17	139	24	52	38	6	4339.25
10/18/1976	1976	10	18	140	23	59	41	9	4348.25
10/19/1976	1976	10	19	141	26	60	43	11	4359.25
10/20/1976	1976	10	20	142	30	58	44	12	4371.25
10/21/1976	1976	10	21	143	30	60	45	13	4384.25
10/22/1976	1976	10	22	144	34	59	46.5	14.5	4398.75
10/23/1976	1976	10	23	145	36	55	45.5	13.5	4412.25
10/24/1976	1976	10	24	146	29	57	43	11	4423.25
10/25/1976	1976	10	25	147	28	55	41.5	9.5	4432.75
10/26/1976	1976	10	26	148	24	41	32.5	0.5	4433.25
10/27/1976	1976	10	27	149	27	39	72.5	40.5	4473.75
10/28/1976	1976	10	28	150	22	49	35.5	3.5	4477.25
10/29/1976	1976	10	29	151	28	58	43	11	4488.25
10/30/1976	1976	10	30	152	28	56	42	10	4498.25
10/31/1976	1976	10	31	153	27	52	39.5	7.5	4505.75
11/1/1976	1976	11	1	154	23	59	41	9	4514.75
11/2/1976	1976	11	2	155	29	56	42.5	10.5	4525.25
11/3/1976	1976	11	3	156	30	60	45	13	4538.25
11/4/1976	1976	11	4	157	29	60	44.5	12.5	4550.75
11/5/1976	1976	11	5	158	31	62	46.5	14.5	4565.25
11/6/1976	1976	11	6	159	30	64	47	15	4580.25
11/7/1976	1976	11	7	160	29	66	47.5	15.5	4595.75
11/8/1976	1976	11	8	161	30	60	45	13	4608.75
11/9/1976	1976	11	9	162	25	65	45	13	4621.75
11/10/1976	1976	11	10	163	32	63	47.5	15.5	4637.25
11/11/1976	1976	11	11	164	30	57	43.5	11.5	4648.75
11/12/1976	1976	11	12	165	25	48	36.5	4.5	4653.25
11/13/1976	1976	11	13	166	25	44	34.5	2.5	4655.75
11/14/1976	1976	11	14	167	20	48	34	2	4657.75
11/15/1976	1976	11	15	168	20	40	30	-2	4655.75
11/16/1976	1976	11	16	169	11	40	25.5	-6.5	4649.25
11/17/1976	1976	11	17	170	22	52	37	5	4654.25
11/18/1976	1976	11	18	171	19	51	35	3	4657.25
11/19/1976	1976	11	19	172	26	57	41.5	9.5	4666.75
11/20/1976	1976	11	20	173	27	56	41.5	9.5	4676.25
11/21/1976	1976	11	21	174	31	59	45	13	4689.25
11/22/1976	1976	11	22	175	28	56	42	10	4699.25
11/23/1976	1976	11	23	176	26	49	37.5	5.5	4704.75
11/24/1976	1976	11	24	177	28	50	39	7	4711.75
11/25/1976	1976	11	25	178	25	50	37.5	5.5	4717.25
11/26/1976	1976	11	26	179	29	48	38.5	6.5	4723.75
11/27/1976	1976	11	27	180	-9	32	11.5	-20.5	4703.25
11/28/1976	1976	11	28	181	-10	32	11	-21	4682.25
11/29/1976	1976	11	29	182	-9	30	10.5	-21.5	4660.75
11/30/1976	1976	11	30	183	7	32	19.5	-12.5	4648.25
12/1/1976	1976	12	1	184	9	34	21.5	-10.5	4637.75
12/2/1976	1976	12	2	185	8	35	21.5	-10.5	4627.25
12/3/1976	1976	12	3	186	12	39	25.5	-6.5	4620.75
12/4/1976	1976	12	4	187	0	38	19	-13	4607.75
12/5/1976	1976	12	5	188	-2	19	8.5	-23.5	4584.25
12/6/1976	1976	12	6	189	10	22	16	-16	4568.25
12/7/1976	1976	12	7	190	12	30	21	-11	4557.25

12/8/1976	1976	12	8	191	12	36	24	-8	4549.25
12/9/1976	1976	12	9	192	23	40	31.5	-0.5	4548.75
12/10/1976	1976	12	10	193	9	40	24.5	-7.5	4541.25
12/11/1976	1976	12	11	194	8	32	20	-12	4529.25
12/12/1976	1976	12	12	195	8	39	23.5	-8.5	4520.75
12/13/1976	1976	12	13	196	9	38	23.5	-8.5	4512.25
12/14/1976	1976	12	14	197	10	35	22.5	-9.5	4502.75
12/15/1976	1976	12	15	198	13	36	24.5	-7.5	4495.25
12/16/1976	1976	12	16	199	12	39	25.5	-6.5	4488.75
12/17/1976	1976	12	17	200	16	35	25.5	-6.5	4482.25
12/18/1976	1976	12	18	201	17	37	27	-5	4477.25
12/19/1976	1976	12	19	202	10	39	24.5	-7.5	4469.75
12/20/1976	1976	12	20	203	11	34	22.5	-9.5	4460.25
12/21/1976	1976	12	21	204	12	39	25.5	-6.5	4453.75
12/22/1976	1976	12	22	205	12	40	26	-6	4447.75
12/23/1976	1976	12	23	206	11	34	22.5	-9.5	4438.25
12/24/1976	1976	12	24	207	10	37	23.5	-8.5	4429.75
12/25/1976	1976	12	25	208	10	36	23	-9	4420.75
12/26/1976	1976	12	26	209	11	35	23	-9	4411.75
12/27/1976	1976	12	27	210	8	32	20	-12	4399.75
12/28/1976	1976	12	28	211	9	33	21	-11	4388.75
12/29/1976	1976	12	29	212	10	30	20	-12	4376.75
12/30/1976	1976	12	30	213	11	32	21.5	-10.5	4366.25
12/31/1976	1976	12	31	214	11	32	21.5	-10.5	4355.75
1/1/1977	1977	1	1	215	11	30	20.5	-11.5	4344.25
1/2/1977	1977	1	2	216	10	39	24.5	-7.5	4336.75
1/3/1977	1977	1	3	217	11	36	23.5	-8.5	4328.25
1/4/1977	1977	1	4	218	11	30	20.5	-11.5	4316.75
1/5/1977	1977	1	5	219	10	36	23	-9	4307.75
1/6/1977	1977	1	6	220	10	36	23	-9	4298.75
1/7/1977	1977	1	7	221	-1	25	12	-20	4278.75
1/8/1977	1977	1	8	222	5	25	15	-17	4261.75
1/9/1977	1977	1	9	223	9	30	19.5	-12.5	4249.25
1/10/1977	1977	1	10	224	-10	29	9.5	-22.5	4226.75
1/11/1977	1977	1	11	225	-4	34	15	-17	4209.75
1/12/1977	1977	1	12	226	-9	39	15	-17	4192.75
1/13/1977	1977	1	13	227	-10	35	12.5	-19.5	4173.25
1/14/1977	1977	1	14	228	-10	32	11	-21	4152.25
1/15/1977	1977	1	15	229	-10	32	11	-21	4131.25
1/16/1977	1977	1	16	230	-11	39	14	-18	4113.25
1/17/1977	1977	1	17	231	12	40	26	-6	4107.25
1/18/1977	1977	1	18	232	12	39	25.5	-6.5	4100.75
1/19/1977	1977	1	19	233	13	39	26	-6	4094.75
1/20/1977	1977	1	20	234	12	38	25	-7	4087.75
1/21/1977	1977	1	21	235	22	40	31	-1	4086.75
1/22/1977	1977	1	22	236	20	39	29.5	-2.5	4084.25
1/23/1977	1977	1	23	237	25	37	31	-1	4083.25
1/24/1977	1977	1	24	238	25	39	32	0	4083.25
1/25/1977	1977	1	25	239	12	36	24	-8	4075.25
1/26/1977	1977	1	26	240	15	38	26.5	-5.5	4069.75
1/27/1977	1977	1	27	241	19	37	28	-4	4065.75
1/28/1977	1977	1	28	242	17	40	28.5	-3.5	4062.25
1/29/1977	1977	1	29	243	13	40	26.5	-5.5	4056.75
1/30/1977	1977	1	30	244	13	39	26	-6	4050.75
1/31/1977	1977	1	31	245	18	40	29	-3	4047.75
2/1/1977	1977	2	1	246	21	48	34.5	2.5	4050.25
2/2/1977	1977	2	2	247	20	39	29.5	-2.5	4047.75
2/3/1977	1977	2	3	248	17	37	27	-5	4042.75
2/4/1977	1977	2	4	249	15	35	25	-7	4035.75
2/5/1977	1977	2	5	250	14	32	23	-9	4026.75
2/6/1977	1977	2	6	251	13	30	21.5	-10.5	4016.25
2/7/1977	1977	2	7	252	12	32	22	-10	4006.25
2/8/1977	1977	2	8	253	15	37	26	-6	4000.25
2/9/1977	1977	2	9	254	14	35	24.5	-7.5	3992.75
2/10/1977	1977	2	10	255	19	40	29.5	-2.5	3990.25
2/11/1977	1977	2	11	256	20	40	30	-2	3988.25
2/12/1977	1977	2	12	257	21	44	32.5	0.5	3988.75
2/13/1977	1977	2	13	258	20	49	34.5	2.5	3991.25
2/14/1977	1977	2	14	259	20	49	34.5	2.5	3993.75
2/15/1977	1977	2	15	260	20	49	34.5	2.5	3996.25
2/16/1977	1977	2	16	261	28	50	39	7	4003.25
2/17/1977	1977	2	17	262	29	54	41.5	9.5	4012.75
2/18/1977	1977	2	18	263	29	59	44	12	4024.75
2/19/1977	1977	2	19	264	27	58	42.5	10.5	4035.25
2/20/1977	1977	2	20	265	28	60	44	12	4047.25
2/21/1977	1977	2	21	266	27	61	44	12	4059.25
2/22/1977	1977	2	22	267	11	59	35	3	4062.25
2/23/1977	1977	2	23	268	10	30	20	-12	4050.25
2/24/1977	1977	2	24	269	8	29	18.5	-13.5	4036.75
2/25/1977	1977	2	25	270	12	30	21	-11	4025.75
2/26/1977	1977	2	26	271	10	29	19.5	-12.5	4013.25
2/27/1977	1977	2	27	272	12	39	25.5	-6.5	4006.75
2/28/1977	1977	2	28	273	10	40	25	-7	3999.75
3/1/1977	1977	3	1	274	20	45	32.5	0.5	4000.25
3/2/1977	1977	3	2	275	10	40	25	-7	3993.25
3/3/1977	1977	3	3	276	12	36	24	-8	3985.25
3/4/1977	1977	3	4	277	15	34	24.5	-7.5	3977.75
3/5/1977	1977	3	5	278	18	32	25	-7	3970.75
3/6/1977	1977	3	6	279	12	40	26	-6	3964.75
3/7/1977	1977	3	7	280	15	39	27	-5	3959.75
3/8/1977	1977	3	8	281	18	40	29	-3	3956.75
3/9/1977	1977	3	9	282	19	42	30.5	-1.5	3955.25
3/10/1977	1977	3	10	283	20	40	30	-2	3953.25

3/11/1977	1977	3	11	284	10	39	24.5	-7.5	3945.75
3/12/1977	1977	3	12	285	16	49	32.5	0.5	3946.25
3/13/1977	1977	3	13	286	19	32	25.5	-6.5	3939.75
3/14/1977	1977	3	14	287	19	42	30.5	-1.5	3938.25
3/15/1977	1977	3	15	288	20	42	31	-1	3937.25
3/16/1977	1977	3	16	289	20	45	32.5	0.5	3937.75
3/17/1977	1977	3	17	290	28	49	38.5	6.5	3944.25
3/18/1977	1977	3	18	291	20	46	33	1	3945.25
3/19/1977	1977	3	19	292	19	42	30.5	-1.5	3943.75
3/20/1977	1977	3	20	293	19	48	33.5	1.5	3945.25
3/21/1977	1977	3	21	294	18	46	32	0	3945.25
3/22/1977	1977	3	22	295	20	54	37	5	3950.25
3/23/1977	1977	3	23	296	32	52	42	10	3960.25
3/24/1977	1977	3	24	297	30	49	39.5	7.5	3967.75
3/25/1977	1977	3	25	298	32	50	41	9	3976.75
3/26/1977	1977	3	26	299	28	51	39.5	7.5	3984.25
3/27/1977	1977	3	27	300	32	40	36	4	3988.25
3/28/1977	1977	3	28	301	27	50	38.5	6.5	3994.75
3/29/1977	1977	3	29	302	20	37	28.5	-3.5	3991.25
3/30/1977	1977	3	30	303	16	31	23.5	-8.5	3982.75
3/31/1977	1977	3	31	304	15	30	22.5	-9.5	3973.25
4/1/1977	1977	4	1	305	26	40	33	1	3974.25
4/2/1977	1977	4	2	306	25	42	33.5	1.5	3975.75
4/3/1977	1977	4	3	307	26	43	34.5	2.5	3978.25
4/4/1977	1977	4	4	308	21		21	-11	3967.25
4/5/1977	1977	4	5	309	24		24	-8	3959.25
4/6/1977	1977	4	6	310	25		25	-7	3952.25
4/7/1977	1977	4	7	311	31		31	-1	3951.25
4/8/1977	1977	4	8	312	35		35	3	3954.25
4/9/1977	1977	4	9	313	36		36	4	3958.25
4/10/1977	1977	4	10	314	39	74	56.5	24.5	3982.75
4/11/1977	1977	4	11	315	31	74	52.5	20.5	4003.25
4/12/1977	1977	4	12	316	30	65	47.5	15.5	4018.75
4/13/1977	1977	4	13	317	33	69	51	19	4037.75
4/14/1977	1977	4	14	318	31	67	49	17	4054.75
4/15/1977	1977	4	15	319	35	69	52	20	4074.75
4/16/1977	1977	4	16	320	36	66	31.25	-0.75	4074
4/17/1977	1977	4	17	321	35	62	48.5	16.5	4090.5
4/18/1977	1977	4	18	322	30	55	42.5	10.5	4101
4/19/1977	1977	4	19	323	31	54	42.5	10.5	4111.5
4/20/1977	1977	4	20	324	32	69	50.5	18.5	4130
4/21/1977	1977	4	21	325	41	68	54.5	22.5	4152.5
4/22/1977	1977	4	22	326	30	64	47	15	4167.5
4/23/1977	1977	4	23	327	33	72	52.5	20.5	4188
4/24/1977	1977	4	24	328	41	70	55.5	23.5	4211.5
4/25/1977	1977	4	25	329	36	69	52.5	20.5	4232
4/26/1977	1977	4	26	330	37	73	55	23	4255
4/27/1977	1977	4	27	331	42	74	58	26	4281
4/28/1977	1977	4	28	332	45	72	58.5	26.5	4307.5
4/29/1977	1977	4	29	333	40	73	56.5	24.5	4332
4/30/1977	1977	4	30	334	40	76	58	26	4358
5/1/1977	1977	5	1	335	49	74	61.5	29.5	4387.5
5/2/1977	1977	5	2	336	40	76	58	26	4413.5
5/3/1977	1977	5	3	337	42	75	58.5	26.5	4440
5/4/1977	1977	5	4	338	42	69	55.5	23.5	4463.5
5/5/1977	1977	5	5	339	43	69	56	24	4487.5
5/6/1977	1977	5	6	340	38	70	54	22	4509.5
5/7/1977	1977	5	7	341	39	73	56	24	4533.5
5/8/1977	1977	5	8	342	38	72	55	23	4556.5
5/9/1977	1977	5	9	343	41	74	57.5	25.5	4582
5/10/1977	1977	5	10	344	48	76	62	30	4612
5/11/1977	1977	5	11	345	49	68	58.5	26.5	4638.5
5/12/1977	1977	5	12	346	35	67	51	19	4657.5
5/13/1977	1977	5	13	347	36	72	54	22	4679.5
5/14/1977	1977	5	14	348	43	68	55.5	23.5	4703
5/15/1977	1977	5	15	349	40	64	52	20	4723
5/16/1977	1977	5	16	350	32	60	46	14	4737
5/17/1977	1977	5	17	351	37	67	52	20	4757
5/18/1977	1977	5	18	352	38	70	54	22	4779
5/19/1977	1977	5	19	353	45	70	57.5	25.5	4804.5
5/20/1977	1977	5	20	354	31	75	53	21	4825.5
5/21/1977	1977	5	21	355	36	63	49.5	17.5	4843
5/22/1977	1977	5	22	356	32	69	50.5	18.5	4861.5
5/23/1977	1977	5	23	357	39	70	54.5	22.5	4884
5/24/1977	1977	5	24	358	40	69	54.5	22.5	4906.5
5/25/1977	1977	5	25	359	46	70	58	26	4932.5
5/26/1977	1977	5	26	360	43	70	56.5	24.5	4957
5/27/1977	1977	5	27	361	38	66	52	20	4977
5/28/1977	1977	5	28	362	39	71	55	23	5000
5/29/1977	1977	5	29	363	38	69	53.5	21.5	5021.5
5/30/1977	1977	5	30	364	37	69	53	21	5042.5
5/31/1977	1977	5	31	365	41	74	57.5	25.5	5068
6/1/1977	1977	6	1	1	52	86	69	37	37
6/2/1977	1977	6	2	2	54	83	68.5	36.5	73.5
6/3/1977	1977	6	3	3	56	77	66.5	34.5	108
6/4/1977	1977	6	4	4	48	79	63.5	31.5	139.5
6/5/1977	1977	6	5	5	57	78	67.5	35.5	175
6/6/1977	1977	6	6	6	55	81	68	36	211
6/7/1977	1977	6	7	7	51	80	65.5	33.5	244.5
6/8/1977	1977	6	8	8	50	80	65	33	277.5
6/9/1977	1977	6	9	9	52	81	66.5	34.5	312
6/10/1977	1977	6	10	10	49	82	65.5	33.5	345.5
6/11/1977	1977	6	11	11	51	81	66	34	379.5

6/12/1977	1977	6	12	12	48	84	66	34	413.5
6/13/1977	1977	6	13	13	51	88	69.5	37.5	451
6/14/1977	1977	6	14	14	51	90	70.5	38.5	489.5
6/15/1977	1977	6	15	15	55	89	72	40	529.5
6/16/1977	1977	6	16	16	53	90	71.5	39.5	569
6/17/1977	1977	6	17	17	51	91	71	39	608
6/18/1977	1977	6	18	18	55	88	71.5	39.5	647.5
6/19/1977	1977	6	19	19	57	85	71	39	686.5
6/20/1977	1977	6	20	20	58	87	72.5	40.5	727
6/21/1977	1977	6	21	21	51	81	66	34	761
6/22/1977	1977	6	22	22	54	78	66	34	795
6/23/1977	1977	6	23	23	48	75	61.5	29.5	824.5
6/24/1977	1977	6	24	24	51	74	62.5	30.5	855
6/25/1977	1977	6	25	25	49	81	65	33	888
6/26/1977	1977	6	26	26	52	88	70	38	926
6/27/1977	1977	6	27	27	55	87	71	39	965
6/28/1977	1977	6	28	28	57	91	74	42	1007
6/29/1977	1977	6	29	29	56	88	72	40	1047
6/30/1977	1977	6	30	30	53	91	72	40	1087
7/1/1977	1977	7	1	31	56	88	72	40	1127
7/2/1977	1977	7	2	32	61	90	75.5	43.5	1170.5
7/3/1977	1977	7	3	33	62	91	76.5	44.5	1215
7/4/1977	1977	7	4	34	50	96	73	41	1256
7/5/1977	1977	7	5	35	53	90	71.5	39.5	1295.5
7/6/1977	1977	7	6	36	52	83	67.5	35.5	1331
7/7/1977	1977	7	7	37	55	86	70.5	38.5	1369.5
7/8/1977	1977	7	8	38	56	87	71.5	39.5	1409
7/9/1977	1977	7	9	39	62	85	73.5	41.5	1450.5
7/10/1977	1977	7	10	40	59	86	72.5	40.5	1491
7/11/1977	1977	7	11	41	58	73	65.5	33.5	1524.5
7/12/1977	1977	7	12	42	56	82	69	37	1561.5
7/13/1977	1977	7	13	43	54	80	67	35	1596.5
7/14/1977	1977	7	14	44	57	71	64	32	1628.5
7/15/1977	1977	7	15	45	54	78	66	34	1662.5
7/16/1977	1977	7	16	46	57	80	68.5	36.5	1699
7/17/1977	1977	7	17	47	55	81	68	36	1735
7/18/1977	1977	7	18	48	56	84	70	38	1773
7/19/1977	1977	7	19	49	55	81	68	36	1809
7/20/1977	1977	7	20	50	53	76	64.5	32.5	1841.5
7/21/1977	1977	7	21	51	54	78	66	34	1875.5
7/22/1977	1977	7	22	52	55	80	67.5	35.5	1911
7/23/1977	1977	7	23	53	53	79	66	34	1945
7/24/1977	1977	7	24	54	59	71	65	33	1978
7/25/1977	1977	7	25	55	53	77	65	33	2011
7/26/1977	1977	7	26	56	52	79	65.5	33.5	2044.5
7/27/1977	1977	7	27	57	53	85	69	37	2081.5
7/28/1977	1977	7	28	58	51	83	67	35	2116.5
7/29/1977	1977	7	29	59	55	88	71.5	39.5	2156
7/30/1977	1977	7	30	60	56	88	72	40	2196
7/31/1977	1977	7	31	61	57	90	73.5	41.5	2237.5
8/1/1977	1977	8	1	62	55	90	72.5	40.5	2278
8/2/1977	1977	8	2	63	55	90	72.5	40.5	2318.5
8/3/1977	1977	8	3	64	56	93	74.5	42.5	2361
8/4/1977	1977	8	4	65	60	88	74	42	2403
8/5/1977	1977	8	5	66	59	86	72.5	40.5	2443.5
8/6/1977	1977	8	6	67	58	89	73.5	41.5	2485
8/7/1977	1977	8	7	68	57	88	72.5	40.5	2525.5
8/8/1977	1977	8	8	69	55	86	70.5	38.5	2564
8/9/1977	1977	8	9	70	59	85	72	40	2604
8/10/1977	1977	8	10	71	58	80	69	37	2641
8/11/1977	1977	8	11	72	54	79	66.5	34.5	2675.5
8/12/1977	1977	8	12	73	55	67	61	29	2704.5
8/13/1977	1977	8	13	74	51	75	63	31	2735.5
8/14/1977	1977	8	14	75	59	78	68.5	36.5	2772
8/15/1977	1977	8	15	76	59	70	64.5	32.5	2804.5
8/16/1977	1977	8	16	77	56	70	63	31	2835.5
8/17/1977	1977	8	17	78	59	72	65.5	33.5	2869
8/18/1977	1977	8	18	79	55	70	62.5	30.5	2899.5
8/19/1977	1977	8	19	80	58	78	68	36	2935.5
8/20/1977	1977	8	20	81	53	72	62.5	30.5	2966
8/21/1977	1977	8	21	82	54	79	66.5	34.5	3000.5
8/22/1977	1977	8	22	83	53	79	66	34	3034.5
8/23/1977	1977	8	23	84	54	83	68.5	36.5	3071
8/24/1977	1977	8	24	85	55	84	69.5	37.5	3108.5
8/25/1977	1977	8	25	86	56	81	68.5	36.5	3145
8/26/1977	1977	8	26	87	57	82	69.5	37.5	3182.5
8/27/1977	1977	8	27	88	58	80	69	37	3219.5
8/28/1977	1977	8	28	89	49	78	63.5	31.5	3251
8/29/1977	1977	8	29	90	48	80	64	32	3283
8/30/1977	1977	8	30	91	55	81	68	36	3319
8/31/1977	1977	8	31	92	55	80	67.5	35.5	3354.5
9/1/1977	1977	9	1	93	51	76	63.5	31.5	3386
9/2/1977	1977	9	2	94	57	73	65	33	3419
9/3/1977	1977	9	3	95	52	76	64	32	3451
9/4/1977	1977	9	4	96	55	75	65	33	3484
9/5/1977	1977	9	5	97	54	78	66	34	3518
9/6/1977	1977	9	6	98	51	79	65	33	3551
9/7/1977	1977	9	7	99	53	80	66.5	34.5	3585.5
9/8/1977	1977	9	8	100	54	81	67.5	35.5	3621
9/9/1977	1977	9	9	101	53	82	67.5	35.5	3656.5
9/10/1977	1977	9	10	102	54	79	66.5	34.5	3691
9/11/1977	1977	9	11	103	52	79	65.5	33.5	3724.5
9/12/1977	1977	9	12	104	51	69	60	28	3752.5

9/13/1977	1977	9	13	105	46	70	58	26	3778.5
9/14/1977	1977	9	14	106	42	72	57	25	3803.5
9/15/1977	1977	9	15	107	50	73	61.5	29.5	3833
9/16/1977	1977	9	16	108	46	74	60	28	3861
9/17/1977	1977	9	17	109	51	70	60.5	28.5	3889.5
9/18/1977	1977	9	18	110	41	76	58.5	26.5	3916
9/19/1977	1977	9	19	111	46	78	62	30	3946
9/20/1977	1977	9	20	112	51	76	63.5	31.5	3977.5
9/21/1977	1977	9	21	113	43	75	59	27	4004.5
9/22/1977	1977	9	22	114	46	72	59	27	4031.5
9/23/1977	1977	9	23	115	52	69	60.5	28.5	4060
9/24/1977	1977	9	24	116	45	69	57	25	4085
9/25/1977	1977	9	25	117	46	67	56.5	24.5	4109.5
9/26/1977	1977	9	26	118	47	75	61	29	4138.5
9/27/1977	1977	9	27	119	51	72	61.5	29.5	4168
9/28/1977	1977	9	28	120	52	70	61	29	4197
9/29/1977	1977	9	29	121	46	75	60.5	28.5	4225.5
9/30/1977	1977	9	30	122	54	73	63.5	31.5	4257
10/1/1977	1977	10	1	123	40	68	54	22	4279
10/2/1977	1977	10	2	124	41	69	55	23	4302
10/3/1977	1977	10	3	125	52	72	62	30	4332
10/4/1977	1977	10	4	126	46	70	58	26	4358
10/5/1977	1977	10	5	127	49	74	61.5	29.5	4387.5
10/6/1977	1977	10	6	128	49	71	60	28	4415.5
10/7/1977	1977	10	7	129	49	68	58.5	26.5	4442
10/8/1977	1977	10	8	130	40	66	53	21	4463
10/9/1977	1977	10	9	131	41	65	53	21	4484
10/10/1977	1977	10	10	132	40	64	52	20	4504
10/11/1977	1977	10	11	133	32	64	48	16	4520
10/12/1977	1977	10	12	134	32	60	46	14	4534
10/13/1977	1977	10	13	135	35	66	50.5	18.5	4552.5
10/14/1977	1977	10	14	136	39	67	53	21	4573.5
10/15/1977	1977	10	15	137	38	68	53	21	4594.5
10/16/1977	1977	10	16	138	37	69	53	21	4615.5
10/17/1977	1977	10	17	139	48	68	58	26	4641.5
10/18/1977	1977	10	18	140	40	69	54.5	22.5	4664
10/19/1977	1977	10	19	141	39	70	54.5	22.5	4686.5
10/20/1977	1977	10	20	142	42	67	54.5	22.5	4709
10/21/1977	1977	10	21	143	36	65	50.5	18.5	4727.5
10/22/1977	1977	10	22	144	32	59	45.5	13.5	4741
10/23/1977	1977	10	23	145	36	46	41	9	4750
10/24/1977	1977	10	24	146	34	62	48	16	4766
10/25/1977	1977	10	25	147	36	65	50.5	18.5	4784.5
10/26/1977	1977	10	26	148	37	67	52	20	4804.5
10/27/1977	1977	10	27	149	39	65	52	20	4824.5
10/28/1977	1977	10	28	150	40	63	51.5	19.5	4844
10/29/1977	1977	10	29	151	41	62	51.5	19.5	4863.5
10/30/1977	1977	10	30	152	39	59	49	17	4880.5
10/31/1977	1977	10	31	153	32	56	44	12	4892.5
11/1/1977	1977	11	1	154	21	53	37	5	4897.5
11/2/1977	1977	11	2	155	21	53	37	5	4902.5
11/3/1977	1977	11	3	156	23	52	37.5	5.5	4908
11/4/1977	1977	11	4	157	24	53	38.5	6.5	4914.5
11/5/1977	1977	11	5	158	25	52	38.5	6.5	4921
11/6/1977	1977	11	6	159	26	52	39	7	4928
11/7/1977	1977	11	7	160	28	40	34	2	4930
11/8/1977	1977	11	8	161	28	49	38.5	6.5	4936.5
11/9/1977	1977	11	9	162	20	48	34	2	4938.5
11/10/1977	1977	11	10	163	11	48	29.5	-2.5	4936
11/11/1977	1977	11	11	164	21	48	34.5	2.5	4938.5
11/12/1977	1977	11	12	165	24	53	38.5	6.5	4945
11/13/1977	1977	11	13	166	28	54	41	9	4954
11/14/1977	1977	11	14	167	30	56	43	11	4965
11/15/1977	1977	11	15	168	31	57	44	12	4977
11/16/1977	1977	11	16	169	28	52	40	8	4985
11/17/1977	1977	11	17	170	30	56	43	11	4996
11/18/1977	1977	11	18	171	33	52	42.5	10.5	5006.5
11/19/1977	1977	11	19	172	34	52	43	11	5017.5
11/20/1977	1977	11	20	173	39	49	44	12	5029.5
11/21/1977	1977	11	21	174	35	47	41	9	5038.5
11/22/1977	1977	11	22	175	25	50	37.5	5.5	5044
11/23/1977	1977	11	23	176	28	54	41	9	5053
11/24/1977	1977	11	24	177	29	51	40	8	5061
11/25/1977	1977	11	25	178	25	52	38.5	6.5	5067.5
11/26/1977	1977	11	26	179	31	58	44.5	12.5	5080
11/27/1977	1977	11	27	180	29	51	40	8	5088
11/28/1977	1977	11	28	181	31	41	36	4	5092
11/29/1977	1977	11	29	182	28	39	33.5	1.5	5093.5
11/30/1977	1977	11	30	183	19	40	29.5	-2.5	5091
12/1/1977	1977	12	1	184	17	39	28	-4	5087
12/2/1977	1977	12	2	185	25	49	37	5	5092
12/3/1977	1977	12	3	186	26	50	38	6	5098
12/4/1977	1977	12	4	187	30	54	42	10	5108
12/5/1977	1977	12	5	188	31	55	43	11	5119
12/6/1977	1977	12	6	189	26	50	38	6	5125
12/7/1977	1977	12	7	190	27	52	39.5	7.5	5132.5
12/8/1977	1977	12	8	191	32	52	42	10	5142.5
12/9/1977	1977	12	9	192	31	56	43.5	11.5	5154
12/10/1977	1977	12	10	193	27	57	42	10	5164
12/11/1977	1977	12	11	194	32	59	45.5	13.5	5177.5
12/12/1977	1977	12	12	195	33	58	45.5	13.5	5191
12/13/1977	1977	12	13	196	29	57	43	11	5202
12/14/1977	1977	12	14	197	21	49	35	3	5205

12/15/1977	1977	12	15	198	25	50	37.5	5.5	5210.5
12/16/1977	1977	12	16	199	27	55	41	9	5219.5
12/17/1977	1977	12	17	200	19	50	34.5	2.5	5222
12/18/1977	1977	12	18	201	16	45	30.5	-1.5	5220.5
12/19/1977	1977	12	19	202	17	42	29.5	-2.5	5218
12/20/1977	1977	12	20	203	19	45	32	0	5218
12/21/1977	1977	12	21	204	8	38	23	-9	5209
12/22/1977	1977	12	22	205	7	36	21.5	-10.5	5198.5
12/23/1977	1977	12	23	206	5	40	22.5	-9.5	5189
12/24/1977	1977	12	24	207	5	39	22	-10	5179
12/25/1977	1977	12	25	208	10	38	24	-8	5171
12/26/1977	1977	12	26	209	12	38	25	-7	5164
12/27/1977	1977	12	27	210	30	38	34	2	5166
12/28/1977	1977	12	28	211	32	39	35.5	3.5	5169.5
12/29/1977	1977	12	29	212	32	40	36	4	5173.5
12/30/1977	1977	12	30	213	30	40	35	3	5176.5
12/31/1977	1977	12	31	214	30	40	35	3	5179.5
1/1/1978	1978	1	1	215	30	39	34.5	2.5	5182
1/2/1978	1978	1	2	216	19	40	29.5	-2.5	5179.5
1/3/1978	1978	1	3	217	21	46	33.5	1.5	5181
1/4/1978	1978	1	4	218	20	40	30	-2	5179
1/5/1978	1978	1	5	219	28	44	36	4	5183
1/6/1978	1978	1	6	220	27	42	34.5	2.5	5185.5
1/7/1978	1978	1	7	221	20	40	30	-2	5183.5
1/8/1978	1978	1	8	222	21	40	30.5	-1.5	5182
1/9/1978	1978	1	9	223	22	45	33.5	1.5	5183.5
1/10/1978	1978	1	10	224	29	46	37.5	5.5	5189
1/11/1978	1978	1	11	225	22	40	31	-1	5188
1/12/1978	1978	1	12	226	25	41	33	1	5189
1/13/1978	1978	1	13	227	20	37	28.5	-3.5	5185.5
1/14/1978	1978	1	14	228	21	34	27.5	-4.5	5181
1/15/1978	1978	1	15	229	26	39	32.5	0.5	5181.5
1/16/1978	1978	1	16	230	20	39	29.5	-2.5	5179
1/17/1978	1978	1	17	231	29	37	33	1	5180
1/18/1978	1978	1	18	232	28	35	31.5	-0.5	5179.5
1/19/1978	1978	1	19	233	20	34	27	-5	5174.5
1/20/1978	1978	1	20	234	14	34	24	-8	5166.5
1/21/1978	1978	1	21	235	14	32	23	-9	5157.5
1/22/1978	1978	1	22	236	13	36	24.5	-7.5	5150
1/23/1978	1978	1	23	237	16	37	26.5	-5.5	5144.5
1/24/1978	1978	1	24	238	8	35	21.5	-10.5	5134
1/25/1978	1978	1	25	239	6	36	21	-11	5123
1/26/1978	1978	1	26	240	10	42	26	-6	5117
1/27/1978	1978	1	27	241	12	43	27.5	-4.5	5112.5
1/28/1978	1978	1	28	242	19	39	29	-3	5109.5
1/29/1978	1978	1	29	243	20	40	30	-2	5107.5
1/30/1978	1978	1	30	244	20	42	31	-1	5106.5
1/31/1978	1978	1	31	245	23	40	31.5	-0.5	5106
2/1/1978	1978	2	1	246	29	40	34.5	2.5	5108.5
2/2/1978	1978	2	2	247	21	44	32.5	0.5	5109
2/3/1978	1978	2	3	248	22	44	33	1	5110
2/4/1978	1978	2	4	249	19	42	30.5	-1.5	5108.5
2/5/1978	1978	2	5	250	26	45	35.5	3.5	5112
2/6/1978	1978	2	6	251	27	43	35	3	5115
2/7/1978	1978	2	7	252	31	42	36.5	4.5	5119.5
2/8/1978	1978	2	8	253	30	45	37.5	5.5	5125
2/9/1978	1978	2	9	254	21	42	31.5	-0.5	5124.5
2/10/1978	1978	2	10	255	30	49	39.5	7.5	5132
2/11/1978	1978	2	11	256	9	38	23.5	-8.5	5123.5
2/12/1978	1978	2	12	257	10	30	20	-12	5111.5
2/13/1978	1978	2	13	258	10	27	18.5	-13.5	5098
2/14/1978	1978	2	14	259	11	25	18	-14	5084
2/15/1978	1978	2	15	260	13	39	26	-6	5078
2/16/1978	1978	2	16	261	19	32	25.5	-6.5	5071.5
2/17/1978	1978	2	17	262	11	32	21.5	-10.5	5061
2/18/1978	1978	2	18	263	-6	30	12	-20	5041
2/19/1978	1978	2	19	264	6	32	19	-13	5028
2/20/1978	1978	2	20	265	12	39	25.5	-6.5	5021.5
2/21/1978	1978	2	21	266	21	40	30.5	-1.5	5020
2/22/1978	1978	2	22	267	21	46	33.5	1.5	5021.5
2/23/1978	1978	2	23	268	22	49	35.5	3.5	5025
2/24/1978	1978	2	24	269	25	50	37.5	5.5	5030.5
2/25/1978	1978	2	25	270	26	51	38.5	6.5	5037
2/26/1978	1978	2	26	271	22	50	36	4	5041
2/27/1978	1978	2	27	272	26	49	37.5	5.5	5046.5
2/28/1978	1978	2	28	273	30	40	35	3	5049.5
3/1/1978	1978	3	1	274	30	45	37.5	5.5	5055
3/2/1978	1978	3	2	275	32	45	38.5	6.5	5061.5
3/3/1978	1978	3	3	276	33	44	38.5	6.5	5068
3/4/1978	1978	3	4	277	29	49	39	7	5075
3/5/1978	1978	3	5	278	28	48	38	6	5081
3/6/1978	1978	3	6	279	37	45	41	9	5090
3/7/1978	1978	3	7	280	28	47	37.5	5.5	5095.5
3/8/1978	1978	3	8	281	27	48	37.5	5.5	5101
3/9/1978	1978	3	9	282	29	50	39.5	7.5	5108.5
3/10/1978	1978	3	10	283	30	50	40	8	5116.5
3/11/1978	1978	3	11	284	29	48	38.5	6.5	5123
3/12/1978	1978	3	12	285	28	47	37.5	5.5	5128.5
3/13/1978	1978	3	13	286	25	45	35	3	5131.5
3/14/1978	1978	3	14	287	26	46	36	4	5135.5
3/15/1978	1978	3	15	288	19	44	31.5	-0.5	5135
3/16/1978	1978	3	16	289	20	49	34.5	2.5	5137.5
3/17/1978	1978	3	17	290	28	49	38.5	6.5	5144

3/18/1978	1978	3	18	291	31	50	40.5	8.5	5152.5
3/19/1978	1978	3	19	292	39	66	52.5	20.5	5173
3/20/1978	1978	3	20	293	35	61	48	16	5189
3/21/1978	1978	3	21	294	32	65	48.5	16.5	5205.5
3/22/1978	1978	3	22	295	37	60	48.5	16.5	5222
3/23/1978	1978	3	23	296	34	56	45	13	5235
3/24/1978	1978	3	24	297	33	59	46	14	5249
3/25/1978	1978	3	25	298	29	60	44.5	12.5	5261.5
3/26/1978	1978	3	26	299	36	60	48	16	5277.5
3/27/1978	1978	3	27	300	35	65	50	18	5295.5
3/28/1978	1978	3	28	301	34	69	51.5	19.5	5315
3/29/1978	1978	3	29	302	39	66	52.5	20.5	5335.5
3/30/1978	1978	3	30	303	34	67	50.5	18.5	5354
3/31/1978	1978	3	31	304	36	69	52.5	20.5	5374.5
4/1/1978	1978	4	1	305	28	65	46.5	14.5	5389
4/2/1978	1978	4	2	306	27	59	43	11	5400
4/3/1978	1978	4	3	307	26	58	42	10	5410
4/4/1978	1978	4	4	308	27	57	42	10	5420
4/5/1978	1978	4	5	309	29	58	43.5	11.5	5431.5
4/6/1978	1978	4	6	310	29	60	44.5	12.5	5444
4/7/1978	1978	4	7	311	27	69	48	16	5460
4/8/1978	1978	4	8	312	29	69	49	17	5477
4/9/1978	1978	4	9	313	33	70	51.5	19.5	5496.5
4/10/1978	1978	4	10	314	21	59	40	8	5504.5
4/11/1978	1978	4	11	315	29	57	43	11	5515.5
4/12/1978	1978	4	12	316	29	68	48.5	16.5	5532
4/13/1978	1978	4	13	317	37	69	53	21	5553
4/14/1978	1978	4	14	318	58	66	62	30	5583
4/15/1978	1978	4	15	319	41	64	52.5	20.5	5603.5
4/16/1978	1978	4	16	320	33	66	49.5	17.5	5621
4/17/1978	1978	4	17	321	47	65	56	24	5645
4/18/1978	1978	4	18	322	29	59	44	12	5657
4/19/1978	1978	4	19	323	23	60	41.5	9.5	5666.5
4/20/1978	1978	4	20	324	30	66	48	16	5682.5
4/21/1978	1978	4	21	325	34	65	49.5	17.5	5700
4/22/1978	1978	4	22	326	37	64	50.5	18.5	5718.5
4/23/1978	1978	4	23	327	25	60	42.5	10.5	5729
4/24/1978	1978	4	24	328	30	69	49.5	17.5	5746.5
4/25/1978	1978	4	25	329	38	75	56.5	24.5	5771
4/26/1978	1978	4	26	330	44	74	59	27	5798
4/27/1978	1978	4	27	331	43	76	59.5	27.5	5825.5
4/28/1978	1978	4	28	332	41	74	57.5	25.5	5851
4/29/1978	1978	4	29	333	37	62	49.5	17.5	5868.5
4/30/1978	1978	4	30	334	36	65	50.5	18.5	5887
5/1/1978	1978	5	1	335	37	65	51	19	5906
5/2/1978	1978	5	2	336	38	67	52.5	20.5	5926.5
5/3/1978	1978	5	3	337	22	65	43.5	11.5	5938
5/4/1978	1978	5	4	338	38	62	50	18	5956
5/5/1978	1978	5	5	339	36	59	47.5	15.5	5971.5
5/6/1978	1978	5	6	340	33	60	46.5	14.5	5986
5/7/1978	1978	5	7	341	27	40	33.5	1.5	5987.5
5/8/1978	1978	5	8	342	30	53	41.5	9.5	5997
5/9/1978	1978	5	9	343	29	50	39.5	7.5	6004.5
5/10/1978	1978	5	10	344	35	58	46.5	14.5	6019
5/11/1978	1978	5	11	345	35	59	47	15	6034
5/12/1978	1978	5	12	346	41	61	51	19	6053
5/13/1978	1978	5	13	347	41	69	55	23	6076
5/14/1978	1978	5	14	348	43	70	56.5	24.5	6100.5
5/15/1978	1978	5	15	349	46	72	59	27	6127.5
5/16/1978	1978	5	16	350	40	79	59.5	27.5	6155
5/17/1978	1978	5	17	351	41	80	60.5	28.5	6183.5
5/18/1978	1978	5	18	352	51	81	66	34	6217.5
5/19/1978	1978	5	19	353	44	79	61.5	29.5	6247
5/20/1978	1978	5	20	354	34	77	55.5	23.5	6270.5
5/21/1978	1978	5	21	355	33	69	51	19	6289.5
5/22/1978	1978	5	22	356	43	70	56.5	24.5	6314
5/23/1978	1978	5	23	357	42	73	57.5	25.5	6339.5
5/24/1978	1978	5	24	358	37	70	53.5	21.5	6361
5/25/1978	1978	5	25	359	42	70	56	24	6385
5/26/1978	1978	5	26	360	47	71	59	27	6412
5/27/1978	1978	5	27	361	43	75	59	27	6439
5/28/1978	1978	5	28	362	40	74	57	25	6464
5/29/1978	1978	5	29	363	42	73	57.5	25.5	6489.5
5/30/1978	1978	5	30	364	41	74	57.5	25.5	6515
5/31/1978	1978	5	31	365	42	75	58.5	26.5	6541.5
6/1/1978	1978	6	1	1	48	80	64	32	32
6/2/1978	1978	6	2	2	44	79	61.5	29.5	61.5
6/3/1978	1978	6	3	3	45	80	62.5	30.5	92
6/4/1978	1978	6	4	4	46	81	63.5	31.5	123.5
6/5/1978	1978	6	5	5	47	80	63.5	31.5	155
6/6/1978	1978	6	6	6	41	77	59	27	182
6/7/1978	1978	6	7	7	44	79	61.5	29.5	211.5
6/8/1978	1978	6	8	8	48	80	64	32	243.5
6/9/1978	1978	6	9	9	47	82	64.5	32.5	276
6/10/1978	1978	6	10	10	46	80	63	31	307
6/11/1978	1978	6	11	11	45	80	62.5	30.5	337.5
6/12/1978	1978	6	12	12	49	78	63.5	31.5	369
6/13/1978	1978	6	13	13	50	80	65	33	402
6/14/1978	1978	6	14	14	55	83	69	37	439
6/15/1978	1978	6	15	15	56	86	71	39	478
6/16/1978	1978	6	16	16	51	85	68	36	514
6/17/1978	1978	6	17	17	52	85	68.5	36.5	550.5
6/18/1978	1978	6	18	18	60	80	70	38	588.5

6/19/1978	1978	6	19	19	58	87	72.5	40.5	629
6/20/1978	1978	6	20	20	54	85	69.5	37.5	666.5
6/21/1978	1978	6	21	21	53	87	70	38	704.5
6/22/1978	1978	6	22	22	56	86	71	39	743.5
6/23/1978	1978	6	23	23	59	87	73	41	784.5
6/24/1978	1978	6	24	24	58	90	74	42	826.5
6/25/1978	1978	6	25	25	59	90	74.5	42.5	869
6/26/1978	1978	6	26	26	68	89	78.5	46.5	915.5
6/27/1978	1978	6	27	27	55	86	70.5	38.5	954
6/28/1978	1978	6	28	28	54	84	69	37	991
6/29/1978	1978	6	29	29	53	77	65	33	1024
6/30/1978	1978	6	30	30	54	80	67	35	1059
7/1/1978	1978	7	1	31	52	83	67.5	35.5	1094.5
7/2/1978	1978	7	2	32	53	90	71.5	39.5	1134
7/3/1978	1978	7	3	33	54	89	71.5	39.5	1173.5
7/4/1978	1978	7	4	34	55	83	69	37	1210.5
7/5/1978	1978	7	5	35	54	80	67	35	1245.5
7/6/1978	1978	7	6	36	52	87	69.5	37.5	1283
7/7/1978	1978	7	7	37	52	84	68	36	1319
7/8/1978	1978	7	8	38	55	90	72.5	40.5	1359.5
7/9/1978	1978	7	9	39	54	87	70.5	38.5	1398
7/10/1978	1978	7	10	40	60	86	73	41	1439
7/11/1978	1978	7	11	41	55	83	69	37	1476
7/12/1978	1978	7	12	42	54	84	69	37	1513
7/13/1978	1978	7	13	43	57	85	71	39	1552
7/14/1978	1978	7	14	44	59	87	73	41	1593
7/15/1978	1978	7	15	45	54	88	71	39	1632
7/16/1978	1978	7	16	46	59	90	74.5	42.5	1674.5
7/17/1978	1978	7	17	47	64	90	77	45	1719.5
7/18/1978	1978	7	18	48	57	88	72.5	40.5	1760
7/19/1978	1978	7	19	49	56	78	67	35	1795
7/20/1978	1978	7	20	50	56	88	72	40	1835
7/21/1978	1978	7	21	51	58	87	72.5	40.5	1875.5
7/22/1978	1978	7	22	52	56	89	72.5	40.5	1916
7/23/1978	1978	7	23	53	55	80	67.5	35.5	1951.5
7/24/1978	1978	7	24	54	54	81	67.5	35.5	1987
7/25/1978	1978	7	25	55	56	89	72.5	40.5	2027.5
7/26/1978	1978	7	26	56	57	88	72.5	40.5	2068
7/27/1978	1978	7	27	57	57	86	71.5	39.5	2107.5
7/28/1978	1978	7	28	58	60	89	74.5	42.5	2150
7/29/1978	1978	7	29	59	56	89	72.5	40.5	2190.5
7/30/1978	1978	7	30	60	59	85	72	40	2230.5
7/31/1978	1978	7	31	61	61	85	73	41	2271.5
8/1/1978	1978	8	1	62	56	88	72	40	2311.5
8/2/1978	1978	8	2	63	55	81	68	36	2347.5
8/3/1978	1978	8	3	64	56	81	68.5	36.5	2384
8/4/1978	1978	8	4	65	53	83	68	36	2420
8/5/1978	1978	8	5	66	47	75	61	29	2449
8/6/1978	1978	8	6	67	50	79	64.5	32.5	2481.5
8/7/1978	1978	8	7	68	55	80	67.5	35.5	2517
8/8/1978	1978	8	8	69	52	81	66.5	34.5	2551.5
8/9/1978	1978	8	9	70	50	82	66	34	2585.5
8/10/1978	1978	8	10	71	54	84	69	37	2622.5
8/11/1978	1978	8	11	72	53	85	69	37	2659.5
8/12/1978	1978	8	12	73	52	79	65.5	33.5	2693
8/13/1978	1978	8	13	74	54	76	65	33	2726
8/14/1978	1978	8	14	75	53	70	61.5	29.5	2755.5
8/15/1978	1978	8	15	76	49	79	64	32	2787.5
8/16/1978	1978	8	16	77	48	79	63.5	31.5	2819
8/17/1978	1978	8	17	78	55	79	67	35	2854
8/18/1978	1978	8	18	79	56	79	67.5	35.5	2889.5
8/19/1978	1978	8	19	80	54	80	67	35	2924.5
8/20/1978	1978	8	20	81	54	76	65	33	2957.5
8/21/1978	1978	8	21	82	53	75	64	32	2989.5
8/22/1978	1978	8	22	83	49	78	63.5	31.5	3021
8/23/1978	1978	8	23	84	49	76	62.5	30.5	3051.5
8/24/1978	1978	8	24	85	52	79	65.5	33.5	3085
8/25/1978	1978	8	25	86	49	78	63.5	31.5	3116.5
8/26/1978	1978	8	26	87	54	80	67	35	3151.5
8/27/1978	1978	8	27	88	52	81	66.5	34.5	3186
8/28/1978	1978	8	28	89	49	82	65.5	33.5	3219.5
8/29/1978	1978	8	29	90	57	82	69.5	37.5	3257
8/30/1978	1978	8	30	91	44	79	61.5	29.5	3286.5
8/31/1978	1978	8	31	92	56	79	67.5	35.5	3322
9/1/1978	1978	9	1	93	51	76	63.5	31.5	3353.5
9/2/1978	1978	9	2	94	53	79	66	34	3387.5
9/3/1978	1978	9	3	95	48	78	63	31	3418.5
9/4/1978	1978	9	4	96	50	80	65	33	3451.5
9/5/1978	1978	9	5	97	55	80	67.5	35.5	3487
9/6/1978	1978	9	6	98	53	77	65	33	3520
9/7/1978	1978	9	7	99	50	75	62.5	30.5	3550.5
9/8/1978	1978	9	8	100	49	77	63	31	3581.5
9/9/1978	1978	9	9	101	48	78	63	31	3612.5
9/10/1978	1978	9	10	102	55	79	67	35	3647.5
9/11/1978	1978	9	11	103	54	79	66.5	34.5	3682
9/12/1978	1978	9	12	104	52	76	64	32	3714
9/13/1978	1978	9	13	105	49	72	60.5	28.5	3742.5
9/14/1978	1978	9	14	106	45	70	57.5	25.5	3768
9/15/1978	1978	9	15	107	48	71	59.5	27.5	3795.5
9/16/1978	1978	9	16	108	47	71	59	27	3822.5
9/17/1978	1978	9	17	109	43	72	57.5	25.5	3848
9/18/1978	1978	9	18	110	47	74	60.5	28.5	3876.5
9/19/1978	1978	9	19	111	43	72	57.5	25.5	3902

9/20/1978	1978	9	20	112	34	69	51.5	19.5	3921.5
9/21/1978	1978	9	21	113	33	66	49.5	17.5	3939
9/22/1978	1978	9	22	114	39	68	53.5	21.5	3960.5
9/23/1978	1978	9	23	115	43	66	54.5	22.5	3983
9/24/1978	1978	9	24	116	49	63	56	24	4007
9/25/1978	1978	9	25	117	47	61	54	22	4029
9/26/1978	1978	9	26	118	42	70	56	24	4053
9/27/1978	1978	9	27	119	44	72	58	26	4079
9/28/1978	1978	9	28	120	44	74	59	27	4106
9/29/1978	1978	9	29	121	49	72	60.5	28.5	4134.5
9/30/1978	1978	9	30	122	45	76	60.5	28.5	4163
10/1/1978	1978	10	1	123	50	78	64	32	4195
10/2/1978	1978	10	2	124	49	78	63.5	31.5	4226.5
10/3/1978	1978	10	3	125	44	74	59	27	4253.5
10/4/1978	1978	10	4	126	43	72	57.5	25.5	4279
10/5/1978	1978	10	5	127	42	73	57.5	25.5	4304.5
10/6/1978	1978	10	6	128	38	72	55	23	4327.5
10/7/1978	1978	10	7	129	43	74	58.5	26.5	4354
10/8/1978	1978	10	8	130	42	70	56	24	4378
10/9/1978	1978	10	9	131	43	72	57.5	25.5	4403.5
10/10/1978	1978	10	10	132	46	75	60.5	28.5	4432
10/11/1978	1978	10	11	133	43	70	56.5	24.5	4456.5
10/12/1978	1978	10	12	134	44	71	57.5	25.5	4482
10/13/1978	1978	10	13	135	39	70	54.5	22.5	4504.5
10/14/1978	1978	10	14	136	35	69	52	20	4524.5
10/15/1978	1978	10	15	137	39	70	54.5	22.5	4547
10/16/1978	1978	10	16	138	38	72	55	23	4570
10/17/1978	1978	10	17	139	36	70	53	21	4591
10/18/1978	1978	10	18	140	44	69	56.5	24.5	4615.5
10/19/1978	1978	10	19	141	43	67	55	23	4638.5
10/20/1978	1978	10	20	142	42	65	53.5	21.5	4660
10/21/1978	1978	10	21	143	38	69	53.5	21.5	4681.5
10/22/1978	1978	10	22	144	36	60	48	16	4697.5
10/23/1978	1978	10	23	145	39	59	49	17	4714.5
10/24/1978	1978	10	24	146	38	50	44	12	4726.5
10/25/1978	1978	10	25	147	40	54	47	15	4741.5
10/26/1978	1978	10	26	148	27	50	38.5	6.5	4748
10/27/1978	1978	10	27	149	29	56	42.5	10.5	4758.5
10/28/1978	1978	10	28	150	29	58	43.5	11.5	4770
10/29/1978	1978	10	29	151	36	59	47.5	15.5	4785.5
10/30/1978	1978	10	30	152	32	58	45	13	4798.5
10/31/1978	1978	10	31	153	32	58	45	13	4811.5
11/1/1978	1978	11	1	154	45	59	52	20	4831.5
11/2/1978	1978	11	2	155	40	58	49	17	4848.5
11/3/1978	1978	11	3	156	32	55	43.5	11.5	4860
11/4/1978	1978	11	4	157	33	56	44.5	12.5	4872.5
11/5/1978	1978	11	5	158	32	52	42	10	4882.5
11/6/1978	1978	11	6	159	35	52	43.5	11.5	4894
11/7/1978	1978	11	7	160	32	56	44	12	4906
11/8/1978	1978	11	8	161	34	59	46.5	14.5	4920.5
11/9/1978	1978	11	9	162	36	60	48	16	4936.5
11/10/1978	1978	11	10	163	34	60	47	15	4951.5
11/11/1978	1978	11	11	164	39	59	49	17	4968.5
11/12/1978	1978	11	12	165	38	55	46.5	14.5	4983
11/13/1978	1978	11	13	166	36	55	45.5	13.5	4996.5
11/14/1978	1978	11	14	167	26	49	37.5	5.5	5002
11/15/1978	1978	11	15	168	29	45	37	5	5007
11/16/1978	1978	11	16	169	29	43	36	4	5011
11/17/1978	1978	11	17	170	28	40	34	2	5013
11/18/1978	1978	11	18	171	20	46	33	1	5014
11/19/1978	1978	11	19	172	23	48	35.5	3.5	5017.5
11/20/1978	1978	11	20	173	24	49	36.5	4.5	5022
11/21/1978	1978	11	21	174	27	49	38	6	5028
11/22/1978	1978	11	22	175	31	47	39	7	5035
11/23/1978	1978	11	23	176	30	46	38	6	5041
11/24/1978	1978	11	24	177	29	44	36.5	4.5	5045.5
11/25/1978	1978	11	25	178	28	43	35.5	3.5	5049
11/26/1978	1978	11	26	179	26	43	34.5	2.5	5051.5
11/27/1978	1978	11	27	180	25	40	32.5	0.5	5052
11/28/1978	1978	11	28	181	26	39	32.5	0.5	5052.5
11/29/1978	1978	11	29	182	25	39	32	0	5052.5
11/30/1978	1978	11	30	183	17	39	28	-4	5048.5
12/1/1978	1978	12	1	184	32	49	40.5	8.5	5057
12/2/1978	1978	12	2	185	30	45	37.5	5.5	5062.5
12/3/1978	1978	12	3	186	31	40	35.5	3.5	5066
12/4/1978	1978	12	4	187	9	40	24.5	-7.5	5058.5
12/5/1978	1978	12	5	188	8	36	22	-10	5048.5
12/6/1978	1978	12	6	189	7	29	18	-14	5034.5
12/7/1978	1978	12	7	190	-4	20	8	-24	5010.5
12/8/1978	1978	12	8	191	-10	23	6.5	-25.5	4985
12/9/1978	1978	12	9	192	-9	20	5.5	-26.5	4958.5
12/10/1978	1978	12	10	193	4	30	17	-15	4943.5
12/11/1978	1978	12	11	194	7	30	18.5	-13.5	4930
12/12/1978	1978	12	12	195	10	39	24.5	-7.5	4922.5
12/13/1978	1978	12	13	196	12	37	24.5	-7.5	4915
12/14/1978	1978	12	14	197	15	37	26	-6	4909
12/15/1978	1978	12	15	198	16	39	27.5	-4.5	4904.5
12/16/1978	1978	12	16	199	20	38	29	-3	4901.5
12/17/1978	1978	12	17	200	20	39	29.5	-2.5	4899
12/18/1978	1978	12	18	201	26	40	33	1	4900
12/19/1978	1978	12	19	202	30	39	34.5	2.5	4902.5
12/20/1978	1978	12	20	203	19	39	29	-3	4899.5
12/21/1978	1978	12	21	204	16	36	26	-6	4893.5

12/22/1978	1978	12	22	205	18	38	28	-4	4889.5
12/23/1978	1978	12	23	206	16	37	26.5	-5.5	4884
12/24/1978	1978	12	24	207	15	35	25	-7	4877
12/25/1978	1978	12	25	208	14	30	22	-10	4867
12/26/1978	1978	12	26	209	12	29	20.5	-11.5	4855.5
12/27/1978	1978	12	27	210	19	29	24	-8	4847.5
12/28/1978	1978	12	28	211	19	38	28.5	-3.5	4844
12/29/1978	1978	12	29	212	20	39	29.5	-2.5	4841.5
12/30/1978	1978	12	30	213	-10	39	14.5	-17.5	4824
12/31/1978	1978	12	31	214	-12	38	13	-19	4805
1/1/1979	1979	1	1	215	-4	34	15	-17	4788
1/2/1979	1979	1	2	216	-5	32	13.5	-18.5	4769.5
1/3/1979	1979	1	3	217	-4	40	18	-14	4755.5
1/4/1979	1979	1	4	218	10	42	26	-6	4749.5
1/5/1979	1979	1	5	219	19	40	29.5	-2.5	4747
1/6/1979	1979	1	6	220	18	36	27	-5	4742
1/7/1979	1979	1	7	221	20	35	27.5	-4.5	4737.5
1/8/1979	1979	1	8	222	6	32	19	-13	4724.5
1/9/1979	1979	1	9	223	10	31	20.5	-11.5	4713
1/10/1979	1979	1	10	224	16	35	25.5	-6.5	4706.5
1/11/1979	1979	1	11	225	18	40	29	-3	4703.5
1/12/1979	1979	1	12	226	18	43	30.5	-1.5	4702
1/13/1979	1979	1	13	227	15	39	27	-5	4697
1/14/1979	1979	1	14	228	10	30	20	-12	4685
1/15/1979	1979	1	15	229	7	30	18.5	-13.5	4671.5
1/16/1979	1979	1	16	230	18	39	28.5	-3.5	4668
1/17/1979	1979	1	17	231	19	38	28.5	-3.5	4664.5
1/18/1979	1979	1	18	232	20	40	30	-2	4662.5
1/19/1979	1979	1	19	233	19	36	27.5	-4.5	4658
1/20/1979	1979	1	20	234	18	30	24	-8	4650
1/21/1979	1979	1	21	235	17	30	23.5	-8.5	4641.5
1/22/1979	1979	1	22	236	15	39	27	-5	4636.5
1/23/1979	1979	1	23	237	3	30	16.5	-15.5	4621
1/24/1979	1979	1	24	238	5	34	19.5	-12.5	4608.5
1/25/1979	1979	1	25	239	5	30	17.5	-14.5	4594
1/26/1979	1979	1	26	240	10	34	22	-10	4584
1/27/1979	1979	1	27	241	11	25	18	-14	4570
1/28/1979	1979	1	28	242	0	30	15	-17	4553
1/29/1979	1979	1	29	243	0	30	15	-17	4536
1/30/1979	1979	1	30	244	-8	20	6	-26	4510
1/31/1979	1979	1	31	245	-2	26	12	-20	4490
2/1/1979	1979	2	1	246	14	34	24	-8	4482
2/2/1979	1979	2	2	247	19	30	24.5	-7.5	4474.5
2/3/1979	1979	2	3	248	18	29	23.5	-8.5	4466
2/4/1979	1979	2	4	249	17	29	23	-9	4457
2/5/1979	1979	2	5	250	15	29	22	-10	4447
2/6/1979	1979	2	6	251	10	31	20.5	-11.5	4435.5
2/7/1979	1979	2	7	252	12	30	21	-11	4424.5
2/8/1979	1979	2	8	253	12	36	24	-8	4416.5
2/9/1979	1979	2	9	254	10	30	20	-12	4404.5
2/10/1979	1979	2	10	255	17	36	26.5	-5.5	4399
2/11/1979	1979	2	11	256	16	40	28	-4	4395
2/12/1979	1979	2	12	257	17	43	30	-2	4393
2/13/1979	1979	2	13	258	18	40	29	-3	4390
2/14/1979	1979	2	14	259	20	39	29.5	-2.5	4387.5
2/15/1979	1979	2	15	260	18	40	29	-3	4384.5
2/16/1979	1979	2	16	261	19	40	29.5	-2.5	4382
2/17/1979	1979	2	17	262	15	39	27	-5	4377
2/18/1979	1979	2	18	263	20	40	30	-2	4375
2/19/1979	1979	2	19	264	30	56	43	11	4386
2/20/1979	1979	2	20	265	27	53	40	8	4394
2/21/1979	1979	2	21	266	28	50	39	7	4401
2/22/1979	1979	2	22	267	18	39	28.5	-3.5	4397.5
2/23/1979	1979	2	23	268	15	37	26	-6	4391.5
2/24/1979	1979	2	24	269	14	38	26	-6	4385.5
2/25/1979	1979	2	25	270	16	37	26.5	-5.5	4380
2/26/1979	1979	2	26	271	14	35	24.5	-7.5	4372.5
2/27/1979	1979	2	27	272	12	30	21	-11	4361.5
2/28/1979	1979	2	28	273	12	42	27	-5	4356.5
3/1/1979	1979	3	1	274	15	42	28.5	-3.5	4353
3/2/1979	1979	3	2	275	16	35	25.5	-6.5	4346.5
3/3/1979	1979	3	3	276	16	40	28	-4	4342.5
3/4/1979	1979	3	4	277	17	40	28.5	-3.5	4339
3/5/1979	1979	3	5	278	18	42	30	-2	4337
3/6/1979	1979	3	6	279	20	50	35	3	4340
3/7/1979	1979	3	7	280	26	57	41.5	9.5	4349.5
3/8/1979	1979	3	8	281	31	57	44	12	4361.5
3/9/1979	1979	3	9	282	28	56	42	10	4371.5
3/10/1979	1979	3	10	283	17	49	33	1	4372.5
3/11/1979	1979	3	11	284	22	55	38.5	6.5	4379
3/12/1979	1979	3	12	285	25	58	41.5	9.5	4388.5
3/13/1979	1979	3	13	286	27	57	42	10	4398.5
3/14/1979	1979	3	14	287	34	54	44	12	4410.5
3/15/1979	1979	3	15	288	21	54	37.5	5.5	4416
3/16/1979	1979	3	16	289	38	57	47.5	15.5	4431.5
3/17/1979	1979	3	17	290	25	49	37	5	4436.5
3/18/1979	1979	3	18	291	24	40	32	0	4436.5
3/19/1979	1979	3	19	292	25	40	32.5	0.5	4437
3/20/1979	1979	3	20	293	33	51	42	10	4447
3/21/1979	1979	3	21	294	29	54	41.5	9.5	4456.5
3/22/1979	1979	3	22	295	27	49	38	6	4462.5
3/23/1979	1979	3	23	296	24	49	36.5	4.5	4467
3/24/1979	1979	3	24	297	25	57	41	9	4476

3/25/1979	1979	3	25	298	27	55	41	9	4485
3/26/1979	1979	3	26	299	29	57	43	11	4496
3/27/1979	1979	3	27	300	30	58	44	12	4508
3/28/1979	1979	3	28	301	29	56	42.5	10.5	4518.5
3/29/1979	1979	3	29	302	28	50	39	7	4525.5
3/30/1979	1979	3	30	303	27	50	38.5	6.5	4532
3/31/1979	1979	3	31	304	26	50	38	6	4538
4/1/1979	1979	4	1	305	21	44	32.5	0.5	4538.5
4/2/1979	1979	4	2	306	20	42	31	-1	4537.5
4/3/1979	1979	4	3	307	21	40	30.5	-1.5	4536
4/4/1979	1979	4	4	308	19	41	30	-2	4534
4/5/1979	1979	4	5	309	19	49	34	2	4536
4/6/1979	1979	4	6	310	28	49	38.5	6.5	4542.5
4/7/1979	1979	4	7	311	27	50	38.5	6.5	4549
4/8/1979	1979	4	8	312	27	53	40	8	4557
4/9/1979	1979	4	9	313	33	60	46.5	14.5	4571.5
4/10/1979	1979	4	10	314	35	65	50	18	4589.5
4/11/1979	1979	4	11	315	32	62	47	15	4604.5
4/12/1979	1979	4	12	316	33	58	45.5	13.5	4618
4/13/1979	1979	4	13	317	31	53	42	10	4628
4/14/1979	1979	4	14	318	21	39	30	-2	4626
4/15/1979	1979	4	15	319	24	38	31	-1	4625
4/16/1979	1979	4	16	320	21	46	33.5	1.5	4626.5
4/17/1979	1979	4	17	321	33	60	46.5	14.5	4641
4/18/1979	1979	4	18	322	30	68	49	17	4658
4/19/1979	1979	4	19	323	39	70	54.5	22.5	4680.5
4/20/1979	1979	4	20	324	38	71	54.5	22.5	4703
4/21/1979	1979	4	21	325	39	72	55.5	23.5	4726.5
4/22/1979	1979	4	22	326	40	70	55	23	4749.5
4/23/1979	1979	4	23	327	40	71	55.5	23.5	4773
4/24/1979	1979	4	24	328	38	69	53.5	21.5	4794.5
4/25/1979	1979	4	25	329	31	65	48	16	4810.5
4/26/1979	1979	4	26	330	36	65	50.5	18.5	4829
4/27/1979	1979	4	27	331	35	69	52	20	4849
4/28/1979	1979	4	28	332	41	69	55	23	4872
4/29/1979	1979	4	29	333	40	69	54.5	22.5	4894.5
4/30/1979	1979	4	30	334	41	68	54.5	22.5	4917
5/1/1979	1979	5	1	335	42	68	55	23	4940
5/2/1979	1979	5	2	336	39	63	51	19	4959
5/3/1979	1979	5	3	337	30	63	46.5	14.5	4973.5
5/4/1979	1979	5	4	338	31	64	47.5	15.5	4989
5/5/1979	1979	5	5	339	37	69	53	21	5010
5/6/1979	1979	5	6	340	34	69	51.5	19.5	5029.5
5/7/1979	1979	5	7	341	49	70	59.5	27.5	5057
5/8/1979	1979	5	8	342	44	72	58	26	5083
5/9/1979	1979	5	9	343	47	70	58.5	26.5	5109.5
5/10/1979	1979	5	10	344	29	65	47	15	5124.5
5/11/1979	1979	5	11	345	30	51	40.5	8.5	5133
5/12/1979	1979	5	12	346	28	58	43	11	5144
5/13/1979	1979	5	13	347	37	68	52.5	20.5	5164.5
5/14/1979	1979	5	14	348	32	69	50.5	18.5	5183
5/15/1979	1979	5	15	349	32	77	54.5	22.5	5205.5
5/16/1979	1979	5	16	350	40	76	58	26	5231.5
5/17/1979	1979	5	17	351	49	69	59	27	5258.5
5/18/1979	1979	5	18	352	44	67	55.5	23.5	5282
5/19/1979	1979	5	19	353	42	75	58.5	26.5	5308.5
5/20/1979	1979	5	20	354	48	76	62	30	5338.5
5/21/1979	1979	5	21	355	42	75	58.5	26.5	5365
5/22/1979	1979	5	22	356	33	66	49.5	17.5	5382.5
5/23/1979	1979	5	23	357	42	69	55.5	23.5	5406
5/24/1979	1979	5	24	358	42	75	58.5	26.5	5432.5
5/25/1979	1979	5	25	359	45	77	61	29	5461.5
5/26/1979	1979	5	26	360	46	78	62	30	5491.5
5/27/1979	1979	5	27	361	45	72	58.5	26.5	5518
5/28/1979	1979	5	28	362	46	72	59	27	5545
5/29/1979	1979	5	29	363	40	73	56.5	24.5	5569.5
5/30/1979	1979	5	30	364	47	74	60.5	28.5	5598
5/31/1979	1979	5	31	365	44	75	59.5	27.5	5625.5
6/1/1979	1979	6	1	1	42	72	57	25	25
6/2/1979	1979	6	2	2	43	69	56	24	49
6/3/1979	1979	6	3	3	41	69	55	23	72
6/4/1979	1979	6	4	4	47	70	58.5	26.5	98.5
6/5/1979	1979	6	5	5	46	76	61	29	127.5
6/6/1979	1979	6	6	6	52	77	64.5	32.5	160
6/7/1979	1979	6	7	7	49	75	62	30	190
6/8/1979	1979	6	8	8	42	65	53.5	21.5	211.5
6/9/1979	1979	6	9	9	41	67	54	22	233.5
6/10/1979	1979	6	10	10	39	64	51.5	19.5	253
6/11/1979	1979	6	11	11	41	79	60	28	281
6/12/1979	1979	6	12	12	49	84	66.5	34.5	315.5
6/13/1979	1979	6	13	13	51	86	68.5	36.5	352
6/14/1979	1979	6	14	14	55	86	70.5	38.5	390.5
6/15/1979	1979	6	15	15	56	84	70	38	428.5
6/16/1979	1979	6	16	16	58	82	70	38	466.5
6/17/1979	1979	6	17	17	49	79	64	32	498.5
6/18/1979	1979	6	18	18	50	79	64.5	32.5	531
6/19/1979	1979	6	19	19	41	76	58.5	26.5	557.5
6/20/1979	1979	6	20	20	45	81	63	31	588.5
6/21/1979	1979	6	21	21	51	85	68	36	624.5
6/22/1979	1979	6	22	22	57	87	72	40	664.5
6/23/1979	1979	6	23	23	53	85	69	37	701.5
6/24/1979	1979	6	24	24	55	84	69.5	37.5	739
6/25/1979	1979	6	25	25	53	87	70	38	777

6/26/1979	1979	6	26	26	58	90	74	42	819
6/27/1979	1979	6	27	27	59	92	75.5	43.5	862.5
6/28/1979	1979	6	28	28	57	91	74	42	904.5
6/29/1979	1979	6	29	29	57	91	74	42	946.5
6/30/1979	1979	6	30	30	55	87	71	39	985.5
7/1/1979	1979	7	1	31	50	85	67.5	35.5	1021
7/2/1979	1979	7	2	32	55	79	67	35	1056
7/3/1979	1979	7	3	33	55	89	72	40	1096
7/4/1979	1979	7	4	34	50	79	64.5	32.5	1128.5
7/5/1979	1979	7	5	35	51	81	66	34	1162.5
7/6/1979	1979	7	6	36	61	82	71.5	39.5	1202
7/7/1979	1979	7	7	37	56	94	75	43	1245
7/8/1979	1979	7	8	38	53	90	71.5	39.5	1284.5
7/9/1979	1979	7	9	39	54	92	73	41	1325.5
7/10/1979	1979	7	10	40	55	89	72	40	1365.5
7/11/1979	1979	7	11	41	55	90	72.5	40.5	1406
7/12/1979	1979	7	12	42	56	94	75	43	1449
7/13/1979	1979	7	13	43	60	95	77.5	45.5	1494.5
7/14/1979	1979	7	14	44	57	94	75.5	43.5	1538
7/15/1979	1979	7	15	45	59	95	77	45	1583
7/16/1979	1979	7	16	46	60	96	78	46	1629
7/17/1979	1979	7	17	47	61	92	76.5	44.5	1673.5
7/18/1979	1979	7	18	48	59	90	74.5	42.5	1716
7/19/1979	1979	7	19	49	56	77	66.5	34.5	1750.5
7/20/1979	1979	7	20	50	54	71	62.5	30.5	1781
7/21/1979	1979	7	21	51	50	74	62	30	1811
7/22/1979	1979	7	22	52	50	74	62	30	1841
7/23/1979	1979	7	23	53	57	76	66.5	34.5	1875.5
7/24/1979	1979	7	24	54	58	78	68	36	1911.5
7/25/1979	1979	7	25	55	55	85	70	38	1949.5
7/26/1979	1979	7	26	56	54	86	70	38	1987.5
7/27/1979	1979	7	27	57	57	87	72	40	2027.5
7/28/1979	1979	7	28	58	58	88	73	41	2068.5
7/29/1979	1979	7	29	59	60	89	74.5	42.5	2111
7/30/1979	1979	7	30	60	58	91	74.5	42.5	2153.5
7/31/1979	1979	7	31	61	56	83	69.5	37.5	2191
8/1/1979	1979	8	1	62	50	88	69	37	2228
8/2/1979	1979	8	2	63	55	89	72	40	2268
8/3/1979	1979	8	3	64	63	88	75.5	43.5	2311.5
8/4/1979	1979	8	4	65	57	88	72.5	40.5	2352
8/5/1979	1979	8	5	66	60	86	73	41	2393
8/6/1979	1979	8	6	67	56	84	70	38	2431
8/7/1979	1979	8	7	68	57	86	71.5	39.5	2470.5
8/8/1979	1979	8	8	69	54	78	66	34	2504.5
8/9/1979	1979	8	9	70	56	84	70	38	2542.5
8/10/1979	1979	8	10	71	58	84	71	39	2581.5
8/11/1979	1979	8	11	72	52	82	67	35	2616.5
8/12/1979	1979	8	12	73	51	75	63	31	2647.5
8/13/1979	1979	8	13	74	54	77	65.5	33.5	2681
8/14/1979	1979	8	14	75	54	72	63	31	2712
8/15/1979	1979	8	15	76	52	70	61	29	2741
8/16/1979	1979	8	16	77	45	70	57.5	25.5	2766.5
8/17/1979	1979	8	17	78	52	71	61.5	29.5	2796
8/18/1979	1979	8	18	79	47	70	58.5	26.5	2822.5
8/19/1979	1979	8	19	80	46	69	57.5	25.5	2848
8/20/1979	1979	8	20	81	44	69	56.5	24.5	2872.5
8/21/1979	1979	8	21	82	50	70	60	28	2900.5
8/22/1979	1979	8	22	83	49	70	59.5	27.5	2928
8/23/1979	1979	8	23	84	49	80	64.5	32.5	2960.5
8/24/1979	1979	8	24	85	51	81	66	34	2994.5
8/25/1979	1979	8	25	86	51	81	66	34	3028.5
8/26/1979	1979	8	26	87	53	82	67.5	35.5	3064
8/27/1979	1979	8	27	88	57	83	70	38	3102
8/28/1979	1979	8	28	89	50	82	66	34	3136
8/29/1979	1979	8	29	90	55	83	69	37	3173
8/30/1979	1979	8	30	91	56	83	69.5	37.5	3210.5
8/31/1979	1979	8	31	92	55	79	67	35	3245.5
9/1/1979	1979	9	1	93	55	83	69	37	3282.5
9/2/1979	1979	9	2	94	54	82	68	36	3318.5
9/3/1979	1979	9	3	95	53	81	67	35	3353.5
9/4/1979	1979	9	4	96	57	84	70.5	38.5	3392
9/5/1979	1979	9	5	97	56	83	69.5	37.5	3429.5
9/6/1979	1979	9	6	98	52	84	68	36	3465.5
9/7/1979	1979	9	7	99	56	85	70.5	38.5	3504
9/8/1979	1979	9	8	100	57	82	69.5	37.5	3541.5
9/9/1979	1979	9	9	101	55	81	68	36	3577.5
9/10/1979	1979	9	10	102	51	78	64.5	32.5	3610
9/11/1979	1979	9	11	103	57	77	67	35	3645
9/12/1979	1979	9	12	104	51	72	61.5	29.5	3674.5
9/13/1979	1979	9	13	105	50	76	63	31	3705.5
9/14/1979	1979	9	14	106	51	70	60.5	28.5	3734
9/15/1979	1979	9	15	107	50	69	59.5	27.5	3761.5
9/16/1979	1979	9	16	108	40	69	54.5	22.5	3784
9/17/1979	1979	9	17	109	45	67	56	24	3808
9/18/1979	1979	9	18	110	45	68	56.5	24.5	3832.5
9/19/1979	1979	9	19	111	41	71	56	24	3856.5
9/20/1979	1979	9	20	112	46	74	60	28	3884.5
9/21/1979	1979	9	21	113	48	72	60	28	3912.5
9/22/1979	1979	9	22	114	43	75	59	27	3939.5
9/23/1979	1979	9	23	115	49	76	62.5	30.5	3970
9/24/1979	1979	9	24	116	50	76	63	31	4001
9/25/1979	1979	9	25	117	51	79	65	33	4034
9/26/1979	1979	9	26	118	48	76	62	30	4064

9/27/1979	1979	9	27	119	52	74	63	31	4095
9/28/1979	1979	9	28	120	49	75	62	30	4125
9/29/1979	1979	9	29	121	48	75	61.5	29.5	4154.5
9/30/1979	1979	9	30	122	50	75	62.5	30.5	4185
10/1/1979	1979	10	1	123	51	77	64	32	4217
10/2/1979	1979	10	2	124	49	75	62	30	4247
10/3/1979	1979	10	3	125	48	74	61	29	4276
10/4/1979	1979	10	4	126	43	76	59.5	27.5	4303.5
10/5/1979	1979	10	5	127	46	76	61	29	4332.5
10/6/1979	1979	10	6	128	44	78	61	29	4361.5
10/7/1979	1979	10	7	129	43	76	59.5	27.5	4389
10/8/1979	1979	10	8	130	42	74	58	26	4415
10/9/1979	1979	10	9	131	45	72	58.5	26.5	4441.5
10/10/1979	1979	10	10	132	40	75	57.5	25.5	4467
10/11/1979	1979	10	11	133	45	76	60.5	28.5	4495.5
10/12/1979	1979	10	12	134	46	75	60.5	28.5	4524
10/13/1979	1979	10	13	135	41	72	56.5	24.5	4548.5
10/14/1979	1979	10	14	136	44	70	57	25	4573.5
10/15/1979	1979	10	15	137	39	67	53	21	4594.5
10/16/1979	1979	10	16	138	38	70	54	22	4616.5
10/17/1979	1979	10	17	139	39	65	52	20	4636.5
10/18/1979	1979	10	18	140	47	66	56.5	24.5	4661
10/19/1979	1979	10	19	141	40	64	52	20	4681
10/20/1979	1979	10	20	142	39	60	49.5	17.5	4698.5
10/21/1979	1979	10	21	143	24	60	42	10	4708.5
10/22/1979	1979	10	22	144	30	61	45.5	13.5	4722
10/23/1979	1979	10	23	145	39	66	52.5	20.5	4742.5
10/24/1979	1979	10	24	146	40	69	54.5	22.5	4765
10/25/1979	1979	10	25	147	40	69	54.5	22.5	4787.5
10/26/1979	1979	10	26	148	39	68	53.5	21.5	4809
10/27/1979	1979	10	27	149	34	67	50.5	18.5	4827.5
10/28/1979	1979	10	28	150	40	61	50.5	18.5	4846
10/29/1979	1979	10	29	151	25	43	34	2	4848
10/30/1979	1979	10	30	152	17	41	29	-3	4845
10/31/1979	1979	10	31	153	20	42.5	31.25	-0.75	4844.25
11/1/1979	1979	11	1	154	26	44	35	3	4847.25
11/2/1979	1979	11	2	155	22	43	32.5	0.5	4847.75
11/3/1979	1979	11	3	156	21	43	32	0	4847.75
11/4/1979	1979	11	4	157	23	43	33	1	4848.75
11/5/1979	1979	11	5	158	20	43	31.5	-0.5	4848.25
11/6/1979	1979	11	6	159	25	43	34	2	4850.25
11/7/1979	1979	11	7	160	25	43	34	2	4852.25
11/8/1979	1979	11	8	161	36	49	42.5	10.5	4862.75
11/9/1979	1979	11	9	162	25	44	34.5	2.5	4865.25
11/10/1979	1979	11	10	163	31	41	36	4	4869.25
11/11/1979	1979	11	11	164	29	41	35	3	4872.25
11/12/1979	1979	11	12	165	25	42	33.5	1.5	4873.75
11/13/1979	1979	11	13	166	20	43	31.5	-0.5	4873.25
11/14/1979	1979	11	14	167	20	45	32.5	0.5	4873.75
11/15/1979	1979	11	15	168	23	43	33	1	4874.75
11/16/1979	1979	11	16	169	24	43	33.5	1.5	4876.25
11/17/1979	1979	11	17	170	23	43	33	1	4877.25
11/18/1979	1979	11	18	171	24	51	37.5	5.5	4882.75
11/19/1979	1979	11	19	172	23	49	36	4	4886.75
11/20/1979	1979	11	20	173	22	48	35	3	4889.75
11/21/1979	1979	11	21	174	20	47	33.5	1.5	4891.25
11/22/1979	1979	11	22	175	26	49	37.5	5.5	4896.75
11/23/1979	1979	11	23	176	18	42	30	-2	4894.75
11/24/1979	1979	11	24	177	17	40	28.5	-3.5	4891.25
11/25/1979	1979	11	25	178	15	40	27.5	-4.5	4886.75
11/26/1979	1979	11	26	179	14	40	27	-5	4881.75
11/27/1979	1979	11	27	180	9	40	24.5	-7.5	4874.25
11/28/1979	1979	11	28	181	11	34	22.5	-9.5	4864.75
11/29/1979	1979	11	29	182	10	34	22	-10	4854.75
11/30/1979	1979	11	30	183	10	32	21	-11	4843.75
12/1/1979	1979	12	1	184	9	43	26	-6	4837.75
12/2/1979	1979	12	2	185	8	43	25.5	-6.5	4831.25
12/3/1979	1979	12	3	186	12	43	27.5	-4.5	4826.75
12/4/1979	1979	12	4	187	13	43	28	-4	4822.75
12/5/1979	1979	12	5	188	10	43	26.5	-5.5	4817.25
12/6/1979	1979	12	6	189	20	43	31.5	-0.5	4816.75
12/7/1979	1979	12	7	190	23	43	33	1	4817.75
12/8/1979	1979	12	8	191	23	43	33	1	4818.75
12/9/1979	1979	12	9	192	15	43	29	-3	4815.75
12/10/1979	1979	12	10	193	15	43	29	-3	4812.75
12/11/1979	1979	12	11	194	12	43	27.5	-4.5	4808.25
12/12/1979	1979	12	12	195	25	49	37	5	4813.25
12/13/1979	1979	12	13	196	23	50	36.5	4.5	4817.75
12/14/1979	1979	12	14	197	20	53	36.5	4.5	4822.25
12/15/1979	1979	12	15	198	27	53	40	8	4830.25
12/16/1979	1979	12	16	199	29	55	42	10	4840.25
12/17/1979	1979	12	17	200	20	55	37.5	5.5	4845.75
12/18/1979	1979	12	18	201	18	55	36.5	4.5	4850.25
12/19/1979	1979	12	19	202	18	55	36.5	4.5	4854.75
12/20/1979	1979	12	20	203	15	55	35	3	4857.75
12/21/1979	1979	12	21	204	16	45	30.5	-1.5	4856.25
12/22/1979	1979	12	22	205	18	46	32	0	4856.25
12/23/1979	1979	12	23	206	18	49	33.5	1.5	4857.75
12/24/1979	1979	12	24	207	19	40	29.5	-2.5	4855.25
12/25/1979	1979	12	25	208	19	40	29.5	-2.5	4852.75
12/26/1979	1979	12	26	209	19	39	29	-3	4849.75
12/27/1979	1979	12	27	210	18	39	28.5	-3.5	4846.25
12/28/1979	1979	12	28	211	12	39	25.5	-6.5	4839.75

12/29/1979	1979	12	29	212	14	40	27	-5	4834.75
12/30/1979	1979	12	30	213	15	42	28.5	-3.5	4831.25
12/31/1979	1979	12	31	214	8	36	22	-10	4821.25
1/1/1980	1980	1	1	215	8	30	19	-13	4808.25
1/2/1980	1980	1	2	216	7	30	18.5	-13.5	4794.75
1/3/1980	1980	1	3	217	7	29	18	-14	4780.75
1/4/1980	1980	1	4	218	11	28	19.5	-12.5	4768.25
1/5/1980	1980	1	5	219	15	30	60.5	28.5	4796.75
1/6/1980	1980	1	6	220	14	29	60.5	28.5	4825.25
1/7/1980	1980	1	7	221	14	30	22	-10	4815.25
1/8/1980	1980	1	8	222	25	39	32	0	4815.25
1/9/1980	1980	1	9	223	13	40	26.5	-5.5	4809.75
1/10/1980	1980	1	10	224	13	40	26.5	-5.5	4804.25
1/11/1980	1980	1	11	225	17	37	27	-5	4799.25
1/12/1980	1980	1	12	226	10	38	24	-8	4791.25
1/13/1980	1980	1	13	227	15	39	27	-5	4786.25
1/14/1980	1980	1	14	228	18	39	28.5	-3.5	4782.75
1/15/1980	1980	1	15	229	20	40	30	-2	4780.75
1/16/1980	1980	1	16	230	20	40	30	-2	4778.75
1/17/1980	1980	1	17	231	18	42	30	-2	4776.75
1/18/1980	1980	1	18	232	19	42	30.5	-1.5	4775.25
1/19/1980	1980	1	19	233	15	40	27.5	-4.5	4770.75
1/20/1980	1980	1	20	234	18	43	30.5	-1.5	4769.25
1/21/1980	1980	1	21	235	19	40	29.5	-2.5	4766.75
1/22/1980	1980	1	22	236	15	39	27	-5	4761.75
1/23/1980	1980	1	23	237	19	36	27.5	-4.5	4757.25
1/24/1980	1980	1	24	238	16	37	26.5	-5.5	4751.75
1/25/1980	1980	1	25	239	15	36	25.5	-6.5	4745.25
1/26/1980	1980	1	26	240	19	40	29.5	-2.5	4742.75
1/27/1980	1980	1	27	241	12	39	25.5	-6.5	4736.25
1/28/1980	1980	1	28	242	19	41	30	-2	4734.25
1/29/1980	1980	1	29	243	18	42	30	-2	4732.25
1/30/1980	1980	1	30	244	19	46	32.5	0.5	4732.75
1/31/1980	1980	1	31	245	15	45	30	-2	4730.75
2/1/1980	1980	2	1	246	24	44	34	2	4732.75
2/2/1980	1980	2	2	247	23	41	32	0	4732.75
2/3/1980	1980	2	3	248	25	48	36.5	4.5	4737.25
2/4/1980	1980	2	4	249	20	50	35	3	4740.25
2/5/1980	1980	2	5	250	20	50	35	3	4743.25
2/6/1980	1980	2	6	251	25	48	36.5	4.5	4747.75
2/7/1980	1980	2	7	252	26	49	37.5	5.5	4753.25
2/8/1980	1980	2	8	253	16	39	27.5	-4.5	4748.75
2/9/1980	1980	2	9	254	4	28	16	-16	4732.75
2/10/1980	1980	2	10	255	-9	30	10.5	-21.5	4711.25
2/11/1980	1980	2	11	256	9	30	19.5	-12.5	4698.75
2/12/1980	1980	2	12	257	10	45	27.5	-4.5	4694.25
2/13/1980	1980	2	13	258	12	44	28	-4	4690.25
2/14/1980	1980	2	14	259	18	46	32	0	4690.25
2/15/1980	1980	2	15	260	15	44	29.5	-2.5	4687.75
2/16/1980	1980	2	16	261	15	44	29.5	-2.5	4685.25
2/17/1980	1980	2	17	262	18	45	31.5	-0.5	4684.75
2/18/1980	1980	2	18	263	20	44	32	0	4684.75
2/19/1980	1980	2	19	264	19	42	30.5	-1.5	4683.25
2/20/1980	1980	2	20	265	12	44	28	-4	4679.25
2/21/1980	1980	2	21	266	11	43	27	-5	4674.25
2/22/1980	1980	2	22	267	12	42	27	-5	4669.25
2/23/1980	1980	2	23	268	24	42	33	1	4670.25
2/24/1980	1980	2	24	269	30	42	36	4	4674.25
2/25/1980	1980	2	25	270	20	49	34.5	2.5	4676.75
2/26/1980	1980	2	26	271	19	50	34.5	2.5	4679.25
2/27/1980	1980	2	27	272	25	53	39	7	4686.25
2/28/1980	1980	2	28	273	27	60	43.5	11.5	4697.75
2/29/1980	1980	2	29	274	30	61	45.5	13.5	4711.25
3/1/1980	1980	3	1	275	23	59	41	9	4720.25
3/2/1980	1980	3	2	276	23	56	39.5	7.5	4727.75
3/3/1980	1980	3	3	277	24	55	39.5	7.5	4735.25
3/4/1980	1980	3	4	278	29	50	39.5	7.5	4742.75
3/5/1980	1980	3	5	279	26	48	37	5	4747.75
3/6/1980	1980	3	6	280	29	47	38	6	4753.75
3/7/1980	1980	3	7	281	19	48	33.5	1.5	4755.25
3/8/1980	1980	3	8	282	20	46	33	1	4756.25
3/9/1980	1980	3	9	283	20	48	34	2	4758.25
3/10/1980	1980	3	10	284	24	49	36.5	4.5	4762.75
3/11/1980	1980	3	11	285	30	49	39.5	7.5	4770.25
3/12/1980	1980	3	12	286	29	48	38.5	6.5	4776.75
3/13/1980	1980	3	13	287	21	54	37.5	5.5	4782.25
3/14/1980	1980	3	14	288	27	60	43.5	11.5	4793.75
3/15/1980	1980	3	15	289	29	59	44	12	4805.75
3/16/1980	1980	3	16	290	19	56	37.5	5.5	4811.25
3/17/1980	1980	3	17	291	10	40	25	-7	4804.25
3/18/1980	1980	3	18	292	11	41	26	-6	4798.25
3/19/1980	1980	3	19	293	12	55	33.5	1.5	4799.75
3/20/1980	1980	3	20	294	29	54	41.5	9.5	4809.25
3/21/1980	1980	3	21	295	24	52	38	6	4815.25
3/22/1980	1980	3	22	296	29	59	44	12	4827.25
3/23/1980	1980	3	23	297	20	57	38.5	6.5	4833.75
3/24/1980	1980	3	24	298	23	47	35	3	4836.75
3/25/1980	1980	3	25	299	24	50	37	5	4841.75
3/26/1980	1980	3	26	300	29	49	39	7	4848.75
3/27/1980	1980	3	27	301	24	45	34.5	2.5	4851.25
3/28/1980	1980	3	28	302	27	40	33.5	1.5	4852.75
3/29/1980	1980	3	29	303	24	40	32	0	4852.75
3/30/1980	1980	3	30	304	23	43	33	1	4853.75

3/31/1980	1980	3	31	305	19	49	34	2	4855.75
4/1/1980	1980	4	1	306	13	49	31	-1	4854.75
4/2/1980	1980	4	2	307	18	48	33	1	4855.75
4/3/1980	1980	4	3	308	19	49	34	2	4857.75
4/4/1980	1980	4	4	309	20	50	35	3	4860.75
4/5/1980	1980	4	5	310	22	56	39	7	4867.75
4/6/1980	1980	4	6	311	28	59	43.5	11.5	4879.25
4/7/1980	1980	4	7	312	30	58	44	12	4891.25
4/8/1980	1980	4	8	313	23	57	40	8	4899.25
4/9/1980	1980	4	9	314	20	59	39.5	7.5	4906.75
4/10/1980	1980	4	10	315	30	59	44.5	12.5	4919.25
4/11/1980	1980	4	11	316	24	60	42	10	4929.25
4/12/1980	1980	4	12	317	24	59	41.5	9.5	4938.75
4/13/1980	1980	4	13	318	20	49	34.5	2.5	4941.25
4/14/1980	1980	4	14	319	25	50	37.5	5.5	4946.75
4/15/1980	1980	4	15	320	32	59	45.5	13.5	4960.25
4/16/1980	1980	4	16	321	25	58	41.5	9.5	4969.75
4/17/1980	1980	4	17	322	32	60	46	14	4983.75
4/18/1980	1980	4	18	323	35	60	47.5	15.5	4999.25
4/19/1980	1980	4	19	324	41	69	55	23	5022.25
4/20/1980	1980	4	20	325	44	69	56.5	24.5	5046.75
4/21/1980	1980	4	21	326	43	65	54	22	5068.75
4/22/1980	1980	4	22	327	37	67	52	20	5088.75
4/23/1980	1980	4	23	328	38	65	51.5	19.5	5108.25
4/24/1980	1980	4	24	329	25	64	44.5	12.5	5120.75
4/25/1980	1980	4	25	330	24	48	36	4	5124.75
4/26/1980	1980	4	26	331	31	59	45	13	5137.75
4/27/1980	1980	4	27	332	34	61	47.5	15.5	5153.25
4/28/1980	1980	4	28	333	35	66	50.5	18.5	5171.75
4/29/1980	1980	4	29	334	46	69	57.5	25.5	5197.25
4/30/1980	1980	4	30	335	30	55	42.5	10.5	5207.75
5/1/1980	1980	5	1	336	33	60	46.5	14.5	5222.25
5/2/1980	1980	5	2	337	32	59	45.5	13.5	5235.75
5/3/1980	1980	5	3	338	34	58	46	14	5249.75
5/4/1980	1980	5	4	339	35	69	52	20	5269.75
5/5/1980	1980	5	5	340	45	55	50	18	5287.75
5/6/1980	1980	5	6	341	37	66	51.5	19.5	5307.25
5/7/1980	1980	5	7	342	26	63	44.5	12.5	5319.75
5/8/1980	1980	5	8	343	37	67	52	20	5339.75
5/9/1980	1980	5	9	344	39	65	52	20	5359.75
5/10/1980	1980	5	10	345	47	70	58.5	26.5	5386.25
5/11/1980	1980	5	11	346	45	67	56	24	5410.25
5/12/1980	1980	5	12	347	29	59	44	12	5422.25
5/13/1980	1980	5	13	348	30	64	47	15	5437.25
5/14/1980	1980	5	14	349	32	65	48.5	16.5	5453.75
5/15/1980	1980	5	15	350	35	64	49.5	17.5	5471.25
5/16/1980	1980	5	16	351	36	60	48	16	5487.25
5/17/1980	1980	5	17	352	45	65	55	23	5510.25
5/18/1980	1980	5	18	353	40	69	54.5	22.5	5532.75
5/19/1980	1980	5	19	354	42	71	56.5	24.5	5557.25
5/20/1980	1980	5	20	355	45	74	59.5	27.5	5584.75
5/21/1980	1980	5	21	356	46	79	62.5	30.5	5615.25
5/22/1980	1980	5	22	357	50	76	63	31	5646.25
5/23/1980	1980	5	23	358	40	77	58.5	26.5	5672.75
5/24/1980	1980	5	24	359	45	69	57	25	5697.75
5/25/1980	1980	5	25	360	28	67	47.5	15.5	5713.25
5/26/1980	1980	5	26	361	35	74	54.5	22.5	5735.75
5/27/1980	1980	5	27	362	40	75	57.5	25.5	5761.25
5/28/1980	1980	5	28	363	38	74	56	24	5785.25
5/29/1980	1980	5	29	364	40	75	57.5	25.5	5810.75
5/30/1980	1980	5	30	365	42	76	59	27	5837.75
5/31/1980	1980	5	31	366	40	76	58	26	5863.75
6/1/1980	1980	6	1	1	40	75	57.5	25.5	25.5
6/2/1980	1980	6	2	2	36	76	56	24	49.5
6/3/1980	1980	6	3	3	39	79	59	27	76.5
6/4/1980	1980	6	4	4	43	80	61.5	29.5	106
6/5/1980	1980	6	5	5	44	81	62.5	30.5	136.5
6/6/1980	1980	6	6	6	45	82	63.5	31.5	168
6/7/1980	1980	6	7	7	52	81	66.5	34.5	202.5
6/8/1980	1980	6	8	8	48	85	66.5	34.5	237
6/9/1980	1980	6	9	9	49	84	66.5	34.5	271.5
6/10/1980	1980	6	10	10	51	85	68	36	307.5
6/11/1980	1980	6	11	11	50	84	67	35	342.5
6/12/1980	1980	6	12	12	49	86	67.5	35.5	378
6/13/1980	1980	6	13	13	48	87	67.5	35.5	413.5
6/14/1980	1980	6	14	14	50	85	67.5	35.5	449
6/15/1980	1980	6	15	15	48	85	66.5	34.5	483.5
6/16/1980	1980	6	16	16	47	86	66.5	34.5	518
6/17/1980	1980	6	17	17	52	90	71	39	557
6/18/1980	1980	6	18	18	58	88	73	41	598
6/19/1980	1980	6	19	19	56	87	71.5	39.5	637.5
6/20/1980	1980	6	20	20	57	85	71	39	676.5
6/21/1980	1980	6	21	21	54	84	69	37	713.5
6/22/1980	1980	6	22	22	53	83	68	36	749.5
6/23/1980	1980	6	23	23	53	82	67.5	35.5	785
6/24/1980	1980	6	24	24	52	87	69.5	37.5	822.5
6/25/1980	1980	6	25	25	55	88	71.5	39.5	862
6/26/1980	1980	6	26	26	56	89	72.5	40.5	902.5
6/27/1980	1980	6	27	27	59	87	73	41	943.5
6/28/1980	1980	6	28	28	60	90	75	43	986.5
6/29/1980	1980	6	29	29	62	89	75.5	43.5	1030
6/30/1980	1980	6	30	30	60	92	76	44	1074
7/1/1980	1980	7	1	31	57	90	73.5	41.5	1115.5

7/2/1980	1980	7	2	32	52	85	68.5	36.5	1152
7/3/1980	1980	7	3	33	54	88	71	39	1191
7/4/1980	1980	7	4	34	58	89	73.5	41.5	1232.5
7/5/1980	1980	7	5	35	58	95	76.5	44.5	1277
7/6/1980	1980	7	6	36	63	91	77	45	1322
7/7/1980	1980	7	7	37	60	87	73.5	41.5	1363.5
7/8/1980	1980	7	8	38	53	85	69	37	1400.5
7/9/1980	1980	7	9	39	54	88	71	39	1439.5
7/10/1980	1980	7	10	40	59	90	74.5	42.5	1482
7/11/1980	1980	7	11	41	58	91	74.5	42.5	1524.5
7/12/1980	1980	7	12	42	57	89	73	41	1565.5
7/13/1980	1980	7	13	43	55	80	67.5	35.5	1601
7/14/1980	1980	7	14	44	52	79	65.5	33.5	1634.5
7/15/1980	1980	7	15	45	56	83	69.5	37.5	1672
7/16/1980	1980	7	16	46	55	89	72	40	1712
7/17/1980	1980	7	17	47	56	89	72.5	40.5	1752.5
7/18/1980	1980	7	18	48	57	92	74.5	42.5	1795
7/19/1980	1980	7	19	49	58	94	76	44	1839
7/20/1980	1980	7	20	50	65	92	78.5	46.5	1885.5
7/21/1980	1980	7	21	51	59	88	73.5	41.5	1927
7/22/1980	1980	7	22	52	54	80	67	35	1962
7/23/1980	1980	7	23	53	57	82	69.5	37.5	1999.5
7/24/1980	1980	7	24	54	53	83	68	36	2035.5
7/25/1980	1980	7	25	55	55	85	70	38	2073.5
7/26/1980	1980	7	26	56	56	90	73	41	2114.5
7/27/1980	1980	7	27	57	57	90	73.5	41.5	2156
7/28/1980	1980	7	28	58	58	91	74.5	42.5	2198.5
7/29/1980	1980	7	29	59	63	89	76	44	2242.5
7/30/1980	1980	7	30	60	63	87	75	43	2285.5
7/31/1980	1980	7	31	61	55	88	71.5	39.5	2325
8/1/1980	1980	8	1	62	64	86	75	43	2368
8/2/1980	1980	8	2	63	61	86	73.5	41.5	2409.5
8/3/1980	1980	8	3	64	58	83	70.5	38.5	2448
8/4/1980	1980	8	4	65	61	89	75	43	2491
8/5/1980	1980	8	5	66	57	81	69	37	2528
8/6/1980	1980	8	6	67	59	80	69.5	37.5	2565.5
8/7/1980	1980	8	7	68	58	85	71.5	39.5	2605
8/8/1980	1980	8	8	69	57	88	72.5	40.5	2645.5
8/9/1980	1980	8	9	70	54	85	69.5	37.5	2683
8/10/1980	1980	8	10	71	56	88	72	40	2723
8/11/1980	1980	8	11	72	58	82	70	38	2761
8/12/1980	1980	8	12	73	52	81	66.5	34.5	2795.5
8/13/1980	1980	8	13	74	53	80	66.5	34.5	2830
8/14/1980	1980	8	14	75	54	78	66	34	2864
8/15/1980	1980	8	15	76	55	78	66.5	34.5	2898.5
8/16/1980	1980	8	16	77	54	79	66.5	34.5	2933
8/17/1980	1980	8	17	78	54	80	67	35	2968
8/18/1980	1980	8	18	79	55	80	51.6	19.6	2987.6
8/19/1980	1980	8	19	80	54	80	67	35	3022.6
8/20/1980	1980	8	20	81	49	79	64	32	3054.6
8/21/1980	1980	8	21	82	49	82	65.5	33.5	3088.1
8/22/1980	1980	8	22	83	54	82	68	36	3124.1
8/23/1980	1980	8	23	84	59	77	68	36	3160.1
8/24/1980	1980	8	24	85	55	69	62	30	3190.1
8/25/1980	1980	8	25	86	52	76	64	32	3222.1
8/26/1980	1980	8	26	87	51	75	63	31	3253.1
8/27/1980	1980	8	27	88	49	79	64	32	3285.1
8/28/1980	1980	8	28	89	53	79	66	34	3319.1
8/29/1980	1980	8	29	90	54	79	66.5	34.5	3353.6
8/30/1980	1980	8	30	91	56	79	67.5	35.5	3389.1
8/31/1980	1980	8	31	92	47	76	61.5	29.5	3418.6
9/1/1980	1980	9	1	93	49	79	64	32	3450.6
9/2/1980	1980	9	2	94	51	80	65.5	33.5	3484.1
9/3/1980	1980	9	3	95	50	81	65.5	33.5	3517.6
9/4/1980	1980	9	4	96	52	81	66.5	34.5	3552.1
9/5/1980	1980	9	5	97	57	76	66.5	34.5	3586.6
9/6/1980	1980	9	6	98	55	72	63.5	31.5	3618.1
9/7/1980	1980	9	7	99	53	73	63	31	3649.1
9/8/1980	1980	9	8	100	52	72	62	30	3679.1
9/9/1980	1980	9	9	101	54	68	61	29	3708.1
9/10/1980	1980	9	10	102	52	69	60.5	28.5	3736.6
9/11/1980	1980	9	11	103	51	68	59.5	27.5	3764.1
9/12/1980	1980	9	12	104	48	70	59	27	3791.1
9/13/1980	1980	9	13	105	47	72	59.5	27.5	3818.6
9/14/1980	1980	9	14	106	49	73	61	29	3847.6
9/15/1980	1980	9	15	107	48	74	61	29	3876.6
9/16/1980	1980	9	16	108	51	76	63.5	31.5	3908.1
9/17/1980	1980	9	17	109	47	77	62	30	3938.1
9/18/1980	1980	9	18	110	49	79	64	32	3970.1
9/19/1980	1980	9	19	111	53	78	65.5	33.5	4003.6
9/20/1980	1980	9	20	112	50	77	63.5	31.5	4035.1
9/21/1980	1980	9	21	113	44	72	58	26	4061.1
9/22/1980	1980	9	22	114	43	77	60	28	4089.1
9/23/1980	1980	9	23	115	44	76	60	28	4117.1
9/24/1980	1980	9	24	116	45	74	59.5	27.5	4144.6
9/25/1980	1980	9	25	117	49	68	58.5	26.5	4171.1
9/26/1980	1980	9	26	118	43	71	57	25	4196.1
9/27/1980	1980	9	27	119	47	76	61.5	29.5	4225.6
9/28/1980	1980	9	28	120	47	76	61.5	29.5	4255.1
9/29/1980	1980	9	29	121	49	79	64	32	4287.1
9/30/1980	1980	9	30	122	48	78	63	31	4318.1
10/1/1980	1980	10	1	123	50	78	64	32	4350.1
10/2/1980	1980	10	2	124	43	79	61	29	4379.1

10/3/1980	1980	10	3	125	42	75	58.5	26.5	4405.6
10/4/1980	1980	10	4	126	44	76	60	28	4433.6
10/5/1980	1980	10	5	127	45	75	60	28	4461.6
10/6/1980	1980	10	6	128	47	70	58.5	26.5	4488.1
10/7/1980	1980	10	7	129	41	72	56.5	24.5	4512.6
10/8/1980	1980	10	8	130	44	72	58	26	4538.6
10/9/1980	1980	10	9	131	45	76	60.5	28.5	4567.1
10/10/1980	1980	10	10	132	40	76	58	26	4593.1
10/11/1980	1980	10	11	133	39	60	49.5	17.5	4610.6
10/12/1980	1980	10	12	134	40	61	50.5	18.5	4629.1
10/13/1980	1980	10	13	135	40	69	54.5	22.5	4651.6
10/14/1980	1980	10	14	136	41	64	52.5	20.5	4672.1
10/15/1980	1980	10	15	137	32	62	47	15	4687.1
10/16/1980	1980	10	16	138	29	52	40.5	8.5	4695.6
10/17/1980	1980	10	17	139	26	47	36.5	4.5	4700.1
10/18/1980	1980	10	18	140	25	50	37.5	5.5	4705.6
10/19/1980	1980	10	19	141	26	55	40.5	8.5	4714.1
10/20/1980	1980	10	20	142	29	56	42.5	10.5	4724.6
10/21/1980	1980	10	21	143	31	57	44	12	4736.6
10/22/1980	1980	10	22	144	30	56	43	11	4747.6
10/23/1980	1980	10	23	145	29	50	39.5	7.5	4755.1
10/24/1980	1980	10	24	146	23	53	38	6	4761.1
10/25/1980	1980	10	25	147	28	67	47.5	15.5	4776.6
10/26/1980	1980	10	26	148	29	63	46	14	4790.6
10/27/1980	1980	10	27	149	29	39	34	2	4792.6
10/28/1980	1980	10	28	150	25	38	31.5	-0.5	4792.1
10/29/1980	1980	10	29	151	21	48	34.5	2.5	4794.6
10/30/1980	1980	10	30	152	25	58	41.5	9.5	4804.1
10/31/1980	1980	10	31	153	32	57	44.5	12.5	4816.6
11/1/1980	1980	11	1	154	28	56	42	10	4826.6
11/2/1980	1980	11	2	155	29	57	43	11	4837.6
11/3/1980	1980	11	3	156	31	59	45	13	4850.6
11/4/1980	1980	11	4	157	32	60	46	14	4864.6
11/5/1980	1980	11	5	158	34	60	47	15	4879.6
11/6/1980	1980	11	6	159	38	61	49.5	17.5	4897.1
11/7/1980	1980	11	7	160	36	63	49.5	17.5	4914.6
11/8/1980	1980	11	8	161	37	66	51.5	19.5	4934.1
11/9/1980	1980	11	9	162	36	66	51	19	4953.1
11/10/1980	1980	11	10	163	39	69	54	22	4975.1
11/11/1980	1980	11	11	164	38	69	53.5	21.5	4996.6
11/12/1980	1980	11	12	165	36	68	52	20	5016.6
11/13/1980	1980	11	13	166	37	65	51	19	5035.6
11/14/1980	1980	11	14	167	38	61	49.5	17.5	5053.1
11/15/1980	1980	11	15	168	15	61	38	6	5059.1
11/16/1980	1980	11	16	169	11	48	29.5	-2.5	5056.6
11/17/1980	1980	11	17	170	17	37	27	-5	5051.6
11/18/1980	1980	11	18	171	10	35	22.5	-9.5	5042.1
11/19/1980	1980	11	19	172	11	34	22.5	-9.5	5032.6
11/20/1980	1980	11	20	173	12	40	26	-6	5026.6
11/21/1980	1980	11	21	174	11	44	27.5	-4.5	5022.1
11/22/1980	1980	11	22	175	17	45	31	-1	5021.1
11/23/1980	1980	11	23	176	19	46	32.5	0.5	5021.6
11/24/1980	1980	11	24	177	16	45	30.5	-1.5	5020.1
11/25/1980	1980	11	25	178	14	43	28.5	-3.5	5016.6
11/26/1980	1980	11	26	179	20	42	31	-1	5015.6
11/27/1980	1980	11	27	180	20	40	30	-2	5013.6
11/28/1980	1980	11	28	181	15	39	27	-5	5008.6
11/29/1980	1980	11	29	182	14	28	21	-11	4997.6
11/30/1980	1980	11	30	183	14	30	22	-10	4987.6
12/1/1980	1980	12	1	184	15	50	32.5	0.5	4988.1
12/2/1980	1980	12	2	185	27	56	41.5	9.5	4997.6
12/3/1980	1980	12	3	186	30	59	44.5	12.5	5010.1
12/4/1980	1980	12	4	187	31	60	45.5	13.5	5023.6
12/5/1980	1980	12	5	188	30	57	43.5	11.5	5035.1
12/6/1980	1980	12	6	189	31	48	39.5	7.5	5042.6
12/7/1980	1980	12	7	190	25	50	37.5	5.5	5048.1
12/8/1980	1980	12	8	191	31	43	37	5	5053.1
12/9/1980	1980	12	9	192	26	40	33	1	5054.1
12/10/1980	1980	12	10	193	18	32	25	-7	5047.1
12/11/1980	1980	12	11	194	15	36	25.5	-6.5	5040.6
12/12/1980	1980	12	12	195	13	39	26	-6	5034.6
12/13/1980	1980	12	13	196	16	39	27.5	-4.5	5030.1
12/14/1980	1980	12	14	197	21	47	34	2	5032.1
12/15/1980	1980	12	15	198	22	45	33.5	1.5	5033.6
12/16/1980	1980	12	16	199	23	45	34	2	5035.6
12/17/1980	1980	12	17	200	24	40	32	0	5035.6
12/18/1980	1980	12	18	201	24	46	35	3	5038.6
12/19/1980	1980	12	19	202	28	50	39	7	5045.6
12/20/1980	1980	12	20	203	27	60	43.5	11.5	5057.1
12/21/1980	1980	12	21	204	30	60	45	13	5070.1
12/22/1980	1980	12	22	205	33	60	46.5	14.5	5084.6
12/23/1980	1980	12	23	206	15	55	35	3	5087.6
12/24/1980	1980	12	24	207	20	49	34.5	2.5	5090.1
12/25/1980	1980	12	25	208	22	49	35.5	3.5	5093.6
12/26/1980	1980	12	26	209	23	50	36.5	4.5	5098.1
12/27/1980	1980	12	27	210	31	56	43.5	11.5	5109.6
12/28/1980	1980	12	28	211	29	68	48.5	16.5	5126.1
12/29/1980	1980	12	29	212	28	50	39	7	5133.1
12/30/1980	1980	12	30	213	29	49	39	7	5140.1
12/31/1980	1980	12	31	214	25	57	41	9	5149.1
1/1/1981	1981	1	1	215	25	57	41	9	5158.1
1/2/1981	1981	1	2	216	28	50	39	7	5165.1
1/3/1981	1981	1	3	217	27	56	41.5	9.5	5174.6

1/4/1981	1981	1	4	218	26	55	40.5	8.5	5183.1
1/5/1981	1981	1	5	219	27	54	40.5	8.5	5191.6
1/6/1981	1981	1	6	220	34	51	42.5	10.5	5202.1
1/7/1981	1981	1	7	221	18	46	32	0	5202.1
1/8/1981	1981	1	8	222	18	45	31.5	-0.5	5201.6
1/9/1981	1981	1	9	223	19	48	33.5	1.5	5203.1
1/10/1981	1981	1	10	224	30	50	40	8	5211.1
1/11/1981	1981	1	11	225	30	50	40	8	5219.1
1/12/1981	1981	1	12	226	21	45	33	1	5220.1
1/13/1981	1981	1	13	227	22	40	31	-1	5219.1
1/14/1981	1981	1	14	228	27	49	38	6	5225.1
1/15/1981	1981	1	15	229	19	50	34.5	2.5	5227.6
1/16/1981	1981	1	16	230	21	48	34.5	2.5	5230.1
1/17/1981	1981	1	17	231	26	47	36.5	4.5	5234.6
1/18/1981	1981	1	18	232	19	45	32	0	5234.6
1/19/1981	1981	1	19	233	20	47	33.5	1.5	5236.1
1/20/1981	1981	1	20	234	18	44	31	-1	5235.1
1/21/1981	1981	1	21	235	20	47	33.5	1.5	5236.6
1/22/1981	1981	1	22	236	14	46	30	-2	5234.6
1/23/1981	1981	1	23	237	15	49	32	0	5234.6
1/24/1981	1981	1	24	238	23	50	36.5	4.5	5239.1
1/25/1981	1981	1	25	239	20	51	35.5	3.5	5242.6
1/26/1981	1981	1	26	240	34	50	42	10	5252.6
1/27/1981	1981	1	27	241	29	49	39	7	5259.6
1/28/1981	1981	1	28	242	14	44	29	-3	5256.6
1/29/1981	1981	1	29	243	13	45	29	-3	5253.6
1/30/1981	1981	1	30	244	16	46	31	-1	5252.6
1/31/1981	1981	1	31	245	17	46	31.5	-0.5	5252.1
2/1/1981	1981	2	1	246	10	44	27	-5	5247.1
2/2/1981	1981	2	2	247	11	41	26	-6	5241.1
2/3/1981	1981	2	3	248	15	45	30	-2	5239.1
2/4/1981	1981	2	4	249	16	50	33	1	5240.1
2/5/1981	1981	2	5	250	15	45	30	-2	5238.1
2/6/1981	1981	2	6	251	16	46	31	-1	5237.1
2/7/1981	1981	2	7	252	17	48	32.5	0.5	5237.6
2/8/1981	1981	2	8	253	20	50	35	3	5240.6
2/9/1981	1981	2	9	254	21	49	35	3	5243.6
2/10/1981	1981	2	10	255	29	49	39	7	5250.6
2/11/1981	1981	2	11	256	9	32	20.5	-11.5	5239.1
2/12/1981	1981	2	12	257	10	44	27	-5	5234.1
2/13/1981	1981	2	13	258	20	42	31	-1	5233.1
2/14/1981	1981	2	14	259	19	50	34.5	2.5	5235.6
2/15/1981	1981	2	15	260	18	49	33.5	1.5	5237.1
2/16/1981	1981	2	16	261	17	48	32.5	0.5	5237.6
2/17/1981	1981	2	17	262	18	56	37	5	5242.6
2/18/1981	1981	2	18	263	23	62	42.5	10.5	5253.1
2/19/1981	1981	2	19	264	24	59	41.5	9.5	5262.6
2/20/1981	1981	2	20	265	25	59	42	10	5272.6
2/21/1981	1981	2	21	266	30	63	46.5	14.5	5287.1
2/22/1981	1981	2	22	267	36	64	50	18	5305.1
2/23/1981	1981	2	23	268	18	58	38	6	5311.1
2/24/1981	1981	2	24	269	19	52	35.5	3.5	5314.6
2/25/1981	1981	2	25	270	19	61	40	8	5322.6
2/26/1981	1981	2	26	271	17	57	37	5	5327.6
2/27/1981	1981	2	27	272	19	59	39	7	5334.6
2/28/1981	1981	2	28	273	20	59	39.5	7.5	5342.1
3/1/1981	1981	3	1	274	25	54	39.5	7.5	5349.6
3/2/1981	1981	3	2	275	30	50	40	8	5357.6
3/3/1981	1981	3	3	276	18	41	29.5	-2.5	5355.1
3/4/1981	1981	3	4	277	20	40	30	-2	5353.1
3/5/1981	1981	3	5	278	20	46	33	1	5354.1
3/6/1981	1981	3	6	279	23	44	33.5	1.5	5355.6
3/7/1981	1981	3	7	280	25	38	31.5	-0.5	5355.1
3/8/1981	1981	3	8	281	23	42	32.5	0.5	5355.6
3/9/1981	1981	3	9	282	25	48	36.5	4.5	5360.1
3/10/1981	1981	3	10	283	20	43	31.5	-0.5	5359.6
3/11/1981	1981	3	11	284	19	40	29.5	-2.5	5357.1
3/12/1981	1981	3	12	285	20	40	30	-2	5355.1
3/13/1981	1981	3	13	286	19	45	32	0	5355.1
3/14/1981	1981	3	14	287	25	46	35.5	3.5	5358.6
3/15/1981	1981	3	15	288	20	47	33.5	1.5	5360.1
3/16/1981	1981	3	16	289	20	47	33.5	1.5	5361.6
3/17/1981	1981	3	17	290	27	50	38.5	6.5	5368.1
3/18/1981	1981	3	18	291	28	55	41.5	9.5	5377.6
3/19/1981	1981	3	19	292	30	52	41	9	5386.6
3/20/1981	1981	3	20	293	19	49	34	2	5388.6
3/21/1981	1981	3	21	294	24	60	42	10	5398.6
3/22/1981	1981	3	22	295	37	58	47.5	15.5	5414.1
3/23/1981	1981	3	23	296	24	56	40	8	5422.1
3/24/1981	1981	3	24	297	24	57	40.5	8.5	5430.6
3/25/1981	1981	3	25	298	25	60	42.5	10.5	5441.1
3/26/1981	1981	3	26	299	33	61	47	15	5456.1
3/27/1981	1981	3	27	300	24	59	41.5	9.5	5465.6
3/28/1981	1981	3	28	301	37	66	51.5	19.5	5485.1
3/29/1981	1981	3	29	302	28	62	45	13	5498.1
3/30/1981	1981	3	30	303	25	44	34.5	2.5	5500.6
3/31/1981	1981	3	31	304	21	55	38	6	5506.6
4/1/1981	1981	4	1	305	26	64	45	13	5519.6
4/2/1981	1981	4	2	306	35	62	48.5	16.5	5536.1
4/3/1981	1981	4	3	307	21	59	40	8	5544.1
4/4/1981	1981	4	4	308	22	62	42	10	5554.1
4/5/1981	1981	4	5	309	32	66	49	17	5571.1
4/6/1981	1981	4	6	310	36	64	50	18	5589.1

4/7/1981	1981	4	7	311	35	62	48.5	16.5	5605.6
4/8/1981	1981	4	8	312	34	71	52.5	20.5	5626.1
4/9/1981	1981	4	9	313	32	69	50.5	18.5	5644.6
4/10/1981	1981	4	10	314	36	70	53	21	5665.6
4/11/1981	1981	4	11	315	34	66	50	18	5683.6
4/12/1981	1981	4	12	316	39	67	53	21	5704.6
4/13/1981	1981	4	13	317	40	65	52.5	20.5	5725.1
4/14/1981	1981	4	14	318	35	61	48	16	5741.1
4/15/1981	1981	4	15	319	34	68	51	19	5760.1
4/16/1981	1981	4	16	320	41	72	56.5	24.5	5784.6
4/17/1981	1981	4	17	321	42	65	53.5	21.5	5806.1
4/18/1981	1981	4	18	322	35	64	49.5	17.5	5823.6
4/19/1981	1981	4	19	323	35	64	49.5	17.5	5841.1
4/20/1981	1981	4	20	324	40	69	54.5	22.5	5863.6
4/21/1981	1981	4	21	325	36	66	51	19	5882.6
4/22/1981	1981	4	22	326	34	68	51	19	5901.6
4/23/1981	1981	4	23	327	36	67	51.5	19.5	5921.1
4/24/1981	1981	4	24	328	39	73	56	24	5945.1
4/25/1981	1981	4	25	329	44	78	61	29	5974.1
4/26/1981	1981	4	26	330	43	77	60	28	6002.1
4/27/1981	1981	4	27	331	44	74	59	27	6029.1
4/28/1981	1981	4	28	332	57	75	66	34	6063.1
4/29/1981	1981	4	29	333	45	76	60.5	28.5	6091.6
4/30/1981	1981	4	30	334	48	70	59	27	6118.6
5/1/1981	1981	5	1	335	47	72	59.5	27.5	6146.1
5/2/1981	1981	5	2	336	43	70	56.5	24.5	6170.6
5/3/1981	1981	5	3	337	47	69	58	26	6196.6
5/4/1981	1981	5	4	338	48	68	58	26	6222.6
5/5/1981	1981	5	5	339	39	70	54.5	22.5	6245.1
5/6/1981	1981	5	6	340	38	68	53	21	6266.1
5/7/1981	1981	5	7	341	38	69	53.5	21.5	6287.6
5/8/1981	1981	5	8	342	36	68	52	20	6307.6
5/9/1981	1981	5	9	343	29	69	49	17	6324.6
5/10/1981	1981	5	10	344	29	69	49	17	6341.6
5/11/1981	1981	5	11	345	40	70	55	23	6364.6
5/12/1981	1981	5	12	346	46	72	59	27	6391.6
5/13/1981	1981	5	13	347	45	75	60	28	6419.6
5/14/1981	1981	5	14	348	38	74	56	24	6443.6
5/15/1981	1981	5	15	349	43	67	55	23	6466.6
5/16/1981	1981	5	16	350	42	68	55	23	6489.6
5/17/1981	1981	5	17	351	42	68	55	23	6512.6
5/18/1981	1981	5	18	352	34	71	52.5	20.5	6533.1
5/19/1981	1981	5	19	353	41	74	57.5	25.5	6558.6
5/20/1981	1981	5	20	354	44	71	57.5	25.5	6584.1
5/21/1981	1981	5	21	355	41	69	55	23	6607.1
5/22/1981	1981	5	22	356	39	71	55	23	6630.1
5/23/1981	1981	5	23	357	38	70	54	22	6652.1
5/24/1981	1981	5	24	358	37	69	53	21	6673.1
5/25/1981	1981	5	25	359	41	70	55.5	23.5	6696.6
5/26/1981	1981	5	26	360	49	72	60.5	28.5	6725.1
5/27/1981	1981	5	27	361	47	78	62.5	30.5	6755.6
5/28/1981	1981	5	28	362	46	74	60	28	6783.6
5/29/1981	1981	5	29	363	43	69	56	24	6807.6
5/30/1981	1981	5	30	364	47	67	57	25	6832.6
5/31/1981	1981	5	31	365	40	71	55.5	23.5	6856.1
6/1/1981	1981	6	1	1	42	71	56.5	24.5	24.5
6/2/1981	1981	6	2	2	47	80	63.5	31.5	56
6/3/1981	1981	6	3	3	49	79	64	32	88
6/4/1981	1981	6	4	4	48	78	63	31	119
6/5/1981	1981	6	5	5	49	79	64	32	151
6/6/1981	1981	6	6	6	50	80	65	33	184
6/7/1981	1981	6	7	7	55	81	68	36	220
6/8/1981	1981	6	8	8	56	83	69.5	37.5	257.5
6/9/1981	1981	6	9	9	57	90	73.5	41.5	299
6/10/1981	1981	6	10	10	57	90	73.5	41.5	340.5
6/11/1981	1981	6	11	11	59	93	76	44	384.5
6/12/1981	1981	6	12	12	57	91	74	42	426.5
6/13/1981	1981	6	13	13	55	88	71.5	39.5	466
6/14/1981	1981	6	14	14	56	86	71	39	505
6/15/1981	1981	6	15	15	53	81	67	35	540
6/16/1981	1981	6	16	16	35	79	57	25	565
6/17/1981	1981	6	17	17	43	76	59.5	27.5	592.5
6/18/1981	1981	6	18	18	49	88	68.5	36.5	629
6/19/1981	1981	6	19	19	53	92	72.5	40.5	669.5
6/20/1981	1981	6	20	20	56	93	74.5	42.5	712
6/21/1981	1981	6	21	21	57	93	75	43	755
6/22/1981	1981	6	22	22	60	95	77.5	45.5	800.5
6/23/1981	1981	6	23	23	59	90	74.5	42.5	843
6/24/1981	1981	6	24	24	62	94	78	46	889
6/25/1981	1981	6	25	25	59	95	77	45	934
6/26/1981	1981	6	26	26	66	93	79.5	47.5	981.5
6/27/1981	1981	6	27	27	62	86	74	42	1023.5
6/28/1981	1981	6	28	28	59	87	73	41	1064.5
6/29/1981	1981	6	29	29	54	81	67.5	35.5	1100
6/30/1981	1981	6	30	30	53	87	70	38	1138
7/1/1981	1981	7	1	31	55	70	62.5	30.5	1168.5
7/2/1981	1981	7	2	32	51	81	66	34	1202.5
7/3/1981	1981	7	3	33	56	85	70.5	38.5	1241
7/4/1981	1981	7	4	34	55	84	69.5	37.5	1278.5
7/5/1981	1981	7	5	35	54	80	67	35	1313.5
7/6/1981	1981	7	6	36	51	90	70.5	38.5	1352
7/7/1981	1981	7	7	37	55	90	72.5	40.5	1392.5
7/8/1981	1981	7	8	38	56	85	70.5	38.5	1431

7/9/1981	1981	7	9	39	55	80	67.5	35.5	1466.5
7/10/1981	1981	7	10	40	56	81	68.5	36.5	1503
7/11/1981	1981	7	11	41	55	78	66.5	34.5	1537.5
7/12/1981	1981	7	12	42	53	79	66	34	1571.5
7/13/1981	1981	7	13	43	55	77	66	34	1605.5
7/14/1981	1981	7	14	44	53	78	65.5	33.5	1639
7/15/1981	1981	7	15	45	53	78	65.5	33.5	1672.5
7/16/1981	1981	7	16	46	54	71	62.5	30.5	1703
7/17/1981	1981	7	17	47	54	76	65	33	1736
7/18/1981	1981	7	18	48	50	75	62.5	30.5	1766.5
7/19/1981	1981	7	19	49	51	76	63.5	31.5	1798
7/20/1981	1981	7	20	50	57	78	67.5	35.5	1833.5
7/21/1981	1981	7	21	51	51	81	66	34	1867.5
7/22/1981	1981	7	22	52	50	80	65	33	1900.5
7/23/1981	1981	7	23	53	60	90	75	43	1943.5
7/24/1981	1981	7	24	54	59	89	74	42	1985.5
7/25/1981	1981	7	25	55	60	87	73.5	41.5	2027
7/26/1981	1981	7	26	56	68	83	75.5	43.5	2070.5
7/27/1981	1981	7	27	57	60	77	68.5	36.5	2107
7/28/1981	1981	7	28	58	56	78	67	35	2142
7/29/1981	1981	7	29	59	55	84	69.5	37.5	2179.5
7/30/1981	1981	7	30	60	56	86	71	39	2218.5
7/31/1981	1981	7	31	61	55	84	69.5	37.5	2256
8/1/1981	1981	8	1	62	57	83	70	38	2294
8/2/1981	1981	8	2	63	56	84	70	38	2332
8/3/1981	1981	8	3	64	58	84	71	39	2371
8/4/1981	1981	8	4	65	59	89	74	42	2413
8/5/1981	1981	8	5	66	57	90	73.5	41.5	2454.5
8/6/1981	1981	8	6	67	58	91	74.5	42.5	2497
8/7/1981	1981	8	7	68	59	90	74.5	42.5	2539.5
8/8/1981	1981	8	8	69	51	84	67.5	35.5	2575
8/9/1981	1981	8	9	70	53	82	67.5	35.5	2610.5
8/10/1981	1981	8	10	71	54	80	67	35	2645.5
8/11/1981	1981	8	11	72	51	70	60.5	28.5	2674
8/12/1981	1981	8	12	73	49	75	62	30	2704
8/13/1981	1981	8	13	74	49	75	62	30	2734
8/14/1981	1981	8	14	75	50	78	64	32	2766
8/15/1981	1981	8	15	76	57	78	67.5	35.5	2801.5
8/16/1981	1981	8	16	77	52	80	66	34	2835.5
8/17/1981	1981	8	17	78	51	78	64.5	32.5	2868
8/18/1981	1981	8	18	79	50	79	64.5	32.5	2900.5
8/19/1981	1981	8	19	80	50	77	63.5	31.5	2932
8/20/1981	1981	8	20	81	54	83	68.5	36.5	2968.5
8/21/1981	1981	8	21	82	57	83	70	38	3006.5
8/22/1981	1981	8	22	83	54	76	65	33	3039.5
8/23/1981	1981	8	23	84	53	70	61.5	29.5	3069
8/24/1981	1981	8	24	85	52	71	61.5	29.5	3098.5
8/25/1981	1981	8	25	86	57	73	65	33	3131.5
8/26/1981	1981	8	26	87	55	79	67	35	3166.5
8/27/1981	1981	8	27	88	54	80	67	35	3201.5
8/28/1981	1981	8	28	89	52	80	66	34	3235.5
8/29/1981	1981	8	29	90	47	79	63	31	3266.5
8/30/1981	1981	8	30	91	48	80	64	32	3298.5
8/31/1981	1981	8	31	92	55	81	68	36	3334.5
9/1/1981	1981	9	1	93	48	76	62	30	3364.5
9/2/1981	1981	9	2	94	50	77	63.5	31.5	3396
9/3/1981	1981	9	3	95	52	79	65.5	33.5	3429.5
9/4/1981	1981	9	4	96	52	79	65.5	33.5	3463
9/5/1981	1981	9	5	97	51	77	64	32	3495
9/6/1981	1981	9	6	98	50	77	63.5	31.5	3526.5
9/7/1981	1981	9	7	99	50	76	63	31	3557.5
9/8/1981	1981	9	8	100	46	75	60.5	28.5	3586
9/9/1981	1981	9	9	101	45	72	58.5	26.5	3612.5
9/10/1981	1981	9	10	102	40	71	55.5	23.5	3636
9/11/1981	1981	9	11	103	49	74	61.5	29.5	3665.5
9/12/1981	1981	9	12	104	46	75	60.5	28.5	3694
9/13/1981	1981	9	13	105	47	76	61.5	29.5	3723.5
9/14/1981	1981	9	14	106	48	77	62.5	30.5	3754
9/15/1981	1981	9	15	107	49	75	62	30	3784
9/16/1981	1981	9	16	108	44	69	56.5	24.5	3808.5
9/17/1981	1981	9	17	109	44	72	58	26	3834.5
9/18/1981	1981	9	18	110	43	70	56.5	24.5	3859
9/19/1981	1981	9	19	111	42	70	56	24	3883
9/20/1981	1981	9	20	112	43	71	57	25	3908
9/21/1981	1981	9	21	113	46	76	61	29	3937
9/22/1981	1981	9	22	114	52	75	63.5	31.5	3968.5
9/23/1981	1981	9	23	115	51	71	61	29	3997.5
9/24/1981	1981	9	24	116	48	69	58.5	26.5	4024
9/25/1981	1981	9	25	117	47	68	57.5	25.5	4049.5
9/26/1981	1981	9	26	118	44	70	57	25	4074.5
9/27/1981	1981	9	27	119	47	76	61.5	29.5	4104
9/28/1981	1981	9	28	120	50	77	63.5	31.5	4135.5
9/29/1981	1981	9	29	121	56	76	66	34	4169.5
9/30/1981	1981	9	30	122	52	74	63	31	4200.5
10/1/1981	1981	10	1	123	49	70	59.5	27.5	4228
10/2/1981	1981	10	2	124	48	69	58.5	26.5	4254.5
10/3/1981	1981	10	3	125	40	60	50	18	4272.5
10/4/1981	1981	10	4	126	40	65	52.5	20.5	4293
10/5/1981	1981	10	5	127	42	64	53	21	4314
10/6/1981	1981	10	6	128	43	66	54.5	22.5	4336.5
10/7/1981	1981	10	7	129	36	64	50	18	4354.5
10/8/1981	1981	10	8	130	46	66	56	24	4378.5
10/9/1981	1981	10	9	131	43	65	54	22	4400.5

10/10/1981	1981	10	10	132	35	67	51	19	4419.5
10/11/1981	1981	10	11	133	39	66	52.5	20.5	4440
10/12/1981	1981	10	12	134	44	62	53	21	4461
10/13/1981	1981	10	13	135	41	64	52.5	20.5	4481.5
10/14/1981	1981	10	14	136	43	62	52.5	20.5	4502
10/15/1981	1981	10	15	137	47	64	55.5	23.5	4525.5
10/16/1981	1981	10	16	138	24	62	43	11	4536.5
10/17/1981	1981	10	17	139	24	62	43	11	4547.5
10/18/1981	1981	10	18	140	31	58	44.5	12.5	4560
10/19/1981	1981	10	19	141	33	61	47	15	4575
10/20/1981	1981	10	20	142	35	63	49	17	4592
10/21/1981	1981	10	21	143	38	64	51	19	4611
10/22/1981	1981	10	22	144	32	59	45.5	13.5	4624.5
10/23/1981	1981	10	23	145	29	57	43	11	4635.5
10/24/1981	1981	10	24	146	28	50	39	7	4642.5
10/25/1981	1981	10	25	147	28	50	39	7	4649.5
10/26/1981	1981	10	26	148	27	61	44	12	4661.5
10/27/1981	1981	10	27	149	36	60	48	16	4677.5
10/28/1981	1981	10	28	150	34	61	47.5	15.5	4693
10/29/1981	1981	10	29	151	48	61	54.5	22.5	4715.5
10/30/1981	1981	10	30	152	30	55	42.5	10.5	4726
10/31/1981	1981	10	31	153	22	48	35	3	4729
11/1/1981	1981	11	1	154	34	53	43.5	11.5	4740.5
11/2/1981	1981	11	2	155	28	58	43	11	4751.5
11/3/1981	1981	11	3	156	31	59	45	13	4764.5
11/4/1981	1981	11	4	157	32	59	45.5	13.5	4778
11/5/1981	1981	11	5	158	32	63	47.5	15.5	4793.5
11/6/1981	1981	11	6	159	30	60	45	13	4806.5
11/7/1981	1981	11	7	160	30	59	44.5	12.5	4819
11/8/1981	1981	11	8	161	35	58	46.5	14.5	4833.5
11/9/1981	1981	11	9	162	29	49	39	7	4840.5
11/10/1981	1981	11	10	163	28	55	41.5	9.5	4850
11/11/1981	1981	11	11	164	31	51	41	9	4859
11/12/1981	1981	11	12	165	30	54	42	10	4869
11/13/1981	1981	11	13	166	32	55	43.5	11.5	4880.5
11/14/1981	1981	11	14	167	33	60	46.5	14.5	4895
11/15/1981	1981	11	15	168	35	64	49.5	17.5	4912.5
11/16/1981	1981	11	16	169	38	65	51.5	19.5	4932
11/17/1981	1981	11	17	170	32	64	48	16	4948
11/18/1981	1981	11	18	171	34	62	48	16	4964
11/19/1981	1981	11	19	172	19	57	38	6	4970
11/20/1981	1981	11	20	173	18	40	29	-3	4967
11/21/1981	1981	11	21	174	17	39	28	-4	4963
11/22/1981	1981	11	22	175	18	37	27.5	-4.5	4958.5
11/23/1981	1981	11	23	176	19	62	40.5	8.5	4967
11/24/1981	1981	11	24	177	34	65	49.5	17.5	4984.5
11/25/1981	1981	11	25	178	32	60	46	14	4998.5
11/26/1981	1981	11	26	179	10	48	29	-3	4995.5
11/27/1981	1981	11	27	180	12	45	28.5	-3.5	4992
11/28/1981	1981	11	28	181	19	47	33	1	4993
11/29/1981	1981	11	29	182	23	44	33.5	1.5	4994.5
11/30/1981	1981	11	30	183	19	40	29.5	-2.5	4992
12/1/1981	1981	12	1	184	9	32	20.5	-11.5	4980.5
12/2/1981	1981	12	2	185	5	30	17.5	-14.5	4966
12/3/1981	1981	12	3	186	10	46	28	-4	4962
12/4/1981	1981	12	4	187	15	54	34.5	2.5	4964.5
12/5/1981	1981	12	5	188	19	47	33	1	4965.5
12/6/1981	1981	12	6	189	20	46	33	1	4966.5
12/7/1981	1981	12	7	190	21	45	33	1	4967.5
12/8/1981	1981	12	8	191	24	50	37	5	4972.5
12/9/1981	1981	12	9	192	19	50	34.5	2.5	4975
12/10/1981	1981	12	10	193	20	51	35.5	3.5	4978.5
12/11/1981	1981	12	11	194	27	52	39.5	7.5	4986
12/12/1981	1981	12	12	195	16	57	36.5	4.5	4990.5
12/13/1981	1981	12	13	196	19	53	36	4	4994.5
12/14/1981	1981	12	14	197	18	49	33.5	1.5	4996
12/15/1981	1981	12	15	198	17	48	32.5	0.5	4996.5
12/16/1981	1981	12	16	199	20	49	34.5	2.5	4999
12/17/1981	1981	12	17	200	21	50	35.5	3.5	5002.5
12/18/1981	1981	12	18	201	20	51	35.5	3.5	5006
12/19/1981	1981	12	19	202	16	49	32.5	0.5	5006.5
12/20/1981	1981	12	20	203	17	48	32.5	0.5	5007
12/21/1981	1981	12	21	204	18	50	34	2	5009
12/22/1981	1981	12	22	205	17	49	33	1	5010
12/23/1981	1981	12	23	206	20	48	34	2	5012
12/24/1981	1981	12	24	207	9	50	29.5	-2.5	5009.5
12/25/1981	1981	12	25	208	10	40	25	-7	5002.5
12/26/1981	1981	12	26	209	5	33	19	-13	4989.5
12/27/1981	1981	12	27	210	4	32	18	-14	4975.5
12/28/1981	1981	12	28	211	5	30	17.5	-14.5	4961
12/29/1981	1981	12	29	212	6	31	18.5	-13.5	4947.5
12/30/1981	1981	12	30	213	11	33	22	-10	4937.5
12/31/1981	1981	12	31	214	15	40	27.5	-4.5	4933
1/1/1982	1982	1	1	215	36	40	38	6	4939
1/2/1982	1982	1	2	216	26	37	31.5	-0.5	4938.5
1/3/1982	1982	1	3	217	13	32	22.5	-9.5	4929
1/4/1982	1982	1	4	218	3	37	20	-12	4917
1/5/1982	1982	1	5	219	27	40	33.5	1.5	4918.5
1/6/1982	1982	1	6	220	32	40	36	4	4922.5
1/7/1982	1982	1	7	221	14	30	22	-10	4912.5
1/8/1982	1982	1	8	222	5	32	18.5	-13.5	4899
1/9/1982	1982	1	9	223	10	45	27.5	-4.5	4894.5
1/10/1982	1982	1	10	224	11	52	31.5	-0.5	4894

1/11/1982	1982	1	11	225	16	44	30	-2	4892
1/12/1982	1982	1	12	226	30	37	33.5	1.5	4893.5
1/13/1982	1982	1	13	227	14	32	23	-9	4884.5
1/14/1982	1982	1	14	228	6	45	25.5	-6.5	4878
1/15/1982	1982	1	15	229	11	44	27.5	-4.5	4873.5
1/16/1982	1982	1	16	230	13	47	30	-2	4871.5
1/17/1982	1982	1	17	231	15	56	35.5	3.5	4875
1/18/1982	1982	1	18	232	25	53	39	7	4882
1/19/1982	1982	1	19	233	25	47	36	4	4886
1/20/1982	1982	1	20	234	23	49	36	4	4890
1/21/1982	1982	1	21	235	16	40	28	-4	4886
1/22/1982	1982	1	22	236	20	31	25.5	-6.5	4879.5
1/23/1982	1982	1	23	237	7	42	24.5	-7.5	4872
1/24/1982	1982	1	24	238	12	62	37	5	4877
1/25/1982	1982	1	25	239	18	61	39.5	7.5	4884.5
1/26/1982	1982	1	26	240	16	65	40.5	8.5	4893
1/27/1982	1982	1	27	241	32	54	43	11	4904
1/28/1982	1982	1	28	242	19	50	34.5	2.5	4906.5
1/29/1982	1982	1	29	243	27	40	33.5	1.5	4908
1/30/1982	1982	1	30	244	18	46	32	0	4908
1/31/1982	1982	1	31	245	11	42	26.5	-5.5	4902.5
2/1/1982	1982	2	1	246	15	39	27	-5	4928
2/2/1982	1982	2	2	247	7	29	18	-14	4914
2/3/1982	1982	2	3	248	6	28	17	-15	4899
2/4/1982	1982	2	4	249	5	29	17	-15	4884
2/5/1982	1982	2	5	250	8	28	18	-14	4870
2/6/1982	1982	2	6	251	-7	30	11.5	-20.5	4849.5
2/7/1982	1982	2	7	252	-8	39	15.5	-16.5	4833
2/8/1982	1982	2	8	253	10	38	24	-8	4825
2/9/1982	1982	2	9	254	10	37	23.5	-8.5	4816.5
2/10/1982	1982	2	10	255	12	35	23.5	-8.5	4808
2/11/1982	1982	2	11	256	11	39	25	-7	4801
2/12/1982	1982	2	12	257	10	34	22	-10	4791
2/13/1982	1982	2	13	258	11	33	22	-10	4781
2/14/1982	1982	2	14	259	10	30	20	-12	4769
2/15/1982	1982	2	15	260	9	30	19.5	-12.5	4756.5
2/16/1982	1982	2	16	261	16	39	27.5	-4.5	4752
2/17/1982	1982	2	17	262	18	39	28.5	-3.5	4748.5
2/18/1982	1982	2	18	263	17	37	27	-5	4743.5
2/19/1982	1982	2	19	264	16	35	25.5	-6.5	4737
2/20/1982	1982	2	20	265	15	36	25.5	-6.5	4730.5
2/21/1982	1982	2	21	266	16	37	26.5	-5.5	4725
2/22/1982	1982	2	22	267	20	58	39	7	4732
2/23/1982	1982	2	23	268	30	50	40	8	4740
2/25/1982	1982	2	25	269	24	57	40.5	8.5	4748.5
2/26/1982	1982	2	26	270	29	41	35	3	4751.5
2/27/1982	1982	2	27	271	27	40	33.5	1.5	4753
2/28/1982	1982	2	28	272	20	42	31	-1	4752
3/1/1982	1982	3	1	273	28	59	43.5	11.5	4763.5
3/2/1982	1982	3	2	274	30	55	42.5	10.5	4774
3/3/1982	1982	3	3	275	29	46	37.5	5.5	4779.5
3/4/1982	1982	3	4	276	25	45	35	3	4782.5
3/5/1982	1982	3	5	277	19	40	29.5	-2.5	4780
3/6/1982	1982	3	6	278	18	40	29	-3	4777
3/7/1982	1982	3	7	279	19	49	34	2	4779
3/8/1982	1982	3	8	280	19	48	33.5	1.5	4780.5
3/9/1982	1982	3	9	281	19	50	34.5	2.5	4783
3/10/1982	1982	3	10	282	20	50	35	3	4786
3/11/1982	1982	3	11	283	29	51	40	8	4794
3/12/1982	1982	3	12	284	28	56	42	10	4804
3/13/1982	1982	3	13	285	29	52	40.5	8.5	4812.5
3/14/1982	1982	3	14	286	30	49	39.5	7.5	4820
3/15/1982	1982	3	15	287	32	49	40.5	8.5	4828.5
3/16/1982	1982	3	16	288	30	46	38	6	4834.5
3/17/1982	1982	3	17	289	26	49	37.5	5.5	4840
3/18/1982	1982	3	18	290	28	50	39	7	4847
3/19/1982	1982	3	19	291	30	51	40.5	8.5	4855.5
3/20/1982	1982	3	20	292	22	50	36	4	4859.5
3/21/1982	1982	3	21	293	20	40	30	-2	4857.5
3/22/1982	1982	3	22	294	20	49	34.5	2.5	4860
3/23/1982	1982	3	23	295	24	47	35.5	3.5	4863.5
3/24/1982	1982	3	24	296	20	48	34	2	4865.5
3/25/1982	1982	3	25	297	24	51	37.5	5.5	4871
3/26/1982	1982	3	26	298	23	56	39.5	7.5	4878.5
3/27/1982	1982	3	27	299	28	58	43	11	4889.5
3/28/1982	1982	3	28	300	35	57	46	14	4903.5
3/29/1982	1982	3	29	301	32	50	41	9	4912.5
3/30/1982	1982	3	30	302	30	59	44.5	12.5	4925
3/31/1982	1982	3	31	303	28	49	38.5	6.5	4931.5
4/1/1982	1982	4	1	304	35	63	49	17	4948.5
4/2/1982	1982	4	2	305	26	64	45	13	4961.5
4/3/1982	1982	4	3	306	26	64	45	13	4974.5
4/4/1982	1982	4	4	307	31	59	45	13	4987.5
4/5/1982	1982	4	5	308	29	60	44.5	12.5	5000
4/6/1982	1982	4	6	309	41	58	49.5	17.5	5017.5
4/7/1982	1982	4	7	310	35	54	44.5	12.5	5030
4/8/1982	1982	4	8	311	24	52	38	6	5036
4/9/1982	1982	4	9	312	33	51	42	10	5046
4/10/1982	1982	4	10	313	25	63	44	12	5058
4/11/1982	1982	4	11	314	34	69	51.5	19.5	5077.5
4/12/1982	1982	4	12	315	34	68	51	19	5096.5
4/13/1982	1982	4	13	316	40	67	53.5	21.5	5118
4/14/1982	1982	4	14	317	34	66	50	18	5136

4/15/1982	1982	4	15	318	33	64	48.5	16.5	5152.5
4/16/1982	1982	4	16	319	34	62	48	16	5168.5
4/17/1982	1982	4	17	320	31	62	46.5	14.5	5183
4/18/1982	1982	4	18	321	35	65	50	18	5201
4/19/1982	1982	4	19	322	32	65	48.5	16.5	5217.5
4/20/1982	1982	4	20	323	24	62	43	11	5228.5
4/21/1982	1982	4	21	324	29	49	39	7	5235.5
4/22/1982	1982	4	22	325	30	42	36	4	5239.5
4/23/1982	1982	4	23	326	30	50	40	8	5247.5
4/24/1982	1982	4	24	327	29	49	39	7	5254.5
4/25/1982	1982	4	25	328	29	50	39.5	7.5	5262
4/26/1982	1982	4	26	329	28	54	41	9	5271
4/27/1982	1982	4	27	330	29	63	46	14	5285
4/28/1982	1982	4	28	331	40	70	55	23	5308
4/29/1982	1982	4	29	332	39	73	56	24	5332
4/30/1982	1982	4	30	333	44	70	57	25	5357
5/1/1982	1982	5	1	334	39	60	49.5	17.5	5374.5
5/2/1982	1982	5	2	335	42	61	51.5	19.5	5394
5/3/1982	1982	5	3	336	40	68	54	22	5416
5/4/1982	1982	5	4	337	44	67	55.5	23.5	5439.5
5/5/1982	1982	5	5	338	35	61	48	16	5455.5
5/6/1982	1982	5	6	339	30	59	44.5	12.5	5468
5/7/1982	1982	5	7	340	31	69	50	18	5486
5/8/1982	1982	5	8	341	39	68	53.5	21.5	5507.5
5/9/1982	1982	5	9	342	41	67	54	22	5529.5
5/10/1982	1982	5	10	343	35	66	50.5	18.5	5548
5/11/1982	1982	5	11	344	34	65	49.5	17.5	5565.5
5/12/1982	1982	5	12	345	32	61	46.5	14.5	5580
5/13/1982	1982	5	13	346	33	56	44.5	12.5	5592.5
5/14/1982	1982	5	14	347	33	65	49	17	5609.5
5/15/1982	1982	5	15	348	36	66	51	19	5628.5
5/16/1982	1982	5	16	349	37	67	52	20	5648.5
5/17/1982	1982	5	17	350	40	71	55.5	23.5	5672
5/18/1982	1982	5	18	351	43	72	57.5	25.5	5697.5
5/19/1982	1982	5	19	352	44	74	59	27	5724.5
5/21/1982	1982	5	21	353	41	73	57	25	5749.5
5/22/1982	1982	5	22	354	40	79	59.5	27.5	5777
5/23/1982	1982	5	23	355	44	76	60	28	5805
5/24/1982	1982	5	24	356	42	76	59	27	5832
5/25/1982	1982	5	25	357	45	75	60	28	5860
5/26/1982	1982	5	26	358	47	75	61	29	5889
5/27/1982	1982	5	27	359	46	77	61.5	29.5	5918.5
5/28/1982	1982	5	28	360	44	78	61	29	5947.5
5/29/1982	1982	5	29	361	43	76	59.5	27.5	5975
5/30/1982	1982	5	30	362	44	74	59	27	6002
5/31/1982	1982	5	31	363	46	75	60.5	28.5	6030.5
6/1/1982	1982	6	1	1	49	78	63.5	31.5	31.5
6/2/1982	1982	6	2	2	46	78	62	30	61.5
6/3/1982	1982	6	3	3	44	76	60	28	89.5
6/4/1982	1982	6	4	4	42	73	57.5	25.5	115
6/5/1982	1982	6	5	5	46	75	60.5	28.5	143.5
6/6/1982	1982	6	6	6	43	76	59.5	27.5	171
6/7/1982	1982	6	7	7	48	80	64	32	203
6/8/1982	1982	6	8	8	50	79	64.5	32.5	235.5
6/9/1982	1982	6	9	9	46	82	64	32	267.5
6/10/1982	1982	6	10	10	45	81	63	31	298.5
6/11/1982	1982	6	11	11	50	80	65	33	331.5
6/12/1982	1982	6	12	12	51	83	67	35	366.5
6/13/1982	1982	6	13	13	52	82	67	35	401.5
6/14/1982	1982	6	14	14	48	83	65.5	33.5	435
6/15/1982	1982	6	15	15	47	79	63	31	466
6/16/1982	1982	6	16	16	48	80	64	32	498
6/17/1982	1982	6	17	17	52	83	67.5	35.5	533.5
6/18/1982	1982	6	18	18	55	84	69.5	37.5	571
6/19/1982	1982	6	19	19	42	78	60	28	599
6/20/1982	1982	6	20	20	45	74	59.5	27.5	626.5
6/21/1982	1982	6	21	21	46	82	64	32	658.5
6/22/1982	1982	6	22	22	50	83	66.5	34.5	693
6/23/1982	1982	6	23	23	47	80	63.5	31.5	724.5
6/24/1982	1982	6	24	24	50	86	68	36	760.5
6/25/1982	1982	6	25	25	53	85	69	37	797.5
6/26/1982	1982	6	26	26	54	87	70.5	38.5	836
6/27/1982	1982	6	27	27	53	90	71.5	39.5	875.5
6/28/1982	1982	6	28	28	58	90	74	42	917.5
6/29/1982	1982	6	29	29	59	89	74	42	959.5
6/30/1982	1982	6	30	30	55	83	69	37	996.5
7/1/1982	1982	7	1	31	49	80	64.5	32.5	1029
7/2/1982	1982	7	2	32	48	81	64.5	32.5	1061.5
7/3/1982	1982	7	3	33	52	80	66	34	1095.5
7/4/1982	1982	7	4	34	55	76	65.5	33.5	1129
7/5/1982	1982	7	5	35	56	78	67	35	1164
7/6/1982	1982	7	6	36	49	79	64	32	1196
7/7/1982	1982	7	7	37	58	79	68.5	36.5	1232.5
7/8/1982	1982	7	8	38	55	83	69	37	1269.5
7/9/1982	1982	7	9	39	54	85	69.5	37.5	1307
7/10/1982	1982	7	10	40	53	88	70.5	38.5	1345.5
7/11/1982	1982	7	11	41	57	86	71.5	39.5	1385
7/12/1982	1982	7	12	42	52	88	70	38	1423
7/13/1982	1982	7	13	43	60	90	75	43	1466
7/14/1982	1982	7	14	44	58	90	74	42	1508
7/15/1982	1982	7	15	45	65	90	77.5	45.5	1553.5
7/16/1982	1982	7	16	46	59	85	72	40	1593.5
7/17/1982	1982	7	17	47	53	82	67.5	35.5	1629

7/18/1982	1982	7	18	48	52	84	68	36	1665
7/19/1982	1982	7	19	49	57	83	70	38	1703
7/20/1982	1982	7	20	50	58	80	69	37	1740
7/21/1982	1982	7	21	51	52	87	69.5	37.5	1777.5
7/22/1982	1982	7	22	52	62	86	74	42	1819.5
7/23/1982	1982	7	23	53	63	83	73	41	1860.5
7/24/1982	1982	7	24	54	68	79	73.5	41.5	1902
7/25/1982	1982	7	25	55	69	79	74	42	1944
7/26/1982	1982	7	26	56	58	79	68.5	36.5	1980.5
7/27/1982	1982	7	27	57	56	81	68.5	36.5	2017
7/28/1982	1982	7	28	58	57	80	68.5	36.5	2053.5
7/29/1982	1982	7	29	59	56	74	65	33	2086.5
7/30/1982	1982	7	30	60	55	74	64.5	32.5	2119
7/31/1982	1982	7	31	61	53	77	65	33	2152
8/1/1982	1982	8	1	62	53	79	66	34	2186
8/2/1982	1982	8	2	63	56	76	66	34	2220
8/3/1982	1982	8	3	64	54	75	64.5	32.5	2252.5
8/4/1982	1982	8	4	65	50	77	63.5	31.5	2284
8/5/1982	1982	8	5	66	59	78	68.5	36.5	2320.5
8/6/1982	1982	8	6	67	54	79	66.5	34.5	2355
8/7/1982	1982	8	7	68	56	79	67.5	35.5	2390.5
8/8/1982	1982	8	8	69	54	77	65.5	33.5	2424
8/9/1982	1982	8	9	70	54	83	68.5	36.5	2460.5
8/10/1982	1982	8	10	71	56	82	69	37	2497.5
8/11/1982	1982	8	11	72	55	81	68	36	2533.5
8/12/1982	1982	8	12	73	56	83	69.5	37.5	2571
8/13/1982	1982	8	13	74	52	75	63.5	31.5	2602.5
8/14/1982	1982	8	14	75	53	79	66	34	2636.5
8/15/1982	1982	8	15	76	55	74	64.5	32.5	2669
8/16/1982	1982	8	16	77	54	81	67.5	35.5	2704.5
8/17/1982	1982	8	17	78	55	78	66.5	34.5	2739
8/18/1982	1982	8	18	79	54	83	68.5	36.5	2775.5
8/19/1982	1982	8	19	80	59	81	70	38	2813.5
8/20/1982	1982	8	20	81	62	82	72	40	2853.5
8/21/1982	1982	8	21	82	57	73	65	33	2886.5
8/22/1982	1982	8	22	83	57	75	66	34	2920.5
8/23/1982	1982	8	23	84	59	73	66	34	2954.5
8/24/1982	1982	8	24	85	54	75	64.5	32.5	2987
8/25/1982	1982	8	25	86	53	74	63.5	31.5	3018.5
8/26/1982	1982	8	26	87	54	73	63.5	31.5	3050
8/27/1982	1982	8	27	88	52	75	63.5	31.5	3081.5
8/28/1982	1982	8	28	89	53	74	63.5	31.5	3113
8/29/1982	1982	8	29	90	52	72	62	30	3143
8/30/1982	1982	8	30	91	54	68	61	29	3172
8/31/1982	1982	8	31	92	52	74	63	31	3203
9/1/1982	1982	9	1	93	56	79	67.5	35.5	3238.5
9/2/1982	1982	9	2	94	57	80	68.5	36.5	3275
9/3/1982	1982	9	3	95	54	81	67.5	35.5	3310.5
9/4/1982	1982	9	4	96	55	76	65.5	33.5	3344
9/5/1982	1982	9	5	97	50	66	58	26	3370
9/6/1982	1982	9	6	98	51	69	60	28	3398
9/7/1982	1982	9	7	99	53	69	61	29	3427
9/8/1982	1982	9	8	100	50	73	61.5	29.5	3456.5
9/9/1982	1982	9	9	101	55	70	62.5	30.5	3487
9/10/1982	1982	9	10	102	52	71	61.5	29.5	3516.5
9/11/1982	1982	9	11	103	50	69	59.5	27.5	3544
9/12/1982	1982	9	12	104	45	58	51.5	19.5	3563.5
9/13/1982	1982	9	13	105	46	63	54.5	22.5	3586
9/14/1982	1982	9	14	106	57	68	62.5	30.5	3616.5
9/15/1982	1982	9	15	107	48	71	59.5	27.5	3644
9/16/1982	1982	9	16	108	49	69	59	27	3671
9/17/1982	1982	9	17	109	49	72	60.5	28.5	3699.5
9/18/1982	1982	9	18	110	44	69	56.5	24.5	3724
9/19/1982	1982	9	19	111	45	69	57	25	3749
9/20/1982	1982	9	20	112	44	69	56.5	24.5	3773.5
9/21/1982	1982	9	21	113	46	68	57	25	3798.5
9/22/1982	1982	9	22	114	47	74	60.5	28.5	3827
9/23/1982	1982	9	23	115	51	77	64	32	3859
9/24/1982	1982	9	24	116	52	76	64	32	3891
9/25/1982	1982	9	25	117	53	69	61	29	3920
9/26/1982	1982	9	26	118	52	76	64	32	3952
9/27/1982	1982	9	27	119	54	73	63.5	31.5	3983.5
9/28/1982	1982	9	28	120	41	67	54	22	4005.5
9/29/1982	1982	9	29	121	36	69	52.5	20.5	4026
9/30/1982	1982	9	30	122	40	69	54.5	22.5	4048.5
10/1/1982	1982	10	1	123	41	68	54.5	22.5	4071
10/2/1982	1982	10	2	124	40	59	49.5	17.5	4088.5
10/3/1982	1982	10	3	125	34	60	47	15	4103.5
10/4/1982	1982	10	4	126	35	64	49.5	17.5	4121
10/5/1982	1982	10	5	127	34	64	49	17	4138
10/6/1982	1982	10	6	128	36	72	54	22	4160
10/7/1982	1982	10	7	129	34	65	49.5	17.5	4177.5
10/8/1982	1982	10	8	130	35	69	52	20	4197.5
10/9/1982	1982	10	9	131	29	59	44	12	4209.5
10/10/1982	1982	10	10	132	22	55	38.5	6.5	4216
10/11/1982	1982	10	11	133	26	50	38	6	4222
10/12/1982	1982	10	12	134	9	40	24.5	-7.5	4214.5
10/13/1982	1982	10	13	135	10	35	22.5	-9.5	4205
10/14/1982	1982	10	14	136	13	40	26.5	-5.5	4199.5
10/15/1982	1982	10	15	137	14	49	31.5	-0.5	4199
10/16/1982	1982	10	16	138	15	50	32.5	0.5	4199.5
10/17/1982	1982	10	17	139	20	64	42	10	4209.5
10/18/1982	1982	10	18	140	32	62	47	15	4224.5

10/19/1982	1982	10	19	141	36	65	50.5	18.5	4243
10/20/1982	1982	10	20	142	28	66	47	15	4258
10/21/1982	1982	10	21	143	35	65	50	18	4276
10/22/1982	1982	10	22	144	32	77	54.5	22.5	4298.5
10/23/1982	1982	10	23	145	34	62	48	16	4314.5
10/24/1982	1982	10	24	146	36	64	50	18	4332.5
10/25/1982	1982	10	25	147	34	68	51	19	4351.5
10/26/1982	1982	10	26	148	30	67	48.5	16.5	4368
10/27/1982	1982	10	27	149	32	65	48.5	16.5	4384.5
10/28/1982	1982	10	28	150	35	63	49	17	4401.5
10/29/1982	1982	10	29	151	37	58	47.5	15.5	4417
10/30/1982	1982	10	30	152	20	46	33	1	4418
10/31/1982	1982	10	31	153	22	50	36	4	4422
11/1/1982	1982	11	1	154	31	54	42.5	10.5	4432.5
11/2/1982	1982	11	2	155	25	48	36.5	4.5	4437
11/3/1982	1982	11	3	156	18	42	30	-2	4435
11/4/1982	1982	11	4	157	24	50	37	5	4440
11/5/1982	1982	11	5	158	29	56	42.5	10.5	4450.5
11/6/1982	1982	11	6	159	30	60	45	13	4463.5
11/7/1982	1982	11	7	160	30	61	45.5	13.5	4477
11/8/1982	1982	11	8	161	34	56	45	13	4490
11/9/1982	1982	11	9	162	20	52	36	4	4494
11/10/1982	1982	11	10	163	30	55	42.5	10.5	4504.5
11/11/1982	1982	11	11	164	27	49	38	6	4510.5
11/12/1982	1982	11	12	165	19	49	34	2	4512.5
11/13/1982	1982	11	13	166	20	50	35	3	4515.5
11/14/1982	1982	11	14	167	19	45	32	0	4515.5
11/15/1982	1982	11	15	168	21	49	35	3	4518.5
11/16/1982	1982	11	16	169	28	47	37.5	5.5	4524
11/17/1982	1982	11	17	170	29	48	38.5	6.5	4530.5
11/18/1982	1982	11	18	171	28	46	37	5	4535.5
11/19/1982	1982	11	19	172	20	45	32.5	0.5	4536
11/20/1982	1982	11	20	173	26	49	37.5	5.5	4541.5
11/21/1982	1982	11	21	174	25	48	36.5	4.5	4546
11/22/1982	1982	11	22	175	28	50	39	7	4553
11/23/1982	1982	11	23	176	30	49	39.5	7.5	4560.5
11/24/1982	1982	11	24	177	23	42	32.5	0.5	4561
11/25/1982	1982	11	25	178	20	39	29.5	-2.5	4558.5
11/26/1982	1982	11	26	179	29	37	33	1	4559.5
11/27/1982	1982	11	27	180	26	38	32	0	4559.5
11/28/1982	1982	11	28	181	27	39	33	1	4560.5
11/29/1982	1982	11	29	182	30	40	35	3	4563.5
11/30/1982	1982	11	30	183	23	42	32.5	0.5	4564
12/1/1982	1982	12	1	184	23	40	31.5	-0.5	4563.5
12/2/1982	1982	12	2	185	20	36	28	-4	4559.5
12/3/1982	1982	12	3	186	17	30	23.5	-8.5	4551
12/4/1982	1982	12	4	187	18	44	31	-1	4550
12/5/1982	1982	12	5	188	21	43	32	0	4550
12/6/1982	1982	12	6	189	19	40	29.5	-2.5	4547.5
12/7/1982	1982	12	7	190	20	48	34	2	4549.5
12/8/1982	1982	12	8	191	23	45	34	2	4551.5
12/9/1982	1982	12	9	192	27	42	34.5	2.5	4554
12/10/1982	1982	12	10	193	28	43	35.5	3.5	4557.5
12/11/1982	1982	12	11	194	29	37	33	1	4558.5
12/12/1982	1982	12	12	195	10	40	25	-7	4551.5
12/13/1982	1982	12	13	196	11	44	27.5	-4.5	4547
12/14/1982	1982	12	14	197	19	40	29.5	-2.5	4544.5
12/15/1982	1982	12	15	198	16	42	29	-3	4541.5
12/16/1982	1982	12	16	199	19	39	29	-3	4538.5
12/17/1982	1982	12	17	200	18	40	29	-3	4535.5
12/18/1982	1982	12	18	201	20	45	32.5	0.5	4536
12/19/1982	1982	12	19	202	20	45	32.5	0.5	4536.5
12/20/1982	1982	12	20	203	21	50	35.5	3.5	4540
12/21/1982	1982	12	21	204	21	46	33.5	1.5	4541.5
12/22/1982	1982	12	22	205	20	49	34.5	2.5	4544
12/23/1982	1982	12	23	206	19	45	32	0	4544
12/24/1982	1982	12	24	207	18	39	28.5	-3.5	4540.5
12/25/1982	1982	12	25	208	6	30	18	-14	4526.5
12/26/1982	1982	12	26	209	7	30	18.5	-13.5	4513
12/27/1982	1982	12	27	210	12	34	23	-9	4504
12/28/1982	1982	12	28	211	14	30	22	-10	4494
12/29/1982	1982	12	29	212	0	25	12.5	-19.5	4474.5
12/30/1982	1982	12	30	213	0	27	13.5	-18.5	4456
12/31/1982	1982	12	31	214	0	24	12	-20	4436
1/1/1983	1983	1	1	215	5	38	21.5	-10.5	4425.5
1/2/1983	1983	1	2	216	4	32	18	-14	4411.5
1/3/1983	1983	1	3	217	0	31	15.5	-16.5	4395
1/4/1983	1983	1	4	218	6	34	20	-12	4383
1/5/1983	1983	1	5	219	10	40	25	-7	4376
1/6/1983	1983	1	6	220		39	39	7	4383
1/7/1983	1983	1	7	221	12	40	26	-6	4377
1/8/1983	1983	1	8	222	19	40	29.5	-2.5	4374.5
1/9/1983	1983	1	9	223	20	44	32	0	4374.5
1/10/1983	1983	1	10	224	15	42	28.5	-3.5	4371
1/11/1983	1983	1	11	225	15	42	28.5	-3.5	4367.5
1/12/1983	1983	1	12	226	19	42	30.5	-1.5	4366
1/13/1983	1983	1	13	227	18	41	29.5	-2.5	4363.5
1/14/1983	1983	1	14	228	19	44	31.5	-0.5	4363
1/15/1983	1983	1	15	229	16	40	28	-4	4359
1/16/1983	1983	1	16	230	15	39	27	-5	4354
1/17/1983	1983	1	17	231	16	38	27	-5	4349
1/18/1983	1983	1	18	232	16	40	28	-4	4345
1/19/1983	1983	1	19	233	10	39	24.5	-7.5	4337.5

1/20/1983	1983	1	20	234	19	40	29.5	-2.5	4335
1/21/1983	1983	1	21	235	20	40	30	-2	4333
1/22/1983	1983	1	22	236	21	38	29.5	-2.5	4330.5
1/23/1983	1983	1	23	237	10	32	21	-11	4319.5
1/24/1983	1983	1	24	238	15	39	27	-5	4314.5
1/25/1983	1983	1	25	239	16	38	27	-5	4309.5
1/26/1983	1983	1	26	240	19	37	28	-4	4305.5
1/27/1983	1983	1	27	241	16	39	27.5	-4.5	4301
1/28/1983	1983	1	28	242	19	40	29.5	-2.5	4298.5
1/29/1983	1983	1	29	243	19	42	30.5	-1.5	4297
1/30/1983	1983	1	30	244	19	40	29.5	-2.5	4294.5
1/31/1983	1983	1	31	245	11	30	20.5	-11.5	4283
2/1/1983	1983	2	1	246	5	28	16.5	-15.5	4267.5
2/2/1983	1983	2	2	247	9	30	19.5	-12.5	4255
2/3/1983	1983	2	3	248	8	38	23	-9	4246
2/4/1983	1983	2	4	249	7	39	23	-9	4237
2/5/1983	1983	2	5	250	5	30	17.5	-14.5	4222.5
2/6/1983	1983	2	6	251	4	34	19	-13	4209.5
2/7/1983	1983	2	7	252	5	36	20.5	-11.5	4198
2/8/1983	1983	2	8	253	5	38	21.5	-10.5	4187.5
2/9/1983	1983	2	9	254	9	46	27.5	-4.5	4183
2/10/1983	1983	2	10	255	10	40	25	-7	4176
2/11/1983	1983	2	11	256	10	40	25	-7	4169
2/12/1983	1983	2	12	257	15	48	31.5	-0.5	4168.5
2/13/1983	1983	2	13	258	17	48	32.5	0.5	4169
2/14/1983	1983	2	14	259	16	46	31	-1	4168
2/15/1983	1983	2	15	260	15	47	31	-1	4167
2/16/1983	1983	2	16	261	17	44	30.5	-1.5	4165.5
2/17/1983	1983	2	17	262	14	45	29.5	-2.5	4163
2/18/1983	1983	2	18	263	15	48	31.5	-0.5	4162.5
2/19/1983	1983	2	19	264	19	49	34	2	4164.5
2/20/1983	1983	2	20	265	20	45	32.5	0.5	4165
2/21/1983	1983	2	21	266	19	48	33.5	1.5	4166.5
2/22/1983	1983	2	22	267	19	46	32.5	0.5	4167
2/23/1983	1983	2	23	268	20	48	34	2	4169
2/24/1983	1983	2	24	269	20	51	35.5	3.5	4172.5
2/25/1983	1983	2	25	270	20	50	35	3	4175.5
2/26/1983	1983	2	26	271	18	50	34	2	4177.5
2/27/1983	1983	2	27	272	19	50	34.5	2.5	4180
2/28/1983	1983	2	28	273	20	43	31.5	-0.5	4179.5
3/1/1983	1983	3	1	274	33	56	44.5	12.5	4192
3/2/1983	1983	3	2	275	39	54	46.5	14.5	4206.5
3/3/1983	1983	3	3	276	34	54	44	12	4218.5
3/4/1983	1983	3	4	277	12	40	26	-6	4212.5
3/5/1983	1983	3	5	278	12	41	26.5	-5.5	4207
3/6/1983	1983	3	6	279	15	45	30	-2	4205
3/7/1983	1983	3	7	280	11	45	28	-4	4201
3/8/1983	1983	3	8	281	11	50	30.5	-1.5	4199.5
3/9/1983	1983	3	9	282	12	51	31.5	-0.5	4199
3/10/1983	1983	3	10	283	20	56	38	6	4205
3/11/1983	1983	3	11	284	22	59	40.5	8.5	4213.5
3/12/1983	1983	3	12	285	25	61	43	11	4224.5
3/13/1983	1983	3	13	286	20	59	39.5	7.5	4232
3/14/1983	1983	3	14	287	19	56	37.5	5.5	4237.5
3/15/1983	1983	3	15	288	18	58	38	6	4243.5
3/16/1983	1983	3	16	289	30	59	44.5	12.5	4256
3/17/1983	1983	3	17	290	28	46	37	5	4261
3/18/1983	1983	3	18	291	25	47	36	4	4265
3/19/1983	1983	3	19	292	24	46	35	3	4268
3/20/1983	1983	3	20	293	25	42	33.5	1.5	4269.5
3/21/1983	1983	3	21	294	26	40	33	1	4270.5
3/22/1983	1983	3	22	295	23	39	31	-1	4269.5
3/23/1983	1983	3	23	296	20	44	32	0	4269.5
3/24/1983	1983	3	24	297	25	44	34.5	2.5	4272
3/25/1983	1983	3	25	298	28	40	34	2	4274
3/26/1983	1983	3	26	299	21	39	30	-2	4272
3/27/1983	1983	3	27	300	21	35	28	-4	4268
3/28/1983	1983	3	28	301	20	46	33	1	4269
3/29/1983	1983	3	29	302	20	45	32.5	0.5	4269.5
3/30/1983	1983	3	30	303	29	49	39	7	4276.5
3/31/1983	1983	3	31	304	29	64	46.5	14.5	4291
4/1/1983	1983	4	1	305	20	30	25	-7	4284
4/2/1983	1983	4	2	306	12	30	21	-11	4273
4/3/1983	1983	4	3	307	16	30	23	-9	4264
4/4/1983	1983	4	4	308	14	35	24.5	-7.5	4256.5
4/5/1983	1983	4	5	309	11	37	24	-8	4248.5
4/6/1983	1983	4	6	310	17	36	26.5	-5.5	4243
4/7/1983	1983	4	7	311	18	40	29	-3	4240
4/8/1983	1983	4	8	312	19	42	30.5	-1.5	4238.5
4/9/1983	1983	4	9	313	20	45	32.5	0.5	4239
4/10/1983	1983	4	10	314	19	48	33.5	1.5	4240.5
4/11/1983	1983	4	11	315	17	47	32	0	4240.5
4/12/1983	1983	4	12	316	19	50	34.5	2.5	4243
4/13/1983	1983	4	13	317	20	57	38.5	6.5	4249.5
4/14/1983	1983	4	14	318	19	55	37	5	4254.5
4/15/1983	1983	4	15	319	13	56	34.5	2.5	4257
4/16/1983	1983	4	16	320	8	48	28	-4	4253
4/17/1983	1983	4	17	321	10	36	23	-9	4244
4/18/1983	1983	4	18	322	15	44	29.5	-2.5	4241.5
4/19/1983	1983	4	19	323	12	40	26	-6	4235.5
4/20/1983	1983	4	20	324	19	45	32	0	4235.5
4/21/1983	1983	4	21	325	20	50	35	3	4238.5
4/22/1983	1983	4	22	326	26	58	42	10	4248.5

4/23/1983	1983	4	23	327	27	64	45.5	13.5	4262
4/24/1983	1983	4	24	328	28	65	46.5	14.5	4276.5
4/25/1983	1983	4	25	329	30	64	47	15	4291.5
4/26/1983	1983	4	26	330	30	65	47.5	15.5	4307
4/27/1983	1983	4	27	331	34	61	47.5	15.5	4322.5
4/28/1983	1983	4	28	332	32	58	45	13	4335.5
4/29/1983	1983	4	29	333	34	66	50	18	4353.5
4/30/1983	1983	4	30	334	66	64	65	33	4386.5
5/1/1983	1983	5	1	335	32	57	44.5	12.5	4399
5/2/1983	1983	5	2	336	29	54	41.5	9.5	4408.5
5/3/1983	1983	5	3	337	31	60	45.5	13.5	4422
5/4/1983	1983	5	4	338	30	60	45	13	4435
5/5/1983	1983	5	5	339	32	61	46.5	14.5	4449.5
5/6/1983	1983	5	6	340	39	68	53.5	21.5	4471
5/7/1983	1983	5	7	341	41	68	54.5	22.5	4493.5
5/8/1983	1983	5	8	342	33	69	51	19	4512.5
5/9/1983	1983	5	9	343	48	73	60.5	28.5	4541
5/10/1983	1983	5	10	344	45	72	58.5	26.5	4567.5
5/11/1983	1983	5	11	345	44	73	58.5	26.5	4594
5/12/1983	1983	5	12	346	46	71	58.5	26.5	4620.5
5/13/1983	1983	5	13	347	31	67	49	17	4637.5
5/14/1983	1983	5	14	348	37	68	52.5	20.5	4658
5/15/1983	1983	5	15	349	32	62	47	15	4673
5/16/1983	1983	5	16	350	34	64	49	17	4690
5/17/1983	1983	5	17	351	39	67	53	21	4711
5/18/1983	1983	5	18	352	30	64	47	15	4726
5/19/1983	1983	5	19	353	29	61	45	13	4739
5/20/1983	1983	5	20	354	38	63	50.5	18.5	4757.5
5/21/1983	1983	5	21	355	33	46	39.5	7.5	4765
5/22/1983	1983	5	22	356	32	68	50	18	4783
5/23/1983	1983	5	23	357	40	74	57	25	4808
5/24/1983	1983	5	24	358	41	75	58	26	4834
5/25/1983	1983	5	25	359	47	77	62	30	4864
5/26/1983	1983	5	26	360	49	75	62	30	4894
5/27/1983	1983	5	27	361	52	77	64.5	32.5	4926.5
5/28/1983	1983	5	28	362	50	81	65.5	33.5	4960
5/29/1983	1983	5	29	363	50	81	65.5	33.5	4993.5
5/30/1983	1983	5	30	364	46	74	60	28	5021.5
5/31/1983	1983	5	31	365	49	74	61.5	29.5	5051
6/1/1983	1983	6	1	1	54	75	64.5	32.5	32.5
6/2/1983	1983	6	2	2	43	74	58.5	26.5	59
6/3/1983	1983	6	3	3	47	76	61.5	29.5	88.5
6/4/1983	1983	6	4	4	44	73	58.5	26.5	115
6/5/1983	1983	6	5	5	45	75	60	28	143
6/6/1983	1983	6	6	6	43	72	57.5	25.5	168.5
6/7/1983	1983	6	7	7	40	70	55	23	191.5
6/8/1983	1983	6	8	8	49	75	62	30	221.5
6/9/1983	1983	6	9	9	49	76	62.5	30.5	252
6/10/1983	1983	6	10	10	48	71	59.5	27.5	279.5
6/11/1983	1983	6	11	11	46	73	59.5	27.5	307
6/12/1983	1983	6	12	12	45	74	59.5	27.5	334.5
6/13/1983	1983	6	13	13	50	80	65	33	367.5
6/14/1983	1983	6	14	14	48	80	64	32	399.5
6/15/1983	1983	6	15	15	43	74	58.5	26.5	426
6/16/1983	1983	6	16	16	39	73	56	24	450
6/17/1983	1983	6	17	17	45	81	63	31	481
6/18/1983	1983	6	18	18	51	80	65.5	33.5	514.5
6/19/1983	1983	6	19	19	53	85	69	37	551.5
6/20/1983	1983	6	20	20	51	82	66.5	34.5	586
6/21/1983	1983	6	21	21	54	85	69.5	37.5	623.5
6/22/1983	1983	6	22	22	50	86	68	36	659.5
6/23/1983	1983	6	23	23	51	87	69	37	696.5
6/24/1983	1983	6	24	24	58	70	64	32	728.5
6/25/1983	1983	6	25	25	50	62	56	24	752.5
6/26/1983	1983	6	26	26	45	60	52.5	20.5	773
6/27/1983	1983	6	27	27	46	70	58	26	799
6/28/1983	1983	6	28	28	45	75	60	28	827
6/29/1983	1983	6	29	29	50	80	65	33	860
6/30/1983	1983	6	30	30	51	81	66	34	894
7/1/1983	1983	7	1	31	52	85	68.5	36.5	930.5
7/2/1983	1983	7	2	32	53	84	68.5	36.5	967
7/3/1983	1983	7	3	33	55	83	69	37	1004
7/4/1983	1983	7	4	34	56	85	70.5	38.5	1042.5
7/5/1983	1983	7	5	35	57	86	71.5	39.5	1082
7/6/1983	1983	7	6	36	54	83	68.5	36.5	1118.5
7/7/1983	1983	7	7	37	55	84	69.5	37.5	1156
7/8/1983	1983	7	8	38	58	82	70	38	1194
7/9/1983	1983	7	9	39	57	85	71	39	1233
7/10/1983	1983	7	10	40	54	81	67.5	35.5	1268.5
7/11/1983	1983	7	11	41	53	78	65.5	33.5	1302
7/12/1983	1983	7	12	42	49	75	62	30	1332
7/13/1983	1983	7	13	43	50	82	66	34	1366
7/14/1983	1983	7	14	44	54	83	68.5	36.5	1402.5
7/15/1983	1983	7	15	45	59	82	70.5	38.5	1441
7/16/1983	1983	7	16	46	57	85	71	39	1480
7/17/1983	1983	7	17	47	58	86	72	40	1520
7/18/1983	1983	7	18	48	56	80	68	36	1556
7/19/1983	1983	7	19	49	55	78	66.5	34.5	1590.5
7/20/1983	1983	7	20	50	54	79	66.5	34.5	1625
7/21/1983	1983	7	21	51	53	78	65.5	33.5	1658.5
7/22/1983	1983	7	22	52	54	80	67	35	1693.5
7/23/1983	1983	7	23	53	55	79	67	35	1728.5
7/24/1983	1983	7	24	54	55	80	67.5	35.5	1764

7/25/1983	1983	7	25	55	54	79	66.5	34.5	1798.5
7/26/1983	1983	7	26	56	52	76	64	32	1830.5
7/27/1983	1983	7	27	57	52	74	63	31	1861.5
7/28/1983	1983	7	28	58	54	77	65.5	33.5	1895
7/29/1983	1983	7	29	59	58	79	68.5	36.5	1931.5
7/30/1983	1983	7	30	60	57	78	67.5	35.5	1967
7/31/1983	1983	7	31	61	58	79	68.5	36.5	2003.5
8/1/1983	1983	8	1	62	55	77	66	34	2037.5
8/2/1983	1983	8	2	63	54	79	66.5	34.5	2072
8/3/1983	1983	8	3	64	56	78	67	35	2107
8/4/1983	1983	8	4	65	55	79	67	35	2142
8/5/1983	1983	8	5	66	58	80	69	37	2179
8/6/1983	1983	8	6	67	57	81	69	37	2216
8/7/1983	1983	8	7	68	59	80	69.5	37.5	2253.5
8/8/1983	1983	8	8	69	57	82	69.5	37.5	2291
8/9/1983	1983	8	9	70	56	81	68.5	36.5	2327.5
8/10/1983	1983	8	10	71	57	79	68	36	2363.5
8/11/1983	1983	8	11	72	55	77	66	34	2397.5
8/12/1983	1983	8	12	73	54	70	62	30	2427.5
8/13/1983	1983	8	13	74	55	74	64.5	32.5	2460
8/14/1983	1983	8	14	75	54	78	66	34	2494
8/15/1983	1983	8	15	76	55	79	67	35	2529
8/16/1983	1983	8	16	77	56	79	67.5	35.5	2564.5
8/17/1983	1983	8	17	78	54	80	67	35	2599.5
8/18/1983	1983	8	18	79	56	80	68	36	2635.5
8/19/1983	1983	8	19	80	57	80	68.5	36.5	2672
8/20/1983	1983	8	20	81	54	79	66.5	34.5	2706.5
8/21/1983	1983	8	21	82	50	77	63.5	31.5	2738
8/22/1983	1983	8	22	83	56	79	67.5	35.5	2773.5
8/23/1983	1983	8	23	84	55	78	66.5	34.5	2808
8/24/1983	1983	8	24	85	54	80	67	35	2843
8/25/1983	1983	8	25	86	56	77	66.5	34.5	2877.5
8/26/1983	1983	8	26	87	52	75	63.5	31.5	2909
8/27/1983	1983	8	27	88	54	76	65	33	2942
8/28/1983	1983	8	28	89	53	77	65	33	2975
8/29/1983	1983	8	29	90	51	75	63	31	3006
8/30/1983	1983	8	30	91	54	72	63	31	3037
8/31/1983	1983	8	31	92	54	76	65	33	3070
9/1/1983	1983	9	1	93	55	76	65.5	33.5	3103.5
9/2/1983	1983	9	2	94	57	77	67	35	3138.5
9/3/1983	1983	9	3	95	61	79	70	38	3176.5
9/4/1983	1983	9	4	96	57	80	68.5	36.5	3213
9/5/1983	1983	9	5	97	54	77	65.5	33.5	3246.5
9/6/1983	1983	9	6	98	52	69	60.5	28.5	3275
9/7/1983	1983	9	7	99	54	79	66.5	34.5	3309.5
9/8/1983	1983	9	8	100	55	74	64.5	32.5	3342
9/9/1983	1983	9	9	101	52	78	65	33	3375
9/10/1983	1983	9	10	102	55	79	67	35	3410
9/11/1983	1983	9	11	103	54	74	64	32	3442
9/12/1983	1983	9	12	104	52	70	61	29	3471
9/13/1983	1983	9	13	105	55	70	62.5	30.5	3501.5
9/14/1983	1983	9	14	106	48	74	61	29	3530.5
9/15/1983	1983	9	15	107	53	78	65.5	33.5	3564
9/16/1983	1983	9	16	108	54	78	66	34	3598
9/17/1983	1983	9	17	109	50	88	69	37	3635
9/18/1983	1983	9	18	110	50	75	62.5	30.5	3665.5
9/19/1983	1983	9	19	111	51	72	61.5	29.5	3695
9/20/1983	1983	9	20	112	35	71	53	21	3716
9/21/1983	1983	9	21	113	36	70	53	21	3737
9/22/1983	1983	9	22	114	45	73	59	27	3764
9/23/1983	1983	9	23	115	51	71	61	29	3793
9/24/1983	1983	9	24	116	42	69	55.5	23.5	3816.5
9/25/1983	1983	9	25	117	43	70	56.5	24.5	3841
9/26/1983	1983	9	26	118	46	71	58.5	26.5	3867.5
9/27/1983	1983	9	27	119	49	71	60	28	3895.5
9/28/1983	1983	9	28	120	45	60	52.5	20.5	3916
9/29/1983	1983	9	29	121	46	62	54	22	3938
9/30/1983	1983	9	30	122	46	62	54	22	3960
10/1/1983	1983	10	1	123	43	61	52	20	3980
10/2/1983	1983	10	2	124	42	61	51.5	19.5	3999.5
10/3/1983	1983	10	3	125	39	59	49	17	4016.5
10/4/1983	1983	10	4	126	37	61	49	17	4033.5
10/5/1983	1983	10	5	127	44	60	52	20	4053.5
10/6/1983	1983	10	6	128	43	64	53.5	21.5	4075
10/7/1983	1983	10	7	129	44	67	55.5	23.5	4098.5
10/8/1983	1983	10	8	130	47	66	56.5	24.5	4123
10/9/1983	1983	10	9	131	40	57	48.5	16.5	4139.5
10/10/1983	1983	10	10	132	41	58	49.5	17.5	4157
10/11/1983	1983	10	11	133	42	55	48.5	16.5	4173.5
10/12/1983	1983	10	12	134	36	56	46	14	4187.5
10/13/1983	1983	10	13	135	36	57	46.5	14.5	4202
10/14/1983	1983	10	14	136	38	68	53	21	4223
10/15/1983	1983	10	15	137	45	66	55.5	23.5	4246.5
10/16/1983	1983	10	16	138	39	58	48.5	16.5	4263
10/17/1983	1983	10	17	139	37	60	48.5	16.5	4279.5
10/18/1983	1983	10	18	140	41	62	51.5	19.5	4299
10/19/1983	1983	10	19	141	42	65	53.5	21.5	4320.5
10/20/1983	1983	10	20	142	46	64	55	23	4343.5
10/21/1983	1983	10	21	143	43	57	50	18	4361.5
10/22/1983	1983	10	22	144	36	60	48	16	4377.5
10/23/1983	1983	10	23	145	40	64	52	20	4397.5
10/24/1983	1983	10	24	146	39	64	51.5	19.5	4417
10/25/1983	1983	10	25	147	42	62	52	20	4437

10/26/1983	1983	10	26	148	33	55	44	12	4449
10/27/1983	1983	10	27	149	32	54	43	11	4460
10/28/1983	1983	10	28	150	33	55	44	12	4472
10/29/1983	1983	10	29	151	32	55	43.5	11.5	4483.5
10/30/1983	1983	10	30	152	33	60	46.5	14.5	4498
10/31/1983	1983	10	31	153	43	64	53.5	21.5	4519.5
11/1/1983	1983	11	1	154	39	61	50	18	4537.5
11/2/1983	1983	11	2	155	40	62	51	19	4556.5
11/3/1983	1983	11	3	156	39	64	51.5	19.5	4576
11/4/1983	1983	11	4	157	40	57	48.5	16.5	4592.5
11/5/1983	1983	11	5	158	40	59	49.5	17.5	4610
11/6/1983	1983	11	6	159	38	60	49	17	4627
11/7/1983	1983	11	7	160	37	63	50	18	4645
11/8/1983	1983	11	8	161	36	63	49.5	17.5	4662.5
11/9/1983	1983	11	9	162	21	59	40	8	4670.5
11/10/1983	1983	11	10	163	27	55	41	9	4679.5
11/11/1983	1983	11	11	164	26	56	41	9	4688.5
11/12/1983	1983	11	12	165	33	60	46.5	14.5	4703
11/13/1983	1983	11	13	166	39	60	49.5	17.5	4720.5
11/14/1983	1983	11	14	167	38	61	49.5	17.5	4738
11/15/1983	1983	11	15	168	20	54	37	5	4743
11/16/1983	1983	11	16	169	24	55	39.5	7.5	4750.5
11/17/1983	1983	11	17	170	25	59	42	10	4760.5
11/18/1983	1983	11	18	171	31	58	44.5	12.5	4773
11/19/1983	1983	11	19	172	11	52	31.5	-0.5	4772.5
11/20/1983	1983	11	20	173	15	36	25.5	-6.5	4766
11/21/1983	1983	11	21	174	26	45	35.5	3.5	4769.5
11/22/1983	1983	11	22	175	7	40	23.5	-8.5	4761
11/23/1983	1983	11	23	176	11	27	19	-13	4748
11/24/1983	1983	11	24	177	16	26	21	-11	4737
11/25/1983	1983	11	25	178	15	45	30	-2	4735
11/26/1983	1983	11	26	179	16	46	31	-1	4734
11/27/1983	1983	11	27	180	12	42	27	-5	4729
11/28/1983	1983	11	28	181	13	39	26	-6	4723
11/29/1983	1983	11	29	182	10	37	23.5	-8.5	4714.5
11/30/1983	1983	11	30	183	15	39	27	-5	4709.5
12/1/1983	1983	12	1	184	26	49	37.5	5.5	4715
12/2/1983	1983	12	2	185	12	46	29	-3	4712
12/3/1983	1983	12	3	186	12	40	26	-6	4706
12/4/1983	1983	12	4	187	18	40	29	-3	4703
12/5/1983	1983	12	5	188	19	41	30	-2	4701
12/6/1983	1983	12	6	189	10	40	25	-7	4694
12/7/1983	1983	12	7	190	18	42	30	-2	4692
12/8/1983	1983	12	8	191	19	48	33.5	1.5	4693.5
12/9/1983	1983	12	9	192	20	48	34	2	4695.5
12/10/1983	1983	12	10	193	19	47	33	1	4696.5
12/11/1983	1983	12	11	194	18	46	32	0	4696.5
12/12/1983	1983	12	12	195	17	40	28.5	-3.5	4693
12/13/1983	1983	12	13	196	16	39	27.5	-4.5	4688.5
12/14/1983	1983	12	14	197	16	40	28	-4	4684.5
12/15/1983	1983	12	15	198	20	35	27.5	-4.5	4680
12/16/1983	1983	12	16	199	16	43	29.5	-2.5	4677.5
12/17/1983	1983	12	17	200	17	37	27	-5	4672.5
12/18/1983	1983	12	18	201	15	36	25.5	-6.5	4666
12/19/1983	1983	12	19	202	15	35	25	-7	4659
12/20/1983	1983	12	20	203	6	32	19	-13	4646
12/21/1983	1983	12	21	204	11	36	23.5	-8.5	4637.5
12/22/1983	1983	12	22	205	15	38	26.5	-5.5	4632
12/23/1983	1983	12	23	206	19	35	27	-5	4627
12/24/1983	1983	12	24	207	16	34	25	-7	4620
12/25/1983	1983	12	25	208	17	36	26.5	-5.5	4614.5
12/26/1983	1983	12	26	209	19	37	28	-4	4610.5
12/27/1983	1983	12	27	210	17	34	25.5	-6.5	4604
12/28/1983	1983	12	28	211	4	35	19.5	-12.5	4591.5
12/29/1983	1983	12	29	212	9	25	17	-15	4576.5
12/30/1983	1983	12	30	213	16	39	27.5	-4.5	4572
12/31/1983	1983	12	31	214	15	38	26.5	-5.5	4566.5
1/1/1984	1984	1	1	215	20	39	29.5	-2.5	4564
1/2/1984	1984	1	2	216	24	40	32	0	4564
1/3/1984	1984	1	3	217	20	39	29.5	-2.5	4561.5
1/4/1984	1984	1	4	218	21	40	30.5	-1.5	4560
1/5/1984	1984	1	5	219	20	39	29.5	-2.5	4557.5
1/6/1984	1984	1	6	220	22	36	29	-3	4554.5
1/7/1984	1984	1	7	221	27	37	32	0	4554.5
1/8/1984	1984	1	8	222	27	45	36	4	4558.5
1/9/1984	1984	1	9	223	26	46	36	4	4562.5
1/10/1984	1984	1	10	224	17	43	30	-2	4560.5
1/11/1984	1984	1	11	225	18	41	29.5	-2.5	4558
1/12/1984	1984	1	12	226	15	39	27	-5	4553
1/13/1984	1984	1	13	227	16	38	27	-5	4548
1/14/1984	1984	1	14	228	9	37	23	-9	4539
1/15/1984	1984	1	15	229	10	35	22.5	-9.5	4529.5
1/16/1984	1984	1	16	230	13	32	22.5	-9.5	4520
1/17/1984	1984	1	17	231	17	28	22.5	-9.5	4510.5
1/18/1984	1984	1	18	232	-4	22	9	-23	4487.5
1/19/1984	1984	1	19	233	-13	29	8	-24	4463.5
1/20/1984	1984	1	20	234	-13	34	10.5	-21.5	4442
1/21/1984	1984	1	21	235	-4	30	13	-19	4423
1/22/1984	1984	1	22	236	11	39	25	-7	4416
1/23/1984	1984	1	23	237	12	34	23	-9	4407
1/24/1984	1984	1	24	238	-6	34	14	-18	4389
1/25/1984	1984	1	25	239	15	37	26	-6	4383
1/26/1984	1984	1	26	240	19	42	30.5	-1.5	4381.5

1/27/1984	1984	1	27	241	18	43	30.5	-1.5	4380
1/28/1984	1984	1	28	242	21	45	33	1	4381
1/29/1984	1984	1	29	243	20	41	30.5	-1.5	4379.5
1/30/1984	1984	1	30	244	17	44	30.5	-1.5	4378
1/31/1984	1984	1	31	245	19	45	32	0	4378
2/1/1984	1984	2	1	246	22	49	35.5	3.5	4381.5
2/2/1984	1984	2	2	247	24	48	36	4	4385.5
2/3/1984	1984	2	3	248	20	47	33.5	1.5	4387
2/4/1984	1984	2	4	249	25	42	33.5	1.5	4388.5
2/5/1984	1984	2	5	250	32	49	40.5	8.5	4397
2/6/1984	1984	2	6	251	23	55	39	7	4404
2/7/1984	1984	2	7	252	25	54	39.5	7.5	4411.5
2/8/1984	1984	2	8	253	21	42	31.5	-0.5	4411
2/9/1984	1984	2	9	254	23	40	31.5	-0.5	4410.5
2/10/1984	1984	2	10	255	12	41	26.5	-5.5	4405
2/11/1984	1984	2	11	256	13	42	27.5	-4.5	4400.5
2/12/1984	1984	2	12	257	15	45	30	-2	4398.5
2/13/1984	1984	2	13	258	13	45	29	-3	4395.5
2/14/1984	1984	2	14	259	13	50	31.5	-0.5	4395
2/15/1984	1984	2	15	260	12	50	31	-1	4394
2/16/1984	1984	2	16	261	16	50	33	1	4395
2/17/1984	1984	2	17	262	11	50	30.5	-1.5	4393.5
2/18/1984	1984	2	18	263	15	49	32	0	4393.5
2/19/1984	1984	2	19	264	19	36	27.5	-4.5	4389
2/20/1984	1984	2	20	265	15	35	25	-7	4382
2/21/1984	1984	2	21	266	12	36	24	-8	4374
2/22/1984	1984	2	22	267	14	39	26.5	-5.5	4368.5
2/23/1984	1984	2	23	268	19	49	34	2	4370.5
2/24/1984	1984	2	24	269	15	48	31.5	-0.5	4370
2/25/1984	1984	2	25	270	18	49	33.5	1.5	4371.5
2/26/1984	1984	2	26	271	30	48	39	7	4378.5
2/27/1984	1984	2	27	272	71	40	55.5	23.5	4402
2/28/1984	1984	2	28	273	12	40	26	-6	4396
2/29/1984	1984	2	29	274	19	50	34.5	2.5	4398.5
3/1/1984	1984	3	1	275	27	58	42.5	10.5	4409
3/2/1984	1984	3	2	276	26	57	41.5	9.5	4418.5
3/3/1984	1984	3	3	277	25	54	39.5	7.5	4426
3/4/1984	1984	3	4	278	22	52	37	5	4431
3/5/1984	1984	3	5	279	15	38	26.5	-5.5	4425.5
3/6/1984	1984	3	6	280	13	39	26	-6	4419.5
3/7/1984	1984	3	7	281	16	48	32	0	4419.5
3/8/1984	1984	3	8	282	25	50	37.5	5.5	4425
3/9/1984	1984	3	9	283	26	51	38.5	6.5	4431.5
3/10/1984	1984	3	10	284	27	55	41	9	4440.5
3/11/1984	1984	3	11	285	17	51	34	2	4442.5
3/12/1984	1984	3	12	286	25	55	40	8	4450.5
3/13/1984	1984	3	13	287	32	60	46	14	4464.5
3/14/1984	1984	3	14	288	39	61	50	18	4482.5
3/15/1984	1984	3	15	289	33	60	46.5	14.5	4497
3/16/1984	1984	3	16	290	40	59	49.5	17.5	4514.5
3/17/1984	1984	3	17	291	28	60	44	12	4526.5
3/18/1984	1984	3	18	292	19	60	39.5	7.5	4534
3/19/1984	1984	3	19	293	20	53	36.5	4.5	4538.5
3/20/1984	1984	3	20	294	24	61	42.5	10.5	4549
3/21/1984	1984	3	21	295	31	64	47.5	15.5	4564.5
3/22/1984	1984	3	22	296	29	61	45	13	4577.5
3/23/1984	1984	3	23	297	19	45	32	0	4577.5
3/24/1984	1984	3	24	298	25	58	41.5	9.5	4587
3/25/1984	1984	3	25	299	26	58	42	10	4597
3/26/1984	1984	3	26	300	24	45	34.5	2.5	4599.5
3/27/1984	1984	3	27	301	28	38	33	1	4600.5
3/28/1984	1984	3	28	302	21	39	30	-2	4598.5
3/29/1984	1984	3	29	303	25	40	32.5	0.5	4599
3/30/1984	1984	3	30	304	20	43	31.5	-0.5	4598.5
3/31/1984	1984	3	31	305	31	46	38.5	6.5	4605
4/1/1984	1984	4	1	306	25	40	32.5	0.5	4605.5
4/2/1984	1984	4	2	307	25	40	32.5	0.5	4606
4/3/1984	1984	4	3	308	27	47	37	5	4611
4/4/1984	1984	4	4	309	23	50	36.5	4.5	4615.5
4/5/1984	1984	4	5	310	25	50	37.5	5.5	4621
4/6/1984	1984	4	6	311	23	61	42	10	4631
4/7/1984	1984	4	7	312	25	61	43	11	4642
4/8/1984	1984	4	8	313	28	58	43	11	4653
4/9/1984	1984	4	9	314	22	56	39	7	4660
4/10/1984	1984	4	10	315	24	40	32	0	4660
4/11/1984	1984	4	11	316	23	59	41	9	4669
4/12/1984	1984	4	12	317	39	61	50	18	4687
4/13/1984	1984	4	13	318	27	62	44.5	12.5	4699.5
4/14/1984	1984	4	14	319	30	64	47	15	4714.5
4/15/1984	1984	4	15	320	32	65	48.5	16.5	4731
4/16/1984	1984	4	16	321	30	68	49	17	4748
4/17/1984	1984	4	17	322	32	72	52	20	4768
4/18/1984	1984	4	18	323	40	71	55.5	23.5	4791.5
4/19/1984	1984	4	19	324	45	69	57	25	4816.5
4/20/1984	1984	4	20	325	40	66	53	21	4837.5
4/21/1984	1984	4	21	326	25	61	43	11	4848.5
4/22/1984	1984	4	22	327	31	48	39.5	7.5	4856
4/23/1984	1984	4	23	328	25	54	39.5	7.5	4863.5
4/24/1984	1984	4	24	329	31	64	47.5	15.5	4879
4/25/1984	1984	4	25	330	30	66	48	16	4895
4/26/1984	1984	4	26	331	36	69	52.5	20.5	4915.5
4/27/1984	1984	4	27	332	37	67	52	20	4935.5
4/28/1984	1984	4	28	333	30	57	43.5	11.5	4947

4/29/1984	1984	4	29	334	21	43	32	0	4947
4/30/1984	1984	4	30	335	27	50	38.5	6.5	4953.5
5/1/1984	1984	5	1	336	39	63	51	19	4972.5
5/2/1984	1984	5	2	337	38	64	51	19	4991.5
5/3/1984	1984	5	3	338	35	69	52	20	5011.5
5/4/1984	1984	5	4	339	34	70	52	20	5031.5
5/5/1984	1984	5	5	340	44	71	57.5	25.5	5057
5/6/1984	1984	5	6	341	48	69	58.5	26.5	5083.5
5/7/1984	1984	5	7	342	43	68	55.5	23.5	5107
5/8/1984	1984	5	8	343	35	67	51	19	5126
5/9/1984	1984	5	9	344	30	71	50.5	18.5	5144.5
5/10/1984	1984	5	10	345	39	72	55.5	23.5	5168
5/11/1984	1984	5	11	346	47	78	62.5	30.5	5198.5
5/12/1984	1984	5	12	347	53	80	66.5	34.5	5233
5/13/1984	1984	5	13	348	54	79	66.5	34.5	5267.5
5/14/1984	1984	5	14	349	49	80	64.5	32.5	5300
5/15/1984	1984	5	15	350	49	76	62.5	30.5	5330.5
5/16/1984	1984	5	16	351	41	66	53.5	21.5	5352
5/17/1984	1984	5	17	352	39	64	51.5	19.5	5371.5
5/18/1984	1984	5	18	353	44	70	57	25	5396.5
5/19/1984	1984	5	19	354	42	74	58	26	5422.5
5/20/1984	1984	5	20	355	44	74	59	27	5449.5
5/21/1984	1984	5	21	356	43	75	59	27	5476.5
5/22/1984	1984	5	22	357	46	80	63	31	5507.5
5/23/1984	1984	5	23	358	55	80	67.5	35.5	5543
5/24/1984	1984	5	24	359	54	85	69.5	37.5	5580.5
5/25/1984	1984	5	25	360	52	86	69	37	5617.5
5/26/1984	1984	5	26	361	53	84	68.5	36.5	5654
5/27/1984	1984	5	27	362	50	83	66.5	34.5	5688.5
5/28/1984	1984	5	28	363	51	87	69	37	5725.5
5/29/1984	1984	5	29	364	52	84	68	36	5761.5
5/30/1984	1984	5	30	365	49	78	63.5	31.5	5793
5/31/1984	1984	5	31	366	47	80	63.5	31.5	5824.5
6/1/1984	1984	6	1	1	45	71	58	26	26
6/2/1984	1984	6	2	2	46	76	61	29	55
6/3/1984	1984	6	3	3	54	74	64	32	87
6/4/1984	1984	6	4	4	50	73	61.5	29.5	116.5
6/5/1984	1984	6	5	5	52	73	62.5	30.5	147
6/6/1984	1984	6	6	6	44	73	58.5	26.5	173.5
6/7/1984	1984	6	7	7	48	74	61	29	202.5
6/8/1984	1984	6	8	8	44	75	59.5	27.5	230
6/9/1984	1984	6	9	9	39	74	56.5	24.5	254.5
6/10/1984	1984	6	10	10	50	82	66	34	288.5
6/11/1984	1984	6	11	11	49	81	65	33	321.5
6/12/1984	1984	6	12	12	51	80	65.5	33.5	355
6/13/1984	1984	6	13	13	50	84	67	35	390
6/14/1984	1984	6	14	14	53	81	67	35	425
6/15/1984	1984	6	15	15	49	76	62.5	30.5	455.5
6/16/1984	1984	6	16	16	48	74	61	29	484.5
6/17/1984	1984	6	17	17	46	80	63	31	515.5
6/18/1984	1984	6	18	18	53	82	67.5	35.5	551
6/19/1984	1984	6	19	19	52	83	67.5	35.5	586.5
6/20/1984	1984	6	20	20	47	79	63	31	617.5
6/21/1984	1984	6	21	21	50	80	65	33	650.5
6/22/1984	1984	6	22	22	56	82	69	37	687.5
6/23/1984	1984	6	23	23	55	81	68	36	723.5
6/24/1984	1984	6	24	24	60	79	69.5	37.5	761
6/25/1984	1984	6	25	25	55	77	66	34	795
6/26/1984	1984	6	26	26	54	78	66	34	829
6/27/1984	1984	6	27	27	53	80	66.5	34.5	863.5
6/28/1984	1984	6	28	28	54	83	68.5	36.5	900
6/29/1984	1984	6	29	29	61	84	72.5	40.5	940.5
6/30/1984	1984	6	30	30	58	83	70.5	38.5	979
7/1/1984	1984	7	1	31	58	79	68.5	36.5	1015.5
7/2/1984	1984	7	2	32	55	86	70.5	38.5	1054
7/3/1984	1984	7	3	33	58	87	72.5	40.5	1094.5
7/4/1984	1984	7	4	34	56	88	72	40	1134.5
7/5/1984	1984	7	5	35	59	86	72.5	40.5	1175
7/6/1984	1984	7	6	36	58	85	71.5	39.5	1214.5
7/7/1984	1984	7	7	37	50	83	66.5	34.5	1249
7/8/1984	1984	7	8	38	64	84	74	42	1291
7/9/1984	1984	7	9	39	59	80	69.5	37.5	1328.5
7/10/1984	1984	7	10	40	57	81	69	37	1365.5
7/11/1984	1984	7	11	41	58	79	68.5	36.5	1402
7/12/1984	1984	7	12	42	55	75	65	33	1435
7/13/1984	1984	7	13	43	56	77	66.5	34.5	1469.5
7/14/1984	1984	7	14	44	57	82	69.5	37.5	1507
7/15/1984	1984	7	15	45	58	86	72	40	1547
7/16/1984	1984	7	16	46	61	83	72	40	1587
7/17/1984	1984	7	17	47	52	77	64.5	32.5	1619.5
7/18/1984	1984	7	18	48	53	80	66.5	34.5	1654
7/19/1984	1984	7	19	49	56	83	69.5	37.5	1691.5
7/20/1984	1984	7	20	50	57	85	71	39	1730.5
7/21/1984	1984	7	21	51	54	87	70.5	38.5	1769
7/22/1984	1984	7	22	52	55	84	69.5	37.5	1806.5
7/23/1984	1984	7	23	53	59	80	69.5	37.5	1844
7/24/1984	1984	7	24	54	56	80	68	36	1880
7/25/1984	1984	7	25	55	57	77	67	35	1915
7/26/1984	1984	7	26	56	56	75	65.5	33.5	1948.5
7/27/1984	1984	7	27	57	55	78	66.5	34.5	1983
7/28/1984	1984	7	28	58	56	80	68	36	2019
7/29/1984	1984	7	29	59	59	78	68.5	36.5	2055.5
7/30/1984	1984	7	30	60	54	81	67.5	35.5	2091

7/31/1984	1984	7	31	61	57	82	69.5	37.5	2128.5
8/1/1984	1984	8	1	62	59	84	71.5	39.5	2168
8/2/1984	1984	8	2	63	58	81	69.5	37.5	2205.5
8/3/1984	1984	8	3	64	56	83	69.5	37.5	2243
8/4/1984	1984	8	4	65	55	82	68.5	36.5	2279.5
8/5/1984	1984	8	5	66	54	79	66.5	34.5	2314
8/6/1984	1984	8	6	67	56	76	66	34	2348
8/7/1984	1984	8	7	68	54	82	68	36	2384
8/8/1984	1984	8	8	69	53	81	67	35	2419
8/9/1984	1984	8	9	70	50	79	64.5	32.5	2451.5
8/10/1984	1984	8	10	71	54	74	64	32	2483.5
8/11/1984	1984	8	11	72	51	76	63.5	31.5	2515
8/12/1984	1984	8	12	73	56	79	67.5	35.5	2550.5
8/13/1984	1984	8	13	74	55	78	66.5	34.5	2585
8/14/1984	1984	8	14	75	52	79	65.5	33.5	2618.5
8/15/1984	1984	8	15	76	56	78	67	35	2653.5
8/16/1984	1984	8	16	77	55	79	67	35	2688.5
8/17/1984	1984	8	17	78	53	78	65.5	33.5	2722
8/18/1984	1984	8	18	79	54	79	66.5	34.5	2756.5
8/19/1984	1984	8	19	80	57	78	67.5	35.5	2792
8/20/1984	1984	8	20	81	56	77	66.5	34.5	2826.5
8/21/1984	1984	8	21	82	57	80	68.5	36.5	2863
8/22/1984	1984	8	22	83	51	82	66.5	34.5	2897.5
8/23/1984	1984	8	23	84	55	72	63.5	31.5	2929
8/24/1984	1984	8	24	85	49	69	59	27	2956
8/25/1984	1984	8	25	86	52	79	65.5	33.5	2989.5
8/26/1984	1984	8	26	87	54	78	66	34	3023.5
8/27/1984	1984	8	27	88	52	79	65.5	33.5	3057
8/28/1984	1984	8	28	89	58	78	68	36	3093
8/29/1984	1984	8	29	90	57	82	69.5	37.5	3130.5
8/30/1984	1984	8	30	91	59	84	71.5	39.5	3170
8/31/1984	1984	8	31	92	58	81	69.5	37.5	3207.5
9/1/1984	1984	9	1	93	54	74	64	32	3239.5
9/2/1984	1984	9	2	94	49	78	63.5	31.5	3271
9/3/1984	1984	9	3	95	48	79	63.5	31.5	3302.5
9/4/1984	1984	9	4	96	47	72	59.5	27.5	3330
9/5/1984	1984	9	5	97	50	78	64	32	3362
9/6/1984	1984	9	6	98	48	78	63	31	3393
9/7/1984	1984	9	7	99	54	76	65	33	3426
9/8/1984	1984	9	8	100	47	79	63	31	3457
9/9/1984	1984	9	9	101	46	80	63	31	3488
9/10/1984	1984	9	10	102	55	84	69.5	37.5	3525.5
9/11/1984	1984	9	11	103	56	81	68.5	36.5	3562
9/12/1984	1984	9	12	104	50	76	63	31	3593
9/13/1984	1984	9	13	105	56	77	66.5	34.5	3627.5
9/14/1984	1984	9	14	106	55	80	67.5	35.5	3663
9/15/1984	1984	9	15	107	50	75	62.5	30.5	3693.5
9/16/1984	1984	9	16	108	52	70	61	29	3722.5
9/17/1984	1984	9	17	109	53	65	59	27	3749.5
9/18/1984	1984	9	18	110	48	72	60	28	3777.5
9/19/1984	1984	9	19	111	50	75	62.5	30.5	3808
9/20/1984	1984	9	20	112	52	76	64	32	3840
9/21/1984	1984	9	21	113	51	73	62	30	3870
9/22/1984	1984	9	22	114	49	68	58.5	26.5	3896.5
9/23/1984	1984	9	23	115	47	70	58.5	26.5	3923
9/24/1984	1984	9	24	116	52	72	62	30	3953
9/25/1984	1984	9	25	117	46	71	58.5	26.5	3979.5
9/26/1984	1984	9	26	118	41	58	49.5	17.5	3997
9/27/1984	1984	9	27	119	40	59	49.5	17.5	4014.5
9/28/1984	1984	9	28	120	41	63	52	20	4034.5
9/29/1984	1984	9	29	121	39	64	51.5	19.5	4054
9/30/1984	1984	9	30	122	36	67	51.5	19.5	4073.5
10/1/1984	1984	10	1	123	48	65	56.5	24.5	4098
10/2/1984	1984	10	2	124	48	65	56.5	24.5	4122.5
10/3/1984	1984	10	3	125	39	63	51	19	4141.5
10/4/1984	1984	10	4	126	38	62	50	18	4159.5
10/5/1984	1984	10	5	127	38	60	49	17	4176.5
10/6/1984	1984	10	6	128	38	59	48.5	16.5	4193
10/7/1984	1984	10	7	129	32	58	45	13	4206
10/8/1984	1984	10	8	130	38	63	50.5	18.5	4224.5
10/9/1984	1984	10	9	131	38	64	51	19	4243.5
10/10/1984	1984	10	10	132	43	63	53	21	4264.5
10/11/1984	1984	10	11	133	42	64	53	21	4285.5
10/12/1984	1984	10	12	134	41	62	51.5	19.5	4305
10/13/1984	1984	10	13	135	32	55	43.5	11.5	4316.5
10/14/1984	1984	10	14	136	30	54	42	10	4326.5
10/15/1984	1984	10	15	137	30	50	40	8	4334.5
10/16/1984	1984	10	16	138	28	34	31	-1	4333.5
10/17/1984	1984	10	17	139	28	57	42.5	10.5	4344
10/18/1984	1984	10	18	140	26	52	39	7	4351
10/19/1984	1984	10	19	141	27	44	35.5	3.5	4354.5
10/20/1984	1984	10	20	142	28	48	38	6	4360.5
10/21/1984	1984	10	21	143	29	44	36.5	4.5	4365
10/22/1984	1984	10	22	144	28	42	35	3	4368
10/23/1984	1984	10	23	145	30	44	37	5	4373
10/24/1984	1984	10	24	146	29	37	33	1	4374
10/25/1984	1984	10	25	147	27	45	36	4	4378
10/26/1984	1984	10	26	148	27	51	39	7	4385
10/27/1984	1984	10	27	149	30	52	41	9	4394
10/28/1984	1984	10	28	150	31	53	42	10	4404
10/29/1984	1984	10	29	151	33	59	46	14	4418
10/30/1984	1984	10	30	152	35	62	48.5	16.5	4434.5
10/31/1984	1984	10	31	153	38	60	49	17	4451.5

11/1/1984	1984	11	1	154	32	55	43.5	11.5	4463
11/2/1984	1984	11	2	155	31	58	44.5	12.5	4475.5
11/3/1984	1984	11	3	156	32	61	46.5	14.5	4490
11/4/1984	1984	11	4	157	33	57	45	13	4503
11/5/1984	1984	11	5	158	30	61	45.5	13.5	4516.5
11/6/1984	1984	11	6	159	35	60	47.5	15.5	4532
11/7/1984	1984	11	7	160	36	61	48.5	16.5	4548.5
11/8/1984	1984	11	8	161	37	59	48	16	4564.5
11/9/1984	1984	11	9	162	31	55	43	11	4575.5
11/10/1984	1984	11	10	163	21	49	35	3	4578.5
11/11/1984	1984	11	11	164	29	56	42.5	10.5	4589
11/12/1984	1984	11	12	165	30	61	45.5	13.5	4602.5
11/13/1984	1984	11	13	166	33	59	46	14	4616.5
11/14/1984	1984	11	14	167	30	57	43.5	11.5	4628
11/15/1984	1984	11	15	168	29	55	42	10	4638
11/16/1984	1984	11	16	169	28	54	41	9	4647
11/17/1984	1984	11	17	170	32	51	41.5	9.5	4656.5
11/18/1984	1984	11	18	171	30	42	36	4	4660.5
11/19/1984	1984	11	19	172	24	44	34	2	4662.5
11/20/1984	1984	11	20	173	23	45	34	2	4664.5
11/21/1984	1984	11	21	174	20	52	36	4	4668.5
11/22/1984	1984	11	22	175	21	42	31.5	-0.5	4668
11/23/1984	1984	11	23	176	27	48	37.5	5.5	4673.5
11/24/1984	1984	11	24	177	30	47	38.5	6.5	4680
11/25/1984	1984	11	25	178	26	39	32.5	0.5	4680.5
11/26/1984	1984	11	26	179	16	31	23.5	-8.5	4672
11/27/1984	1984	11	27	180	8	30	19	-13	4659
11/28/1984	1984	11	28	181	10	39	24.5	-7.5	4651.5
11/29/1984	1984	11	29	182	12	40	26	-6	4645.5
11/30/1984	1984	11	30	183	19	34	26.5	-5.5	4640
12/1/1984	1984	12	1	184	20	40	30	-2	4638
12/2/1984	1984	12	2	185	21	40	30.5	-1.5	4636.5
12/3/1984	1984	12	3	186	21	44	32.5	0.5	4637
12/4/1984	1984	12	4	187	22	42	32	0	4637
12/5/1984	1984	12	5	188	21	40	30.5	-1.5	4635.5
12/6/1984	1984	12	6	189	16	41	28.5	-3.5	4632
12/7/1984	1984	12	7	190	22	51	36.5	4.5	4636.5
12/8/1984	1984	12	8	191	25	50	37.5	5.5	4642
12/9/1984	1984	12	9	192	26	40	33	1	4643
12/10/1984	1984	12	10	193	23	53	38	6	4649
12/11/1984	1984	12	11	194	32	52	42	10	4659
12/12/1984	1984	12	12	195	32	41	36.5	4.5	4663.5
12/13/1984	1984	12	13	196	30	41	35.5	3.5	4667
12/14/1984	1984	12	14	197	14	33	23.5	-8.5	4658.5
12/15/1984	1984	12	15	198	16	32	24	-8	4650.5
12/16/1984	1984	12	16	199	14	39	26.5	-5.5	4645
12/17/1984	1984	12	17	200	15	39	27	-5	4640
12/18/1984	1984	12	18	201	16	40	28	-4	4636
12/19/1984	1984	12	19	202	17	46	31.5	-0.5	4635.5
12/20/1984	1984	12	20	203	31	42	36.5	4.5	4640
12/21/1984	1984	12	21	204	19	35	27	-5	4635
12/22/1984	1984	12	22	205	12	33	22.5	-9.5	4625.5
12/23/1984	1984	12	23	206	15	38	26.5	-5.5	4620
12/24/1984	1984	12	24	207	15	38	26.5	-5.5	4614.5
12/25/1984	1984	12	25	208	17	37	27	-5	4609.5
12/26/1984	1984	12	26	209	19	40	29.5	-2.5	4607
12/27/1984	1984	12	27	210	20	36	28	-4	4603
12/28/1984	1984	12	28	211	35	49	42	10	4613
12/29/1984	1984	12	29	212	28	47	37.5	5.5	4618.5
12/30/1984	1984	12	30	213	21	39	30	-2	4616.5
12/31/1984	1984	12	31	214	12	37	24.5	-7.5	4609
1/1/1985	1985	1	1	215	17	38	27.5	-4.5	4604.5
1/2/1985	1985	1	2	216	16	30	23	-9	4595.5
1/3/1985	1985	1	3	217	10	36	23	-9	4586.5
1/4/1985	1985	1	4	218	13	39	26	-6	4580.5
1/5/1985	1985	1	5	219	19	40	29.5	-2.5	4578
1/6/1985	1985	1	6	220	20	43	31.5	-0.5	4577.5
1/7/1985	1985	1	7	221	21	46	33.5	1.5	4579
1/8/1985	1985	1	8	222	20	44	32	0	4579
1/9/1985	1985	1	9	223	17	38	27.5	-4.5	4574.5
1/10/1985	1985	1	10	224	11	39	25	-7	4567.5
1/11/1985	1985	1	11	225	13	27	20	-12	4555.5
1/12/1985	1985	1	12	226	7	31	19	-13	4542.5
1/13/1985	1985	1	13	227	11	37	24	-8	4534.5
1/14/1985	1985	1	14	228	13	40	26.5	-5.5	4529
1/15/1985	1985	1	15	229	16	42	29	-3	4526
1/16/1985	1985	1	16	230	15	38	26.5	-5.5	4520.5
1/17/1985	1985	1	17	231	20	47	33.5	1.5	4522
1/18/1985	1985	1	18	232	18	45	31.5	-0.5	4521.5
1/19/1985	1985	1	19	233	17	41	29	-3	4518.5
1/20/1985	1985	1	20	234	19	41	30	-2	4516.5
1/21/1985	1985	1	21	235	16	40	28	-4	4512.5
1/22/1985	1985	1	22	236	15	39	27	-5	4507.5
1/23/1985	1985	1	23	237	16	38	27	-5	4502.5
1/24/1985	1985	1	24	238	19	39	29	-3	4499.5
1/25/1985	1985	1	25	239	19	38	28.5	-3.5	4496
1/26/1985	1985	1	26	240	20	37	28.5	-3.5	4492.5
1/27/1985	1985	1	27	241	14	35	24.5	-7.5	4485
1/28/1985	1985	1	28	242	15	33	24	-8	4477
1/29/1985	1985	1	29	243	19	32	25.5	-6.5	4470.5
1/30/1985	1985	1	30	244	5	27	16	-16	4454.5
1/31/1985	1985	1	31	245	6	27	16.5	-15.5	4439
2/1/1985	1985	2	1	246	-5	14	4.5	-27.5	4411.5

2/2/1985	1985	2	2	247	-4	19	7.5	-24.5	4387
2/3/1985	1985	2	3	248	10	20	15	-17	4370
2/4/1985	1985	2	4	249	-3	20	8.5	-23.5	4346.5
2/5/1985	1985	2	5	250	-4	22	9	-23	4323.5
2/6/1985	1985	2	6	251	10	21	15.5	-16.5	4307
2/7/1985	1985	2	7	252	8	30	19	-13	4294
2/8/1985	1985	2	8	253	9	32	20.5	-11.5	4282.5
2/9/1985	1985	2	9	254	9	35	22	-10	4272.5
2/10/1985	1985	2	10	255	5	36	20.5	-11.5	4261
2/11/1985	1985	2	11	256	7	36	21.5	-10.5	4250.5
2/12/1985	1985	2	12	257	19	40	29.5	-2.5	4248
2/13/1985	1985	2	13	258	18	42	30	-2	4246
2/14/1985	1985	2	14	259	20	43	31.5	-0.5	4245.5
2/15/1985	1985	2	15	260	12	45	28.5	-3.5	4242
2/16/1985	1985	2	16	261	18	45	31.5	-0.5	4241.5
2/17/1985	1985	2	17	262	13	43	28	-4	4237.5
2/18/1985	1985	2	18	263	13	45	29	-3	4234.5
2/19/1985	1985	2	19	264	20	49	34.5	2.5	4237
2/20/1985	1985	2	20	265	13	50	31.5	-0.5	4236.5
2/21/1985	1985	2	21	266	14	51	32.5	0.5	4237
2/22/1985	1985	2	22	267	18	45	31.5	-0.5	4236.5
2/23/1985	1985	2	23	268	15	41	28	-4	4232.5
2/24/1985	1985	2	24	269	15	40	27.5	-4.5	4228
2/25/1985	1985	2	25	270	13	40	26.5	-5.5	4222.5
2/26/1985	1985	2	26	271	15	41	28	-4	4218.5
2/27/1985	1985	2	27	272	18	42	30	-2	4216.5
2/28/1985	1985	2	28	273	19	45	32	0	4216.5
3/1/1985	1985	3	1	274	31	52	41.5	9.5	4226
3/2/1985	1985	3	2	275	32	50	41	9	4235
3/3/1985	1985	3	3	276	20	52	36	4	4239
3/4/1985	1985	3	4	277	18	38	28	-4	4235
3/5/1985	1985	3	5	278	21	54	37.5	5.5	4240.5
3/6/1985	1985	3	6	279	25	54	39.5	7.5	4248
3/7/1985	1985	3	7	280	26	52	39	7	4255
3/8/1985	1985	3	8	281	29	54	41.5	9.5	4264.5
3/9/1985	1985	3	9	282	30	58	44	12	4276.5
3/10/1985	1985	3	10	283	38	60	49	17	4293.5
3/11/1985	1985	3	11	284	41	59	50	18	4311.5
3/12/1985	1985	3	12	285	19	46	32.5	0.5	4312
3/13/1985	1985	3	13	286	20	50	35	3	4315
3/14/1985	1985	3	14	287	26	46	36	4	4319
3/15/1985	1985	3	15	288	31	45	38	6	4325
3/16/1985	1985	3	16	289	25	46	35.5	3.5	4328.5
3/17/1985	1985	3	17	290	26	52	39	7	4335.5
3/18/1985	1985	3	18	291	29	52	40.5	8.5	4344
3/19/1985	1985	3	19	292	28	53	40.5	8.5	4352.5
3/20/1985	1985	3	20	293	25	49	37	5	4357.5
3/21/1985	1985	3	21	294	29	52	40.5	8.5	4366
3/22/1985	1985	3	22	295	20	53	36.5	4.5	4370.5
3/23/1985	1985	3	23	296	19	54	36.5	4.5	4375
3/24/1985	1985	3	24	297	30	60	45	13	4388
3/25/1985	1985	3	25	298	31	65	48	16	4404
3/26/1985	1985	3	26	299	35	65	50	18	4422
3/27/1985	1985	3	27	300	39	60	49.5	17.5	4439.5
3/28/1985	1985	3	28	301	38	57	47.5	15.5	4455
3/29/1985	1985	3	29	302	41	56	48.5	16.5	4471.5
3/30/1985	1985	3	30	303	25	54	39.5	7.5	4479
3/31/1985	1985	3	31	304	21	33	27	-5	4474
4/1/1985	1985	4	1	305	28	57	42.5	10.5	4484.5
4/2/1985	1985	4	2	306	30	66	48	16	4500.5
4/3/1985	1985	4	3	307	32	66	49	17	4517.5
4/4/1985	1985	4	4	308	35	65	50	18	4535.5
4/5/1985	1985	4	5	309	29	64	46.5	14.5	4550
4/6/1985	1985	4	6	310	30	62	46	14	4564
4/7/1985	1985	4	7	311	33	60	46.5	14.5	4578.5
4/8/1985	1985	4	8	312	37	68	52.5	20.5	4599
4/9/1985	1985	4	9	313	40	67	53.5	21.5	4620.5
4/10/1985	1985	4	10	314	39	68	53.5	21.5	4642
4/11/1985	1985	4	11	315	38	69	53.5	21.5	4663.5
4/12/1985	1985	4	12	316	39	70	54.5	22.5	4686
4/13/1985	1985	4	13	317	37	69	53	21	4707
4/14/1985	1985	4	14	318	38	68	53	21	4728
4/15/1985	1985	4	15	319	36	72	54	22	4750
4/16/1985	1985	4	16	320	40	73	56.5	24.5	4774.5
4/17/1985	1985	4	17	321	42	74	58	26	4800.5
4/18/1985	1985	4	18	322	45	70	57.5	25.5	4826
4/19/1985	1985	4	19	323	31	69	50	18	4844
4/20/1985	1985	4	20	324	30	66	48	16	4860
4/21/1985	1985	4	21	325	32	64	48	16	4876
4/22/1985	1985	4	22	326	41	65	53	21	4897
4/23/1985	1985	4	23	327	39	46	42.5	10.5	4907.5
4/24/1985	1985	4	24	328	28	59	43.5	11.5	4919
4/25/1985	1985	4	25	329	33	66	49.5	17.5	4936.5
4/26/1985	1985	4	26	330	39	65	52	20	4956.5
4/27/1985	1985	4	27	331	32	54	43	11	4967.5
4/28/1985	1985	4	28	332	34	52	43	11	4978.5
4/29/1985	1985	4	29	333	33	50	41.5	9.5	4988
4/30/1985	1985	4	30	334	32	60	46	14	5002
5/1/1985	1985	5	1	335	41	72	56.5	24.5	5026.5
5/2/1985	1985	5	2	336	36	75	55.5	23.5	5050
5/3/1985	1985	5	3	337	39	69	54	22	5072
5/4/1985	1985	5	4	338	40	70	55	23	5095
5/5/1985	1985	5	5	339	43	69	56	24	5119

5/6/1985	1985	5	6	340	45	70	57.5	25.5	5144.5
5/7/1985	1985	5	7	341	41	71	56	24	5168.5
5/8/1985	1985	5	8	342	48	74	61	29	5197.5
5/9/1985	1985	5	9	343	50	75	62.5	30.5	5228
5/10/1985	1985	5	10	344	54	69	61.5	29.5	5257.5
5/11/1985	1985	5	11	345	46	67	56.5	24.5	5282
5/12/1985	1985	5	12	346	35	63	49	17	5299
5/13/1985	1985	5	13	347	32	58	45	13	5312
5/14/1985	1985	5	14	348	30	66	48	16	5328
5/15/1985	1985	5	15	349	38	75	56.5	24.5	5352.5
5/16/1985	1985	5	16	350	41	74	57.5	25.5	5378
5/17/1985	1985	5	17	351	49	70	59.5	27.5	5405.5
5/18/1985	1985	5	18	352	48	69	58.5	26.5	5432
5/19/1985	1985	5	19	353	41	69	55	23	5455
5/20/1985	1985	5	20	354	40	60	50	18	5473
5/21/1985	1985	5	21	355	41	65	53	21	5494
5/22/1985	1985	5	22	356	46	74	60	28	5522
5/23/1985	1985	5	23	357	45	79	62	30	5552
5/24/1985	1985	5	24	358	46	78	62	30	5582
5/25/1985	1985	5	25	359	45	77	61	29	5611
5/26/1985	1985	5	26	360	40	76	58	26	5637
5/27/1985	1985	5	27	361	46	79	62.5	30.5	5667.5
5/28/1985	1985	5	28	362	52	81	66.5	34.5	5702
5/29/1985	1985	5	29	363	50	80	65	33	5735
5/30/1985	1985	5	30	364	50	76	63	31	5766
5/31/1985	1985	5	31	365	47	70	58.5	26.5	5792.5
6/1/1985	1985	6	1	1	41	75	58	26	26
6/2/1985	1985	6	2	2	40	79	59.5	27.5	53.5
6/3/1985	1985	6	3	3	46	73	59.5	27.5	81
6/4/1985	1985	6	4	4	42	70	56	24	105
6/5/1985	1985	6	5	5	42	71	56.5	24.5	129.5
6/6/1985	1985	6	6	6	46	84	65	33	162.5
6/7/1985	1985	6	7	7	56	92	74	42	204.5
6/8/1985	1985	6	8	8	58	93	75.5	43.5	248
6/9/1985	1985	6	9	9	56	86	71	39	287
6/10/1985	1985	6	10	10	55	88	71.5	39.5	326.5
6/11/1985	1985	6	11	11	53	87	70	38	364.5
6/12/1985	1985	6	12	12	50	85	67.5	35.5	400
6/13/1985	1985	6	13	13	52	86	69	37	437
6/14/1985	1985	6	14	14	60	87	73.5	41.5	478.5
6/15/1985	1985	6	15	15	57	91	74	42	520.5
6/16/1985	1985	6	16	16	56	90	73	41	561.5
6/17/1985	1985	6	17	17	55	88	71.5	39.5	601
6/18/1985	1985	6	18	18	51	83	67	35	636
6/19/1985	1985	6	19	19	55	84	69.5	37.5	673.5
6/20/1985	1985	6	20	20	52	86	69	37	710.5
6/21/1985	1985	6	21	21	57	89	73	41	751.5
6/22/1985	1985	6	22	22	56	86	71	39	790.5
6/23/1985	1985	6	23	23	53	86	69.5	37.5	828
6/24/1985	1985	6	24	24	57	85	71	39	867
6/25/1985	1985	6	25	25	51	80	65.5	33.5	900.5
6/26/1985	1985	6	26	26	40	81	60.5	28.5	929
6/27/1985	1985	6	27	27	44	81	62.5	30.5	959.5
6/28/1985	1985	6	28	28	50	88	69	37	996.5
6/29/1985	1985	6	29	29	51	87	69	37	1033.5
6/30/1985	1985	6	30	30	58	86	72	40	1073.5
7/1/1985	1985	7	1	31	53	90	71.5	39.5	1113
7/2/1985	1985	7	2	32	52	88	70	38	1151
7/3/1985	1985	7	3	33	49	86	67.5	35.5	1186.5
7/4/1985	1985	7	4	34	59	93	76	44	1230.5
7/5/1985	1985	7	5	35	57	94	75.5	43.5	1274
7/6/1985	1985	7	6	36	59	93	76	44	1318
7/7/1985	1985	7	7	37	61	94	77.5	45.5	1363.5
7/8/1985	1985	7	8	38	63	90	76.5	44.5	1408
7/9/1985	1985	7	9	39	59	89	74	42	1450
7/10/1985	1985	7	10	40	63	90	76.5	44.5	1494.5
7/11/1985	1985	7	11	41	55	86	70.5	38.5	1533
7/12/1985	1985	7	12	42	58	91	74.5	42.5	1575.5
7/13/1985	1985	7	13	43	59	93	76	44	1619.5
7/14/1985	1985	7	14	44	58	90	74	42	1661.5
7/15/1985	1985	7	15	45	58	84	71	39	1700.5
7/16/1985	1985	7	16	46	54	87	70.5	38.5	1739
7/17/1985	1985	7	17	47	57	85	71	39	1778
7/18/1985	1985	7	18	48	55	89	72	40	1818
7/19/1985	1985	7	19	49	55	82	68.5	36.5	1854.5
7/20/1985	1985	7	20	50	54	83	68.5	36.5	1891
7/21/1985	1985	7	21	51	55	79	67	35	1926
7/22/1985	1985	7	22	52	54	82	68	36	1962
7/23/1985	1985	7	23	53	55	77	66	34	1996
7/24/1985	1985	7	24	54	53	79	66	34	2030
7/25/1985	1985	7	25	55	50	80	65	33	2063
7/26/1985	1985	7	26	56	51	81	66	34	2097
7/27/1985	1985	7	27	57	52	74	63	31	2128
7/28/1985	1985	7	28	58	58	73	65.5	33.5	2161.5
7/29/1985	1985	7	29	59	56	75	65.5	33.5	2195
7/30/1985	1985	7	30	60	53	76	64.5	32.5	2227.5
7/31/1985	1985	7	31	61	52	79	65.5	33.5	2261
8/1/1985	1985	8	1	62	53	78	65.5	33.5	2294.5
8/2/1985	1985	8	2	63	54	69	61.5	29.5	2324
8/3/1985	1985	8	3	64	40	70	55	23	2347
8/4/1985	1985	8	4	65	51	79	65	33	2380
8/5/1985	1985	8	5	66	55	85	70	38	2418
8/6/1985	1985	8	6	67	58	85	71.5	39.5	2457.5

8/7/1985	1985	8	7	68	59	87	73	41	2498.5
8/8/1985	1985	8	8	69	58	83	70.5	38.5	2537
8/9/1985	1985	8	9	70	55	81	68	36	2573
8/10/1985	1985	8	10	71	57	80	68.5	36.5	2609.5
8/11/1985	1985	8	11	72	50	74	62	30	2639.5
8/12/1985	1985	8	12	73	55	77	66	34	2673.5
8/13/1985	1985	8	13	74	46	81	63.5	31.5	2705
8/14/1985	1985	8	14	75	50	81	65.5	33.5	2738.5
8/15/1985	1985	8	15	76	54	82	68	36	2774.5
8/16/1985	1985	8	16	77	55	83	69	37	2811.5
8/17/1985	1985	8	17	78	53	80	66.5	34.5	2846
8/18/1985	1985	8	18	79	52	80	66	34	2880
8/19/1985	1985	8	19	80	53	85	69	37	2917
8/20/1985	1985	8	20	81	57	86	71.5	39.5	2956.5
8/21/1985	1985	8	21	82	52	80	66	34	2990.5
8/22/1985	1985	8	22	83	58	85	71.5	39.5	3030
8/23/1985	1985	8	23	84	53	86	69.5	37.5	3067.5
8/24/1985	1985	8	24	85	51	87	69	37	3104.5
8/25/1985	1985	8	25	86	55	85	70	38	3142.5
8/26/1985	1985	8	26	87	57	87	72	40	3182.5
8/27/1985	1985	8	27	88	58	86	72	40	3222.5
8/28/1985	1985	8	28	89	57	82	69.5	37.5	3260
8/29/1985	1985	8	29	90	55	86	70.5	38.5	3298.5
8/30/1985	1985	8	30	91	57	86	71.5	39.5	3338
8/31/1985	1985	8	31	92	55	85	70	38	3376
9/1/1985	1985	9	1	93	53	81	67	35	3411
9/2/1985	1985	9	2	94	54	78	66	34	3445
9/3/1985	1985	9	3	95	56	79	67.5	35.5	3480.5
9/4/1985	1985	9	4	96	50	74	62	30	3510.5
9/5/1985	1985	9	5	97	45	75	60	28	3538.5
9/6/1985	1985	9	6	98	46	74	60	28	3566.5
9/7/1985	1985	9	7	99	45	71	58	26	3592.5
9/8/1985	1985	9	8	100	48	75	61.5	29.5	3622
9/9/1985	1985	9	9	101	47	77	62	30	3652
9/10/1985	1985	9	10	102	46	74	60	28	3680
9/11/1985	1985	9	11	103	52	75	63.5	31.5	3711.5
9/12/1985	1985	9	12	104	40	68	54	22	3733.5
9/13/1985	1985	9	13	105	42	78	60	28	3761.5
9/14/1985	1985	9	14	106	50	79	64.5	32.5	3794
9/15/1985	1985	9	15	107	57	75	66	34	3828
9/16/1985	1985	9	16	108	48	75	61.5	29.5	3857.5
9/17/1985	1985	9	17	109	49	72	60.5	28.5	3886
9/18/1985	1985	9	18	110	40	71	55.5	23.5	3909.5
9/19/1985	1985	9	19	111	49	75	62	30	3939.5
9/20/1985	1985	9	20	112	43	62	52.5	20.5	3960
9/21/1985	1985	9	21	113	40	52	46	14	3974
9/22/1985	1985	9	22	114	36	66	51	19	3993
9/23/1985	1985	9	23	115	36	66	51	19	4012
9/24/1985	1985	9	24	116	39	70	54.5	22.5	4034.5
9/25/1985	1985	9	25	117	42	69	55.5	23.5	4058
9/26/1985	1985	9	26	118	38	70	54	22	4080
9/27/1985	1985	9	27	119	44	70	57	25	4105
9/28/1985	1985	9	28	120	45	69	57	25	4130
9/29/1985	1985	9	29	121	37	58	47.5	15.5	4145.5
9/30/1985	1985	9	30	122	32	63	47.5	15.5	4161
10/1/1985	1985	10	1	123	36	65	50.5	18.5	4179.5
10/2/1985	1985	10	2	124	38	64	51	19	4198.5
10/3/1985	1985	10	3	125	35	70	52.5	20.5	4219
10/4/1985	1985	10	4	126	36	70	53	21	4240
10/5/1985	1985	10	5	127	35	69	52	20	4260
10/6/1985	1985	10	6	128	44	74	59	27	4287
10/7/1985	1985	10	7	129	29	71	50	18	4305
10/8/1985	1985	10	8	130	27	62	44.5	12.5	4317.5
10/9/1985	1985	10	9	131	25	64	44.5	12.5	4330
10/10/1985	1985	10	10	132	24	62	43	11	4341
10/11/1985	1985	10	11	133	30	57	43.5	11.5	4352.5
10/12/1985	1985	10	12	134	34	60	47	15	4367.5
10/13/1985	1985	10	13	135	30	59	44.5	12.5	4380
10/14/1985	1985	10	14	136	33	60	46.5	14.5	4394.5
10/15/1985	1985	10	15	137	30	58	44	12	4406.5
10/16/1985	1985	10	16	138	31	58	44.5	12.5	4419
10/17/1985	1985	10	17	139	32	54	43	11	4430
10/18/1985	1985	10	18	140	36	55	45.5	13.5	4443.5
10/19/1985	1985	10	19	141	38	53	45.5	13.5	4457
10/20/1985	1985	10	20	142	33	59	46	14	4471
10/21/1985	1985	10	21	143	39	60	49.5	17.5	4488.5
10/22/1985	1985	10	22	144	38	61	49.5	17.5	4506
10/23/1985	1985	10	23	145	35	60	47.5	15.5	4521.5
10/24/1985	1985	10	24	146	38	66	52	20	4541.5
10/25/1985	1985	10	25	147	37	69	53	21	4562.5
10/26/1985	1985	10	26	148	36	66	51	19	4581.5
10/27/1985	1985	10	27	149	35	64	49.5	17.5	4599
10/28/1985	1985	10	28	150	30	66	48	16	4615
10/29/1985	1985	10	29	151	38	62	50	18	4633
10/30/1985	1985	10	30	152	33	62	47.5	15.5	4648.5
10/31/1985	1985	10	31	153	38	57	47.5	15.5	4664
11/1/1985	1985	11	1	154	32	51	41.5	9.5	4673.5
11/2/1985	1985	11	2	155	29	50	39.5	7.5	4681
11/3/1985	1985	11	3	156	32	58	45	13	4694
11/4/1985	1985	11	4	157	33	66	49.5	17.5	4711.5
11/5/1985	1985	11	5	158	43	63	53	21	4732.5
11/6/1985	1985	11	6	159	29	58	43.5	11.5	4744
11/7/1985	1985	11	7	160	27	57	42	10	4754

11/8/1985	1985	11	8	161	34	58	46	14	4768
11/9/1985	1985	11	9	162	24	56	40	8	4776
11/10/1985	1985	11	10	163	23	59	41	9	4785
11/11/1985	1985	11	11	164	34	59	46.5	14.5	4799.5
11/12/1985	1985	11	12	165	27	54	40.5	8.5	4808
11/13/1985	1985	11	13	166	25	35	30	-2	4806
11/14/1985	1985	11	14	167	15	32	23.5	-8.5	4797.5
11/15/1985	1985	11	15	168	9	41	25	-7	4790.5
11/16/1985	1985	11	16	169	19	52	35.5	3.5	4794
11/17/1985	1985	11	17	170	11	51	31	-1	4793
11/18/1985	1985	11	18	171	16	36	26	-6	4787
11/19/1985	1985	11	19	172	5	33	19	-13	4774
11/20/1985	1985	11	20	173	9	47	28	-4	4770
11/21/1985	1985	11	21	174	10	44	27	-5	4765
11/22/1985	1985	11	22	175	12	50	31	-1	4764
11/23/1985	1985	11	23	176	10	51	30.5	-1.5	4762.5
11/24/1985	1985	11	24	177	11	55	33	1	4763.5
11/25/1985	1985	11	25	178	20	51	35.5	3.5	4767
11/26/1985	1985	11	26	179	18	47	32.5	0.5	4767.5
11/27/1985	1985	11	27	180	10	49	29.5	-2.5	4765
11/28/1985	1985	11	28	181	26	48	37	5	4770
11/29/1985	1985	11	29	182	8	47	27.5	-4.5	4765.5
11/30/1985	1985	11	30	183	10	35	22.5	-9.5	4756
12/1/1985	1985	12	1	184	6	44	25	-7	4749
12/2/1985	1985	12	2	185	16	49	32.5	0.5	4749.5
12/3/1985	1985	12	3	186	14	50	32	0	4749.5
12/4/1985	1985	12	4	187	14	50	32	0	4749.5
12/5/1985	1985	12	5	188	20	54	37	5	4754.5
12/6/1985	1985	12	6	189	20	50	35	3	4757.5
12/7/1985	1985	12	7	190	23	49	36	4	4761.5
12/8/1985	1985	12	8	191	25	47	36	4	4765.5
12/9/1985	1985	12	9	192	10	44	27	-5	4760.5
12/10/1985	1985	12	10	193	19	32	25.5	-6.5	4754
12/11/1985	1985	12	11	194	6	33	19.5	-12.5	4741.5
12/12/1985	1985	12	12	195	7	28	17.5	-14.5	4727
12/13/1985	1985	12	13	196	3	29	16	-16	4711
12/14/1985	1985	12	14	197	9	37	23	-9	4702
12/15/1985	1985	12	15	198	10	39	24.5	-7.5	4694.5
12/16/1985	1985	12	16	199	15	40	27.5	-4.5	4690
12/17/1985	1985	12	17	200	6	38	22	-10	4680
12/18/1985	1985	12	18	201	10	45	27.5	-4.5	4675.5
12/19/1985	1985	12	19	202	15	46	30.5	-1.5	4674
12/20/1985	1985	12	20	203	20	45	32.5	0.5	4674.5
12/21/1985	1985	12	21	204	14	52	33	1	4675.5
12/22/1985	1985	12	22	205	16	53	34.5	2.5	4678
12/23/1985	1985	12	23	206	14	50	32	0	4678
12/24/1985	1985	12	24	207	19	47	33	1	4679
12/25/1985	1985	12	25	208	13	46	29.5	-2.5	4676.5
12/26/1985	1985	12	26	209	15	47	31	-1	4675.5
12/27/1985	1985	12	27	210	15	47	31	-1	4674.5
12/28/1985	1985	12	28	211	15	52	33.5	1.5	4676
12/29/1985	1985	12	29	212	16	54	35	3	4679
12/30/1985	1985	12	30	213	10	46	28	-4	4675
12/31/1985	1985	12	31	214	14	47	30.5	-1.5	4673.5
1/1/1986	1986	1	1	215	12	43	27.5	-4.5	4669
1/2/1986	1986	1	2	216	19	46	32.5	0.5	4669.5
1/3/1986	1986	1	3	217	16	45	30.5	-1.5	4668
1/4/1986	1986	1	4	218	14	44	29	-3	4665
1/5/1986	1986	1	5	219	15	46	30.5	-1.5	4663.5
1/6/1986	1986	1	6	220	12	46	29	-3	4660.5
1/7/1986	1986	1	7	221	19	43	31	-1	4659.5
1/8/1986	1986	1	8	222	10	39	24.5	-7.5	4652
1/9/1986	1986	1	9	223	15	40	27.5	-4.5	4647.5
1/10/1986	1986	1	10	224	19	49	34	2	4649.5
1/11/1986	1986	1	11	225	12	51	31.5	-0.5	4649
1/12/1986	1986	1	12	226	16	56	36	4	4653
1/13/1986	1986	1	13	227	14	54	34	2	4655
1/14/1986	1986	1	14	228	9	47	28	-4	4651
1/15/1986	1986	1	15	229	16	44	30	-2	4649
1/16/1986	1986	1	16	230	17	47	32	0	4649
1/17/1986	1986	1	17	231	19	52	35.5	3.5	4652.5
1/18/1986	1986	1	18	232	18	50	34	2	4654.5
1/19/1986	1986	1	19	233	20	61	40.5	8.5	4663
1/20/1986	1986	1	20	234	37	58	47.5	15.5	4678.5
1/21/1986	1986	1	21	235	16	56	36	4	4682.5
1/22/1986	1986	1	22	236	23	52	37.5	5.5	4688
1/23/1986	1986	1	23	237	20	59	39.5	7.5	4695.5
1/24/1986	1986	1	24	238	27	57	42	10	4705.5
1/25/1986	1986	1	25	239	21	53	37	5	4710.5
1/26/1986	1986	1	26	240	21	54	37.5	5.5	4716
1/27/1986	1986	1	27	241	25	57	41	9	4725
1/28/1986	1986	1	28	242	27	60	43.5	11.5	4736.5
1/29/1986	1986	1	29	243	31	64	47.5	15.5	4752
1/30/1986	1986	1	30	244	29	63	46	14	4766
1/31/1986	1986	1	31	245	20	56	38	6	4772
2/1/1986	1986	2	1	246	30	57	43.5	11.5	4783.5
2/2/1986	1986	2	2	247	29	55	42	10	4793.5
2/3/1986	1986	2	3	248	28	54	41	9	4802.5
2/4/1986	1986	2	4	249	22	43	32.5	0.5	4803
2/5/1986	1986	2	5	250	-3	40	18.5	-13.5	4789.5
2/6/1986	1986	2	6	251	7	36	21.5	-10.5	4779
2/7/1986	1986	2	7	252	13	32	22.5	-9.5	4769.5
2/8/1986	1986	2	8	253	12	34	23	-9	4760.5

2/9/1986	1986	2	9	254	4	32	18	-14	4746.5
2/10/1986	1986	2	10	255	5	33	19	-13	4733.5
2/11/1986	1986	2	11	256	10	35	22.5	-9.5	4724
2/12/1986	1986	2	12	257	12	45	28.5	-3.5	4720.5
2/13/1986	1986	2	13	258	11	44	27.5	-4.5	4716
2/14/1986	1986	2	14	259	12	41	26.5	-5.5	4710.5
2/15/1986	1986	2	15	260	13	40	26.5	-5.5	4705
2/16/1986	1986	2	16	261	14	40	27	-5	4700
2/17/1986	1986	2	17	262	13	54	33.5	1.5	4701.5
2/18/1986	1986	2	18	263	15	58	36.5	4.5	4706
2/19/1986	1986	2	19	264	19	55	37	5	4711
2/20/1986	1986	2	20	265	20	55	37.5	5.5	4716.5
2/21/1986	1986	2	21	266	20	51	35.5	3.5	4720
2/22/1986	1986	2	22	267	23	52	37.5	5.5	4725.5
2/23/1986	1986	2	23	268	26	55	40.5	8.5	4734
2/24/1986	1986	2	24	269	32	60	46	14	4748
2/25/1986	1986	2	25	270	36	67	51.5	19.5	4767.5
2/26/1986	1986	2	26	271	37	64	50.5	18.5	4786
2/27/1986	1986	2	27	272	35	60	47.5	15.5	4801.5
2/28/1986	1986	2	28	273	24	58	41	9	4810.5
3/1/1986	1986	3	1	274	27	64	45.5	13.5	4824
3/2/1986	1986	3	2	275	35	61	48	16	4840
3/3/1986	1986	3	3	276	33	61	47	15	4855
3/4/1986	1986	3	4	277	29	61	45	13	4868
3/5/1986	1986	3	5	278	32	61	46.5	14.5	4882.5
3/6/1986	1986	3	6	279	31	63	47	15	4897.5
3/7/1986	1986	3	7	280	32	63	47.5	15.5	4913
3/8/1986	1986	3	8	281	37	61	49	17	4930
3/9/1986	1986	3	9	282	20	56	38	6	4936
3/10/1986	1986	3	10	283	28	40	34	2	4938
3/11/1986	1986	3	11	284	11	44	27.5	-4.5	4933.5
3/12/1986	1986	3	12	285	29	45	37	5	4938.5
3/13/1986	1986	3	13	286	25	43	34	2	4940.5
3/14/1986	1986	3	14	287	28	39	33.5	1.5	4942
3/15/1986	1986	3	15	288	28	48	38	6	4948
3/16/1986	1986	3	16	289	27	53	40	8	4956
3/17/1986	1986	3	17	290	27	48	37.5	5.5	4961.5
3/18/1986	1986	3	18	291	26	41	33.5	1.5	4963
3/19/1986	1986	3	19	292	20	45	32.5	0.5	4963.5
3/20/1986	1986	3	20	293	28	54	41	9	4972.5
3/21/1986	1986	3	21	294	28	61	44.5	12.5	4985
3/22/1986	1986	3	22	295	29	64	46.5	14.5	4999.5
3/23/1986	1986	3	23	296	33	68	50.5	18.5	5018
3/24/1986	1986	3	24	297	38	66	52	20	5038
3/25/1986	1986	3	25	298	39	66	52.5	20.5	5058.5
3/26/1986	1986	3	26	299	38	67	52.5	20.5	5079
3/27/1986	1986	3	27	300	35	70	52.5	20.5	5099.5
3/28/1986	1986	3	28	301	33	69	51	19	5118.5
3/29/1986	1986	3	29	302	33	64	48.5	16.5	5135
3/30/1986	1986	3	30	303	37	66	51.5	19.5	5154.5
3/31/1986	1986	3	31	304	39	65	52	20	5174.5
4/1/1986	1986	4	1	305	41	58	49.5	17.5	5192
4/2/1986	1986	4	2	306	27	58	42.5	10.5	5202.5
4/3/1986	1986	4	3	307	28	38	33	1	5203.5
4/4/1986	1986	4	4	308	29	51	40	8	5211.5
4/5/1986	1986	4	5	309	29	63	46	14	5225.5
4/6/1986	1986	4	6	310	29	64	46.5	14.5	5240
4/7/1986	1986	4	7	311	44	65	54.5	22.5	5262.5
4/8/1986	1986	4	8	312	42	69	55.5	23.5	5286
4/9/1986	1986	4	9	313	32	66	49	17	5303
4/10/1986	1986	4	10	314	33	64	48.5	16.5	5319.5
4/11/1986	1986	4	11	315	33	64	48.5	16.5	5336
4/12/1986	1986	4	12	316	40	61	50.5	18.5	5354.5
4/13/1986	1986	4	13	317	44	58	51	19	5373.5
4/14/1986	1986	4	14	318	26	62	44	12	5385.5
4/15/1986	1986	4	15	319	42	68	55	23	5408.5
4/16/1986	1986	4	16	320	46	62	54	22	5430.5
4/17/1986	1986	4	17	321	38	59	48.5	16.5	5447
4/18/1986	1986	4	18	322	25	47	36	4	5451
4/19/1986	1986	4	19	323	26	55	40.5	8.5	5459.5
4/20/1986	1986	4	20	324	33	67	50	18	5477.5
4/21/1986	1986	4	21	325	40	73	56.5	24.5	5502
4/22/1986	1986	4	22	326	43	75	59	27	5529
4/23/1986	1986	4	23	327	48	67	57.5	25.5	5554.5
4/24/1986	1986	4	24	328	44	65	54.5	22.5	5577
4/25/1986	1986	4	25	329	46	62	54	22	5599
4/26/1986	1986	4	26	330	31	63	47	15	5614
4/27/1986	1986	4	27	331	21	63	42	10	5624
4/28/1986	1986	4	28	332	21	74	47.5	15.5	5639.5
4/29/1986	1986	4	29	333	44	73	58.5	26.5	5666
4/30/1986	1986	4	30	334	46	72	59	27	5693
5/1/1986	1986	5	1	335	44	77	60.5	28.5	5721.5
5/2/1986	1986	5	2	336	44	77	60.5	28.5	5750
5/3/1986	1986	5	3	337	44	73	58.5	26.5	5776.5
5/4/1986	1986	5	4	338	48	75	61.5	29.5	5806
5/5/1986	1986	5	5	339	36	68	52	20	5826
5/6/1986	1986	5	6	340	40	68	54	22	5848
5/7/1986	1986	5	7	341	39	59	49	17	5865
5/8/1986	1986	5	8	342	29	51	40	8	5873
5/9/1986	1986	5	9	343	26	60	43	11	5884
5/10/1986	1986	5	10	344	30	71	50.5	18.5	5902.5
5/11/1986	1986	5	11	345	40	74	57	25	5927.5
5/12/1986	1986	5	12	346	41	74	57.5	25.5	5953

5/13/1986	1986	5	13	347	41	73	57	25	5978
5/14/1986	1986	5	14	348	49	73	61	29	6007
5/15/1986	1986	5	15	349	49	73	61	29	6036
5/16/1986	1986	5	16	350	49	73	61	29	6065
5/17/1986	1986	5	17	351	49	73	61	29	6094
5/18/1986	1986	5	18	352	34	69	51.5	19.5	6113.5
5/19/1986	1986	5	19	353	41	76	58.5	26.5	6140
5/20/1986	1986	5	20	354	47	80	63.5	31.5	6171.5
5/21/1986	1986	5	21	355	52	79	65.5	33.5	6205
5/22/1986	1986	5	22	356	52	74	63	31	6236
5/23/1986	1986	5	23	357	44	79	61.5	29.5	6265.5
5/24/1986	1986	5	24	358	52	79	65.5	33.5	6299
5/25/1986	1986	5	25	359	49	79	64	32	6331
5/26/1986	1986	5	26	360	45	78	61.5	29.5	6360.5
5/27/1986	1986	5	27	361	45	77	61	29	6389.5
5/28/1986	1986	5	28	362	43	73	58	26	6415.5
5/29/1986	1986	5	29	363	47	80	63.5	31.5	6447
5/30/1986	1986	5	30	364	40	77	58.5	26.5	6473.5
5/31/1986	1986	5	31	365	42	62	52	20	6493.5
6/1/1986	1986	6	1	1	43	65	54	22	22
6/2/1986	1986	6	2	2	43	62	52.5	20.5	42.5
6/3/1986	1986	6	3	3	47	72	59.5	27.5	70
6/4/1986	1986	6	4	4	49	81	65	33	103
6/5/1986	1986	6	5	5	49	83	66	34	137
6/6/1986	1986	6	6	6	59	82	70.5	38.5	175.5
6/7/1986	1986	6	7	7	54	82	68	36	211.5
6/8/1986	1986	6	8	8	54	82	68	36	247.5
6/9/1986	1986	6	9	9	43	72	57.5	25.5	273
6/10/1986	1986	6	10	10	41	71	56	24	297
6/11/1986	1986	6	11	11	45	76	60.5	28.5	325.5
6/12/1986	1986	6	12	12	49	83	66	34	359.5
6/13/1986	1986	6	13	13	57	86	71.5	39.5	399
6/14/1986	1986	6	14	14	56	86	71	39	438
6/15/1986	1986	6	15	15	57	84	70.5	38.5	476.5
6/16/1986	1986	6	16	16	67	86	76.5	44.5	521
6/17/1986	1986	6	17	17	54	83	68.5	36.5	557.5
6/18/1986	1986	6	18	18	54	78	66	34	591.5
6/19/1986	1986	6	19	19	55	82	68.5	36.5	628
6/20/1986	1986	6	20	20	53	86	69.5	37.5	665.5
6/21/1986	1986	6	21	21	54	86	70	38	703.5
6/22/1986	1986	6	22	22	54	88	71	39	742.5
6/23/1986	1986	6	23	23	58	88	73	41	783.5
6/24/1986	1986	6	24	24	53	74	63.5	31.5	815
6/25/1986	1986	6	25	25	53	66	59.5	27.5	842.5
6/26/1986	1986	6	26	26	50	74	62	30	872.5
6/27/1986	1986	6	27	27	53	81	67	35	907.5
6/28/1986	1986	6	28	28	55	84	69.5	37.5	945
6/29/1986	1986	6	29	29	60	83	71.5	39.5	984.5
6/30/1986	1986	6	30	30	60	79	69.5	37.5	1022
7/1/1986	1986	7	1	31	57	78	67.5	35.5	1057.5
7/2/1986	1986	7	2	32	53	81	67	35	1092.5
7/3/1986	1986	7	3	33	56	83	69.5	37.5	1130
7/4/1986	1986	7	4	34	60	84	72	40	1170
7/5/1986	1986	7	5	35	59	84	71.5	39.5	1209.5
7/6/1986	1986	7	6	36	53	82	67.5	35.5	1245
7/7/1986	1986	7	7	37	61	80	70.5	38.5	1283.5
7/8/1986	1986	7	8	38	56	77	66.5	34.5	1318
7/9/1986	1986	7	9	39	55	79	67	35	1353
7/10/1986	1986	7	10	40	53	82	67.5	35.5	1388.5
7/11/1986	1986	7	11	41	53	85	69	37	1425.5
7/12/1986	1986	7	12	42	53	88	70.5	38.5	1464
7/13/1986	1986	7	13	43	60	88	74	42	1506
7/14/1986	1986	7	14	44	60	88	74	42	1548
7/15/1986	1986	7	15	45	56	88	72	40	1588
7/16/1986	1986	7	16	46	56	67	61.5	29.5	1617.5
7/17/1986	1986	7	17	47	52	72	62	30	1647.5
7/18/1986	1986	7	18	48	52	74	63	31	1678.5
7/19/1986	1986	7	19	49	52	76	64	32	1710.5
7/20/1986	1986	7	20	50	52	79	65.5	33.5	1744
7/21/1986	1986	7	21	51	53	71	62	30	1774
7/22/1986	1986	7	22	52	52	71	61.5	29.5	1803.5
7/23/1986	1986	7	23	53	50	75	62.5	30.5	1834
7/24/1986	1986	7	24	54	50	79	64.5	32.5	1866.5
7/25/1986	1986	7	25	55	53	81	67	35	1901.5
7/26/1986	1986	7	26	56	56	84	70	38	1939.5
7/27/1986	1986	7	27	57	51	84	67.5	35.5	1975
7/28/1986	1986	7	28	58	55	86	70.5	38.5	2013.5
7/29/1986	1986	7	29	59	55	89	72	40	2053.5
7/30/1986	1986	7	30	60	60	89	74.5	42.5	2096
7/31/1986	1986	7	31	61	56	87	71.5	39.5	2135.5
8/1/1986	1986	8	1	62	57	88	72.5	40.5	2176
8/2/1986	1986	8	2	63	58	87	72.5	40.5	2216.5
8/3/1986	1986	8	3	64	58	87	72.5	40.5	2257
8/4/1986	1986	8	4	65	55	85	70	38	2295
8/5/1986	1986	8	5	66	56	85	70.5	38.5	2333.5
8/6/1986	1986	8	6	67	58	80	69	37	2370.5
8/7/1986	1986	8	7	68	55	83	69	37	2407.5
8/8/1986	1986	8	8	69	55	84	69.5	37.5	2445
8/9/1986	1986	8	9	70	57	83	70	38	2483
8/10/1986	1986	8	10	71	56	81	68.5	36.5	2519.5
8/11/1986	1986	8	11	72	49	81	65	33	2552.5
8/12/1986	1986	8	12	73	57	81	69	37	2589.5
8/13/1986	1986	8	13	74	55	80	67.5	35.5	2625

8/14/1986	1986	8	14	75	55	82	68.5	36.5	2661.5
8/15/1986	1986	8	15	76	55	82	68.5	36.5	2698
8/16/1986	1986	8	16	77	54	87	70.5	38.5	2736.5
8/17/1986	1986	8	17	78	58	87	72.5	40.5	2777
8/18/1986	1986	8	18	79	62	87	74.5	42.5	2819.5
8/19/1986	1986	8	19	80	60	87	73.5	41.5	2861
8/20/1986	1986	8	20	81	60	88	74	42	2903
8/21/1986	1986	8	21	82	62	87	74.5	42.5	2945.5
8/22/1986	1986	8	22	83	60	86	73	41	2986.5
8/23/1986	1986	8	23	84	56	85	70.5	38.5	3025
8/24/1986	1986	8	24	85	51	72	61.5	29.5	3054.5
8/25/1986	1986	8	25	86	54	73	63.5	31.5	3086
8/26/1986	1986	8	26	87	54	76	65	33	3119
8/27/1986	1986	8	27	88	56	75	65.5	33.5	3152.5
8/28/1986	1986	8	28	89	55	74	64.5	32.5	3185
8/29/1986	1986	8	29	90	55	72	63.5	31.5	3216.5
8/30/1986	1986	8	30	91	54	73	63.5	31.5	3248
8/31/1986	1986	8	31	92	56	72	64	32	3280
9/1/1986	1986	9	1	93	48	76	62	30	3310
9/2/1986	1986	9	2	94	48	76	62	30	3340
9/3/1986	1986	9	3	95	52	77	64.5	32.5	3372.5
9/4/1986	1986	9	4	96	49	80	64.5	32.5	3405
9/5/1986	1986	9	5	97	47	80	63.5	31.5	3436.5
9/6/1986	1986	9	6	98	47	82	64.5	32.5	3469
9/7/1986	1986	9	7	99	63	80	71.5	39.5	3508.5
9/8/1986	1986	9	8	100	53	73	63	31	3539.5
9/9/1986	1986	9	9	101	51	70	60.5	28.5	3568
9/10/1986	1986	9	10	102	50	69	59.5	27.5	3595.5
9/11/1986	1986	9	11	103	40	70	55	23	3618.5
9/12/1986	1986	9	12	104	40	75	57.5	25.5	3644
9/13/1986	1986	9	13	105	49	76	62.5	30.5	3674.5
9/14/1986	1986	9	14	106	48	77	62.5	30.5	3705
9/15/1986	1986	9	15	107	45	76	60.5	28.5	3733.5
9/16/1986	1986	9	16	108	50	74	62	30	3763.5
9/17/1986	1986	9	17	109	44	75	59.5	27.5	3791
9/18/1986	1986	9	18	110	45	74	59.5	27.5	3818.5
9/19/1986	1986	9	19	111	57	78	67.5	35.5	3854
9/20/1986	1986	9	20	112	53	76	64.5	32.5	3886.5
9/21/1986	1986	9	21	113	48	74	61	29	3915.5
9/22/1986	1986	9	22	114	50	72	61	29	3944.5
9/23/1986	1986	9	23	115	43	68	55.5	23.5	3968
9/24/1986	1986	9	24	116	32	60	46	14	3982
9/25/1986	1986	9	25	117	37	53	45	13	3995
9/26/1986	1986	9	26	118	46	62	54	22	4017
9/27/1986	1986	9	27	119	39	70	54.5	22.5	4039.5
9/28/1986	1986	9	28	120	42	70	56	24	4063.5
9/29/1986	1986	9	29	121	39	70	54.5	22.5	4086
9/30/1986	1986	9	30	122	34	70	52	20	4106
10/1/1986	1986	10	1	123	37	74	55.5	23.5	4129.5
10/2/1986	1986	10	2	124	48	70	59	27	4156.5
10/3/1986	1986	10	3	125	39	67	53	21	4177.5
10/4/1986	1986	10	4	126	33	64	48.5	16.5	4194
10/5/1986	1986	10	5	127	35	66	50.5	18.5	4212.5
10/6/1986	1986	10	6	128	44	63	53.5	21.5	4234
10/7/1986	1986	10	7	129	36	64	50	18	4252
10/8/1986	1986	10	8	130	40	67	53.5	21.5	4273.5
10/9/1986	1986	10	9	131	40	67	53.5	21.5	4295
10/10/1986	1986	10	10	132	42	67	54.5	22.5	4317.5
10/11/1986	1986	10	11	133	41	53	47	15	4332.5
10/12/1986	1986	10	12	134	31	46	38.5	6.5	4339
10/13/1986	1986	10	13	135	26	47	36.5	4.5	4343.5
10/14/1986	1986	10	14	136	30	58	44	12	4355.5
10/15/1986	1986	10	15	137	32	62	47	15	4370.5
10/16/1986	1986	10	16	138	36	62	49	17	4387.5
10/17/1986	1986	10	17	139	36	63	49.5	17.5	4405
10/18/1986	1986	10	18	140	38	65	51.5	19.5	4424.5
10/19/1986	1986	10	19	141	53	62	57.5	25.5	4450
10/20/1986	1986	10	20	142	44	62	53	21	4471
10/21/1986	1986	10	21	143	29	55	42	10	4481
10/22/1986	1986	10	22	144	28	54	41	9	4490
10/23/1986	1986	10	23	145	34	60	47	15	4505
10/24/1986	1986	10	24	146	31	59	45	13	4518
10/25/1986	1986	10	25	147	31	59	45	13	4531
10/26/1986	1986	10	26	148	32	62	47	15	4546
10/27/1986	1986	10	27	149	30	64	47	15	4561
10/28/1986	1986	10	28	150	34	66	50	18	4579
10/29/1986	1986	10	29	151	36	64	50	18	4597
10/30/1986	1986	10	30	152	36	65	50.5	18.5	4615.5
10/31/1986	1986	10	31	153	39	64	51.5	19.5	4635
11/1/1986	1986	11	1	154	34	59	46.5	14.5	4649.5
11/2/1986	1986	11	2	155	32	58	45	13	4662.5
11/3/1986	1986	11	3	156	35	44	39.5	7.5	4670
11/4/1986	1986	11	4	157	31	41	36	4	4674
11/5/1986	1986	11	5	158	29	52	40.5	8.5	4682.5
11/6/1986	1986	11	6	159	29	54	41.5	9.5	4692
11/7/1986	1986	11	7	160	25	49	37	5	4697
11/8/1986	1986	11	8	161	25	49	37	5	4702
11/9/1986	1986	11	9	162	17	47	32	0	4702
11/10/1986	1986	11	10	163	24	47	35.5	3.5	4705.5
11/11/1986	1986	11	11	164	19	53	36	4	4709.5
11/12/1986	1986	11	12	165	19	52	35.5	3.5	4713
11/13/1986	1986	11	13	166	19	45	32	0	4713
11/14/1986	1986	11	14	167	16	58	37	5	4718

11/15/1986	1986	11	15	168	16	57	36.5	4.5	4722.5
11/16/1986	1986	11	16	169	35	55	45	13	4735.5
11/17/1986	1986	11	17	170	35	58	46.5	14.5	4750
11/18/1986	1986	11	18	171	37	57	47	15	4765
11/19/1986	1986	11	19	172	38	51	44.5	12.5	4777.5
11/20/1986	1986	11	20	173	31	56	43.5	11.5	4789
11/21/1986	1986	11	21	174	29	57	43	11	4800
11/22/1986	1986	11	22	175	32	48	40	8	4808
11/23/1986	1986	11	23	176	20	48	34	2	4810
11/24/1986	1986	11	24	177	19	43	31	-1	4809
11/25/1986	1986	11	25	178	19	50	34.5	2.5	4811.5
11/26/1986	1986	11	26	179	26	46	36	4	4815.5
11/27/1986	1986	11	27	180	24	44	34	2	4817.5
11/28/1986	1986	11	28	181	24	56	40	8	4825.5
11/29/1986	1986	11	29	182	28	58	43	11	4836.5
11/30/1986	1986	11	30	183	19	51	35	3	4839.5
12/1/1986	1986	12	1	184	19	50	34.5	2.5	4842
12/2/1986	1986	12	2	185	19	53	36	4	4846
12/3/1986	1986	12	3	186	23	54	38.5	6.5	4852.5
12/4/1986	1986	12	4	187	27	50	38.5	6.5	4859
12/5/1986	1986	12	5	188	30	51	40.5	8.5	4867.5
12/6/1986	1986	12	6	189	33	48	40.5	8.5	4876
12/7/1986	1986	12	7	190	33	43	38	6	4882
12/8/1986	1986	12	8	191	27	40	33.5	1.5	4883.5
12/9/1986	1986	12	9	192	27	40	33.5	1.5	4885
12/10/1986	1986	12	10	193	9	27	18	-14	4871
12/11/1986	1986	12	11	194	10	37	23.5	-8.5	4862.5
12/12/1986	1986	12	12	195	10	44	27	-5	4857.5
12/13/1986	1986	12	13	196	18	48	33	1	4858.5
12/14/1986	1986	12	14	197	19	50	34.5	2.5	4861
12/15/1986	1986	12	15	198	21	51	36	4	4865
12/16/1986	1986	12	16	199	28	46	37	5	4870
12/17/1986	1986	12	17	200	29	39	34	2	4872
12/18/1986	1986	12	18	201	26	33	29.5	-2.5	4869.5
12/19/1986	1986	12	19	202	22	40	31	-1	4868.5
12/20/1986	1986	12	20	203	22	43	32.5	0.5	4869
12/21/1986	1986	12	21	204	24	34	29	-3	4866
12/22/1986	1986	12	22	205	24	38	31	-1	4865
12/23/1986	1986	12	23	206	19	40	29.5	-2.5	4862.5
12/24/1986	1986	12	24	207	28	40	34	2	4864.5
12/25/1986	1986	12	25	208	25	36	30.5	-1.5	4863
12/26/1986	1986	12	26	209	13	37	25	-7	4856
12/27/1986	1986	12	27	210	13	39	26	-6	4850
12/28/1986	1986	12	28	211	16	38	27	-5	4845
12/29/1986	1986	12	29	212	16	44	30	-2	4843
12/30/1986	1986	12	30	213	20	44	32	0	4843
12/31/1986	1986	12	31	214	15	42	28.5	-3.5	4839.5
1/1/1987	1987	1	1	215	17	48	32.5	0.5	4840
1/2/1987	1987	1	2	216	17	42	29.5	-2.5	4837.5
1/3/1987	1987	1	3	217	20	45	32.5	0.5	4838
1/4/1987	1987	1	4	218	21	57	39	7	4845
1/5/1987	1987	1	5	219	29	52	40.5	8.5	4853.5
1/6/1987	1987	1	6	220	21	37	29	-3	4850.5
1/7/1987	1987	1	7	221	22	41	31.5	-0.5	4850
1/8/1987	1987	1	8	222	22	30	26	-6	4844
1/9/1987	1987	1	9	223	12	29	20.5	-11.5	4832.5
1/10/1987	1987	1	10	224	10	38	24	-8	4824.5
1/11/1987	1987	1	11	225	13	46	29.5	-2.5	4822
1/12/1987	1987	1	12	226	20	55	37.5	5.5	4827.5
1/13/1987	1987	1	13	227	24	57	40.5	8.5	4836
1/14/1987	1987	1	14	228	25	48	36.5	4.5	4840.5
1/15/1987	1987	1	15	229	24	43	33.5	1.5	4842
1/16/1987	1987	1	16	230	16	29	22.5	-9.5	4832.5
1/17/1987	1987	1	17	231	9	20	14.5	-17.5	4815
1/18/1987	1987	1	18	232	0	23	11.5	-20.5	4794.5
1/19/1987	1987	1	19	233	1	23	12	-20	4774.5
1/20/1987	1987	1	20	234	7	22	14.5	-17.5	4757
1/21/1987	1987	1	21	235	4	30	17	-15	4742
1/22/1987	1987	1	22	236	7	37	22	-10	4732
1/23/1987	1987	1	23	237	17	41	29	-3	4729
1/24/1987	1987	1	24	238	20	39	29.5	-2.5	4726.5
1/25/1987	1987	1	25	239	18	45	31.5	-0.5	4726
1/26/1987	1987	1	26	240	24	51	37.5	5.5	4731.5
1/27/1987	1987	1	27	241	23	51	37	5	4736.5
1/28/1987	1987	1	28	242	36	48	42	10	4746.5
1/29/1987	1987	1	29	243	26	47	36.5	4.5	4751
1/30/1987	1987	1	30	244	24	51	37.5	5.5	4756.5
1/31/1987	1987	1	31	245	30	46	38	6	4762.5
2/1/1987	1987	2	1	246	18	47	32.5	0.5	4763
2/2/1987	1987	2	2	247	24	54	39	7	4770
2/3/1987	1987	2	3	248	30	49	39.5	7.5	4777.5
2/4/1987	1987	2	4	249	29	44	36.5	4.5	4782
2/5/1987	1987	2	5	250	20	11	15.5	-16.5	4765.5
2/6/1987	1987	2	6	251	18	44	31	-1	4764.5
2/7/1987	1987	2	7	252	20	49	34.5	2.5	4767
2/8/1987	1987	2	8	253	27	49	38	6	4773
2/9/1987	1987	2	9	254	28	53	40.5	8.5	4781.5
2/10/1987	1987	2	10	255	29	54	41.5	9.5	4791
2/11/1987	1987	2	11	256	31	55	43	11	4802
2/12/1987	1987	2	12	257	30	49	39.5	7.5	4809.5
2/13/1987	1987	2	13	258	29	50	39.5	7.5	4817
2/14/1987	1987	2	14	259	27	48	37.5	5.5	4822.5
2/15/1987	1987	2	15	260	23	43	33	1	4823.5

2/16/1987	1987	2	16	261	28	39	33.5	1.5	4825
2/17/1987	1987	2	17	262	25	36	30.5	-1.5	4823.5
2/18/1987	1987	2	18	263	17	33	25	-7	4816.5
2/19/1987	1987	2	19	264	17	33	25	-7	4809.5
2/20/1987	1987	2	20	265	14	33	23.5	-8.5	4801
2/21/1987	1987	2	21	266	4	32	18	-14	4787
2/22/1987	1987	2	22	267	9	40	24.5	-7.5	4779.5
2/23/1987	1987	2	23	268	14	37	25.5	-6.5	4773
2/24/1987	1987	2	24	269	22	39	30.5	-1.5	4771.5
2/25/1987	1987	2	25	270	23	38	30.5	-1.5	4770
2/26/1987	1987	2	26	271	23	36	29.5	-2.5	4767.5
2/27/1987	1987	2	27	272	9	32	20.5	-11.5	4756
2/28/1987	1987	2	28	273	11	36	23.5	-8.5	4747.5
3/1/1987	1987	3	1	274	13	44	28.5	-3.5	4744
3/2/1987	1987	3	2	275	20	43	31.5	-0.5	4743.5
3/3/1987	1987	3	3	276	20	48	34	2	4745.5
3/4/1987	1987	3	4	277	24	55	39.5	7.5	4753
3/5/1987	1987	3	5	278	26	60	43	11	4764
3/6/1987	1987	3	6	279	25	63	44	12	4776
3/7/1987	1987	3	7	280	25	63	44	12	4788
3/8/1987	1987	3	8	281	30	52	41	9	4797
3/9/1987	1987	3	9	282	34	46	40	8	4805
3/10/1987	1987	3	10	283	31	51	41	9	4814
3/11/1987	1987	3	11	284	26	53	39.5	7.5	4821.5
3/12/1987	1987	3	12	285	29	56	42.5	10.5	4832
3/13/1987	1987	3	13	286	33	62	47.5	15.5	4847.5
3/14/1987	1987	3	14	287	29	57	43	11	4858.5
3/15/1987	1987	3	15	288	35	53	44	12	4870.5
3/16/1987	1987	3	16	289	21	53	37	5	4875.5
3/17/1987	1987	3	17	290	18	37	27.5	-4.5	4871
3/18/1987	1987	3	18	291	26	55	40.5	8.5	4879.5
3/19/1987	1987	3	19	292	29	53	41	9	4888.5
3/20/1987	1987	3	20	293	23	53	38	6	4894.5
3/21/1987	1987	3	21	294	21	53	37	5	4899.5
3/22/1987	1987	3	22	295	24	49	36.5	4.5	4904
3/23/1987	1987	3	23	296	20	40	30	-2	4902
3/24/1987	1987	3	24	297	23	42	32.5	0.5	4902.5
3/25/1987	1987	3	25	298	20	41	30.5	-1.5	4901
3/26/1987	1987	3	26	299	22	42	32	0	4901
3/27/1987	1987	3	27	300	27	43	35	3	4904
3/28/1987	1987	3	28	301	17	35	26	-6	4898
3/29/1987	1987	3	29	302	17	29	23	-9	4889
3/30/1987	1987	3	30	303	9	43	26	-6	4883
3/31/1987	1987	3	31	304	25	56	40.5	8.5	4891.5
4/1/1987	1987	4	1	305	28	56	42	10	4901.5
4/2/1987	1987	4	2	306	29	57	43	11	4912.5
4/3/1987	1987	4	3	307	26	59	42.5	10.5	4923
4/4/1987	1987	4	4	308	26	59	42.5	10.5	4933.5
4/5/1987	1987	4	5	309	26	59	42.5	10.5	4944
4/6/1987	1987	4	6	310	26	59	42.5	10.5	4954.5
4/7/1987	1987	4	7	311	26	59	42.5	10.5	4965
4/8/1987	1987	4	8	312	26	59	42.5	10.5	4975.5
4/9/1987	1987	4	9	313	26	62	44	12	4987.5
4/10/1987	1987	4	10	314	32	63	47.5	15.5	5003
4/11/1987	1987	4	11	315	35	65	50	18	5021
4/12/1987	1987	4	12	316	30	59	44.5	12.5	5033.5
4/13/1987	1987	4	13	317	28	49	38.5	6.5	5040
4/14/1987	1987	4	14	318	29	64	46.5	14.5	5054.5
4/15/1987	1987	4	15	319	35	71	53	21	5075.5
4/16/1987	1987	4	16	320	35	74	54.5	22.5	5098
4/17/1987	1987	4	17	321	42	76	59	27	5125
4/18/1987	1987	4	18	322	43	75	59	27	5152
4/19/1987	1987	4	19	323	43	75	59	27	5179
4/20/1987	1987	4	20	324	26	65	45.5	13.5	5192.5
4/21/1987	1987	4	21	325	29	62	45.5	13.5	5206
4/22/1987	1987	4	22	326	29	67	48	16	5222
4/23/1987	1987	4	23	327	38	70	54	22	5244
4/24/1987	1987	4	24	328	40	69	54.5	22.5	5266.5
4/25/1987	1987	4	25	329	38	69	53.5	21.5	5288
4/26/1987	1987	4	26	330	39	68	53.5	21.5	5309.5
4/27/1987	1987	4	27	331	47	68	57.5	25.5	5335
4/28/1987	1987	4	28	332	41	66	53.5	21.5	5356.5
4/29/1987	1987	4	29	333	39	71	55	23	5379.5
4/30/1987	1987	4	30	334	46	71	58.5	26.5	5406
5/1/1987	1987	5	1	335	44	66	55	23	5429
5/2/1987	1987	5	2	336	35	67	51	19	5448
5/3/1987	1987	5	3	337	36	61	48.5	16.5	5464.5
5/4/1987	1987	5	4	338	39	65	52	20	5484.5
5/5/1987	1987	5	5	339	40	64	52	20	5504.5
5/6/1987	1987	5	6	340	38	65	51.5	19.5	5524
5/7/1987	1987	5	7	341	41	65	53	21	5545
5/8/1987	1987	5	8	342	40	69	54.5	22.5	5567.5
5/9/1987	1987	5	9	343	44	73	58.5	26.5	5594
5/10/1987	1987	5	10	344	52	69	60.5	28.5	5622.5
5/11/1987	1987	5	11	345	40	71	55.5	23.5	5646
5/12/1987	1987	5	12	346	43	69	56	24	5670
5/13/1987	1987	5	13	347	42	74	58	26	5696
5/14/1987	1987	5	14	348	49	74	61.5	29.5	5725.5
5/15/1987	1987	5	15	349	44	65	54.5	22.5	5748
5/16/1987	1987	5	16	350	44	68	56	24	5772
5/17/1987	1987	5	17	351	43	74	58.5	26.5	5798.5
5/18/1987	1987	5	18	352	44	71	57.5	25.5	5824
5/19/1987	1987	5	19	353	47	65	56	24	5848

5/20/1987	1987	5	20	354	45	63	54	22	5870
5/21/1987	1987	5	21	355	47	65	56	24	5894
5/22/1987	1987	5	22	356	38	66	52	20	5914
5/23/1987	1987	5	23	357	39	63	51	19	5933
5/24/1987	1987	5	24	358	40	67	53.5	21.5	5954.5
5/25/1987	1987	5	25	359	41	67	54	22	5976.5
5/26/1987	1987	5	26	360	38	64	51	19	5995.5
5/27/1987	1987	5	27	361	34	64	49	17	6012.5
5/28/1987	1987	5	28	362	41	63	52	20	6032.5
5/29/1987	1987	5	29	363	37	68	52.5	20.5	6053
5/30/1987	1987	5	30	364	40	70	55	23	6076
5/31/1987	1987	5	31	365	44	76	60	28	6104
6/1/1987	1987	6	1	1	49	78	63.5	31.5	31.5
6/2/1987	1987	6	2	2	47	78	62.5	30.5	62
6/3/1987	1987	6	3	3	44	78	61	29	91
6/4/1987	1987	6	4	4	47	75	61	29	120
6/5/1987	1987	6	5	5	49	74	61.5	29.5	149.5
6/6/1987	1987	6	6	6	46	76	61	29	178.5
6/7/1987	1987	6	7	7	45	76	60.5	28.5	207
6/8/1987	1987	6	8	8	50	62	56	24	231
6/9/1987	1987	6	9	9	43	75	59	27	258
6/10/1987	1987	6	10	10	48	79	63.5	31.5	289.5
6/11/1987	1987	6	11	11	49	83	66	34	323.5
6/12/1987	1987	6	12	12	49	82	65.5	33.5	357
6/13/1987	1987	6	13	13	52	85	68.5	36.5	393.5
6/14/1987	1987	6	14	14	54	86	70	38	431.5
6/15/1987	1987	6	15	15	57	83	70	38	469.5
6/16/1987	1987	6	16	16	51	81	66	34	503.5
6/17/1987	1987	6	17	17	49	83	66	34	537.5
6/18/1987	1987	6	18	18	48	85	66.5	34.5	572
6/19/1987	1987	6	19	19	49	84	66.5	34.5	606.5
6/20/1987	1987	6	20	20	51	82	66.5	34.5	641
6/21/1987	1987	6	21	21	55	83	69	37	678
6/22/1987	1987	6	22	22	52	83	67.5	35.5	713.5
6/23/1987	1987	6	23	23	52	88	70	38	751.5
6/24/1987	1987	6	24	24	56	89	72.5	40.5	792
6/25/1987	1987	6	25	25	56	87	71.5	39.5	831.5
6/26/1987	1987	6	26	26	53	87	70	38	869.5
6/27/1987	1987	6	27	27	51	83	67	35	904.5
6/28/1987	1987	6	28	28	51	80	65.5	33.5	938
6/29/1987	1987	6	29	29	48	77	62.5	30.5	968.5
6/30/1987	1987	6	30	30	48	83	65.5	33.5	1002
7/1/1987	1987	7	1	31	52	84	68	36	1038
7/2/1987	1987	7	2	32	54	86	70	38	1076
7/3/1987	1987	7	3	33	54	86	70	38	1114
7/4/1987	1987	7	4	34	54	86	70	38	1152
7/5/1987	1987	7	5	35	49	86	67.5	35.5	1187.5
7/6/1987	1987	7	6	36	49	85	67	35	1222.5
7/7/1987	1987	7	7	37	57	87	72	40	1262.5
7/8/1987	1987	7	8	38	57	88	72.5	40.5	1303
7/9/1987	1987	7	9	39	56	86	71	39	1342
7/10/1987	1987	7	10	40	56	86	71	39	1381
7/11/1987	1987	7	11	41	52	84	68	36	1417
7/12/1987	1987	7	12	42	59	84	71.5	39.5	1456.5
7/13/1987	1987	7	13	43	53	83	68	36	1492.5
7/14/1987	1987	7	14	44	51	85	68	36	1528.5
7/15/1987	1987	7	15	45	51	85	68	36	1564.5
7/16/1987	1987	7	16	46	63	85	74	42	1606.5
7/17/1987	1987	7	17	47	52	76	64	32	1638.5
7/18/1987	1987	7	18	48	49	81	65	33	1671.5
7/19/1987	1987	7	19	49	55	83	69	37	1708.5
7/20/1987	1987	7	20	50	53	86	69.5	37.5	1746
7/21/1987	1987	7	21	51	57	87	72	40	1786
7/22/1987	1987	7	22	52	57	86	71.5	39.5	1825.5
7/23/1987	1987	7	23	53	57	89	73	41	1866.5
7/24/1987	1987	7	24	54	60	89	74.5	42.5	1909
7/25/1987	1987	7	25	55	55	82	68.5	36.5	1945.5
7/26/1987	1987	7	26	56	57	83	70	38	1983.5
7/27/1987	1987	7	27	57	54	83	68.5	36.5	2020
7/28/1987	1987	7	28	58	58	79	68.5	36.5	2056.5
7/29/1987	1987	7	29	59	55	82	68.5	36.5	2093
7/30/1987	1987	7	30	60	57	79	68	36	2129
7/31/1987	1987	7	31	61	56	79	67.5	35.5	2164.5
8/1/1987	1987	8	1	62	54	84	69	37	2201.5
8/2/1987	1987	8	2	63	58	79	68.5	36.5	2238
8/3/1987	1987	8	3	64	55	80	67.5	35.5	2273.5
8/4/1987	1987	8	4	65	59	80	69.5	37.5	2311
8/5/1987	1987	8	5	66	55	80	67.5	35.5	2346.5
8/6/1987	1987	8	6	67	55	83	69	37	2383.5
8/7/1987	1987	8	7	68	57	72	64.5	32.5	2416
8/8/1987	1987	8	8	69	56	78	67	35	2451
8/9/1987	1987	8	9	70	55	78	66.5	34.5	2485.5
8/10/1987	1987	8	10	71	56	82	69	37	2522.5
8/11/1987	1987	8	11	72	59	80	69.5	37.5	2560
8/12/1987	1987	8	12	73	56	77	66.5	34.5	2594.5
8/13/1987	1987	8	13	74	52	79	65.5	33.5	2628
8/14/1987	1987	8	14	75	50	78	64	32	2660
8/15/1987	1987	8	15	76	50	78	64	32	2692
8/16/1987	1987	8	16	77	51	82	66.5	34.5	2726.5
8/17/1987	1987	8	17	78	50	82	66	34	2760.5
8/18/1987	1987	8	18	79	53	86	69.5	37.5	2798
8/19/1987	1987	8	19	80	53	87	70	38	2836
8/20/1987	1987	8	20	81	60	87	73.5	41.5	2877.5

8/21/1987	1987	8	21	82	56	76	66	34	2911.5
8/22/1987	1987	8	22	83	52	79	65.5	33.5	2945
8/23/1987	1987	8	23	84	54	76	65	33	2978
8/24/1987	1987	8	24	85	55	72	63.5	31.5	3009.5
8/25/1987	1987	8	25	86	52	70	61	29	3038.5
8/26/1987	1987	8	26	87	49	67	58	26	3064.5
8/27/1987	1987	8	27	88	47	70	58.5	26.5	3091
8/28/1987	1987	8	28	89	44	74	59	27	3118
8/29/1987	1987	8	29	90	48	76	62	30	3148
8/30/1987	1987	8	30	91	46	77	61.5	29.5	3177.5
8/31/1987	1987	8	31	92	51	79	65	33	3210.5
9/1/1987	1987	9	1	93	52	77	64.5	32.5	3243
9/2/1987	1987	9	2	94	48	79	63.5	31.5	3274.5
9/3/1987	1987	9	3	95	48	80	64	32	3306.5
9/4/1987	1987	9	4	96	53	75	64	32	3338.5
9/5/1987	1987	9	5	97	49	71	60	28	3366.5
9/6/1987	1987	9	6	98	48	71	59.5	27.5	3394
9/7/1987	1987	9	7	99	47	76	61.5	29.5	3423.5
9/8/1987	1987	9	8	100	46	76	61	29	3452.5
9/9/1987	1987	9	9	101	49	77	63	31	3483.5
9/10/1987	1987	9	10	102	47	77	62	30	3513.5
9/11/1987	1987	9	11	103	47	76	61.5	29.5	3543
9/12/1987	1987	9	12	104	47	76	61.5	29.5	3572.5
9/13/1987	1987	9	13	105	47	78	62.5	30.5	3603
9/14/1987	1987	9	14	106	46	69	57.5	25.5	3628.5
9/15/1987	1987	9	15	107	39	69	54	22	3650.5
9/16/1987	1987	9	16	108	44	76	60	28	3678.5
9/17/1987	1987	9	17	109	53	73	63	31	3709.5
9/18/1987	1987	9	18	110	48	73	60.5	28.5	3738
9/19/1987	1987	9	19	111	47	71	59	27	3765
9/20/1987	1987	9	20	112	41	76	58.5	26.5	3791.5
9/21/1987	1987	9	21	113	43	73	58	26	3817.5
9/22/1987	1987	9	22	114	46	71	58.5	26.5	3844
9/23/1987	1987	9	23	115	46	74	60	28	3872
9/24/1987	1987	9	24	116	47	74	60.5	28.5	3900.5
9/25/1987	1987	9	25	117	49	64	56.5	24.5	3925
9/26/1987	1987	9	26	118	43	72	57.5	25.5	3950.5
9/27/1987	1987	9	27	119	47	74	60.5	28.5	3979
9/28/1987	1987	9	28	120	44	74	59	27	4006
9/29/1987	1987	9	29	121	42	75	58.5	26.5	4032.5
9/30/1987	1987	9	30	122	42	70	56	24	4056.5
10/1/1987	1987	10	1	123	42	74	58	26	4082.5
10/2/1987	1987	10	2	124	42	74	58	26	4108.5
10/3/1987	1987	10	3	125	43	74	58.5	26.5	4135
10/4/1987	1987	10	4	126	44	76	60	28	4163
10/5/1987	1987	10	5	127	44	77	60.5	28.5	4191.5
10/6/1987	1987	10	6	128	42	76	59	27	4218.5
10/7/1987	1987	10	7	129	43	78	60.5	28.5	4247
10/8/1987	1987	10	8	130	44	75	59.5	27.5	4274.5
10/9/1987	1987	10	9	131	44	75	59.5	27.5	4302
10/10/1987	1987	10	10	132	46	73	59.5	27.5	4329.5
10/11/1987	1987	10	11	133	46	74	60	28	4357.5
10/12/1987	1987	10	12	134	47	75	61	29	4386.5
10/13/1987	1987	10	13	135	48	70	59	27	4413.5
10/14/1987	1987	10	14	136	37	60	48.5	16.5	4430
10/15/1987	1987	10	15	137	39	58	48.5	16.5	4446.5
10/16/1987	1987	10	16	138	34	64	49	17	4463.5
10/17/1987	1987	10	17	139	35	66	50.5	18.5	4482
10/18/1987	1987	10	18	140	34	65	49.5	17.5	4499.5
10/19/1987	1987	10	19	141	35	64	49.5	17.5	4517
10/20/1987	1987	10	20	142	32	65	48.5	16.5	4533.5
10/21/1987	1987	10	21	143	33	67	50	18	4551.5
10/22/1987	1987	10	22	144	38	63	50.5	18.5	4570
10/23/1987	1987	10	23	145	42	60	51	19	4589
10/24/1987	1987	10	24	146	41	59	50	18	4607
10/25/1987	1987	10	25	147	45	64	54.5	22.5	4629.5
10/26/1987	1987	10	26	148	36	64	50	18	4647.5
10/27/1987	1987	10	27	149	37	68	52.5	20.5	4668
10/28/1987	1987	10	28	150	40	71	55.5	23.5	4691.5
10/29/1987	1987	10	29	151	41	60	50.5	18.5	4710
10/30/1987	1987	10	30	152	37	59	48	16	4726
10/31/1987	1987	10	31	153	35	55	45	13	4739
11/1/1987	1987	11	1	154	37	61	49	17	4756
11/2/1987	1987	11	2	155	38	56	47	15	4771
11/3/1987	1987	11	3	156	34	61	47.5	15.5	4786.5
11/4/1987	1987	11	4	157	37	64	50.5	18.5	4805
11/5/1987	1987	11	5	158	41	58	49.5	17.5	4822.5
11/6/1987	1987	11	6	159	41	53	47	15	4837.5
11/7/1987	1987	11	7	160	36	46	41	9	4846.5
11/8/1987	1987	11	8	161	29	52	40.5	8.5	4855
11/9/1987	1987	11	9	162	27	55	41	9	4864
11/10/1987	1987	11	10	163	26	56	41	9	4873
11/11/1987	1987	11	11	164	28	52	40	8	4881
11/12/1987	1987	11	12	165	24	55	39.5	7.5	4888.5
11/13/1987	1987	11	13	166	28	58	43	11	4899.5
11/14/1987	1987	11	14	167	33	52	42.5	10.5	4910
11/15/1987	1987	11	15	168	26	36	31	-1	4909
11/16/1987	1987	11	16	169	20	41	30.5	-1.5	4907.5
11/17/1987	1987	11	17	170	26	45	35.5	3.5	4911
11/18/1987	1987	11	18	171	13	42	27.5	-4.5	4906.5
11/19/1987	1987	11	19	172	17	52	34.5	2.5	4909
11/20/1987	1987	11	20	173	23	61	42	10	4919
11/21/1987	1987	11	21	174	27	56	41.5	9.5	4928.5

11/22/1987	1987	11	22	175	22	52	37	5	4933.5
11/23/1987	1987	11	23	176	25	52	38.5	6.5	4940
11/24/1987	1987	11	24	177	23	46	34.5	2.5	4942.5
11/25/1987	1987	11	25	178	17	52	34.5	2.5	4945
11/26/1987	1987	11	26	179	23	44	33.5	1.5	4946.5
11/27/1987	1987	11	27	180	22	46	34	2	4948.5
11/28/1987	1987	11	28	181	14	46	30	-2	4946.5
11/29/1987	1987	11	29	182	17	45	31	-1	4945.5
11/30/1987	1987	11	30	183	17	42	29.5	-2.5	4943
12/1/1987	1987	12	1	184	17	46	31.5	-0.5	4942.5
12/2/1987	1987	12	2	185	23	53	38	6	4948.5
12/3/1987	1987	12	3	186	29	60	44.5	12.5	4961
12/4/1987	1987	12	4	187	30	61	45.5	13.5	4974.5
12/5/1987	1987	12	5	188	30	61	45.5	13.5	4988
12/6/1987	1987	12	6	189	25	52	38.5	6.5	4994.5
12/7/1987	1987	12	7	190	27	57	42	10	5004.5
12/8/1987	1987	12	8	191	20	48	34	2	5006.5
12/9/1987	1987	12	9	192	21	50	35.5	3.5	5010
12/10/1987	1987	12	10	193	26	59	42.5	10.5	5020.5
12/11/1987	1987	12	11	194	35	58	46.5	14.5	5035
12/12/1987	1987	12	12	195	19	42	30.5	-1.5	5033.5
12/13/1987	1987	12	13	196	13	26	19.5	-12.5	5021
12/14/1987	1987	12	14	197	8	22	15	-17	5004
12/15/1987	1987	12	15	198	2	28	15	-17	4987
12/16/1987	1987	12	16	199	10	29	19.5	-12.5	4974.5
12/17/1987	1987	12	17	200	17	44	30.5	-1.5	4973
12/18/1987	1987	12	18	201	25	41	33	1	4974
12/19/1987	1987	12	19	202	26	32	29	-3	4971
12/20/1987	1987	12	20	203	26	33	29.5	-2.5	4968.5
12/21/1987	1987	12	21	204	11	42	26.5	-5.5	4963
12/22/1987	1987	12	22	205	19	51	35	3	4966
12/23/1987	1987	12	23	206	31	45	38	6	4972
12/24/1987	1987	12	24	207	21	34	27.5	-4.5	4967.5
12/25/1987	1987	12	25	208	14	32	23	-9	4958.5
12/26/1987	1987	12	26	209	1	32	16.5	-15.5	4943
12/27/1987	1987	12	27	210	9	26	17.5	-14.5	4928.5
12/28/1987	1987	12	28	211	9	40	24.5	-7.5	4921
12/29/1987	1987	12	29	212	9	51	30	-2	4919
12/30/1987	1987	12	30	213	21	43	32	0	4919
12/31/1987	1987	12	31	214	6	29	17.5	-14.5	4904.5
1/1/1988	1988	1	1	215	5	30	17.5	-14.5	4890
1/2/1988	1988	1	2	216	21	31	26	-6	4884
1/3/1988	1988	1	3	217	10	40	25	-7	4877
1/4/1988	1988	1	4	218	28	41	34.5	2.5	4879.5
1/5/1988	1988	1	5	219	33	47	40	8	4887.5
1/6/1988	1988	1	6	220	28	38	33	1	4888.5
1/7/1988	1988	1	7	221	17	38	27.5	-4.5	4884
1/8/1988	1988	1	8	222	15	36	25.5	-6.5	4877.5
1/9/1988	1988	1	9	223	11	37	24	-8	4869.5
1/10/1988	1988	1	10	224	19	44	31.5	-0.5	4869
1/11/1988	1988	1	11	225	23	47	35	3	4872
1/12/1988	1988	1	12	226	16	41	28.5	-3.5	4868.5
1/13/1988	1988	1	13	227	11	44	27.5	-4.5	4864
1/14/1988	1988	1	14	228	16	42	29	-3	4861
1/15/1988	1988	1	15	229	17	49	33	1	4862
1/16/1988	1988	1	16	230	28	45	36.5	4.5	4866.5
1/17/1988	1988	1	17	231	22	39	30.5	-1.5	4865
1/18/1988	1988	1	18	232	22	38	30	-2	4863
1/19/1988	1988	1	19	233	16	28	22	-10	4853
1/20/1988	1988	1	20	234	4	26	15	-17	4836
1/21/1988	1988	1	21	235	5	29	17	-15	4821
1/22/1988	1988	1	22	236	1	27	14	-18	4803
1/23/1988	1988	1	23	237	8	45	26.5	-5.5	4797.5
1/24/1988	1988	1	24	238	13	32	22.5	-9.5	4788
1/25/1988	1988	1	25	239	8	37	22.5	-9.5	4778.5
1/26/1988	1988	1	26	240	18	47	32.5	0.5	4779
1/27/1988	1988	1	27	241	19	55	37	5	4784
1/28/1988	1988	1	28	242	25	52	38.5	6.5	4790.5
1/29/1988	1988	1	29	243	28	51	39.5	7.5	4798
1/30/1988	1988	1	30	244	29	53	41	9	4807
1/31/1988	1988	1	31	245	23	48	35.5	3.5	4810.5
2/1/1988	1988	2	1	246	23	41	32	0	4810.5
2/2/1988	1988	2	2	247	31	45	38	6	4816.5
2/3/1988	1988	2	3	248	32	42	37	5	4821.5
2/4/1988	1988	2	4	249	24	37	30.5	-1.5	4820
2/5/1988	1988	2	5	250	23	41	32	0	4820
2/6/1988	1988	2	6	251	23	41	32	0	4820
2/7/1988	1988	2	7	252	17	47	32	0	4820
2/8/1988	1988	2	8	253	21	50	35.5	3.5	4823.5
2/9/1988	1988	2	9	254	21	53	37	5	4828.5
2/10/1988	1988	2	10	255	26	53	39.5	7.5	4836
2/11/1988	1988	2	11	256	22	47	34.5	2.5	4838.5
2/12/1988	1988	2	12	257	23	53	38	6	4844.5
2/13/1988	1988	2	13	258	24	55	39.5	7.5	4852
2/14/1988	1988	2	14	259	19	50	34.5	2.5	4854.5
2/15/1988	1988	2	15	260	18	52	35	3	4857.5
2/16/1988	1988	2	16	261	29	52	40.5	8.5	4866
2/17/1988	1988	2	17	262	19	39	29	-3	4863
2/18/1988	1988	2	18	263	13	38	25.5	-6.5	4856.5
2/19/1988	1988	2	19	264	18	41	29.5	-2.5	4854
2/20/1988	1988	2	20	265	20	47	33.5	1.5	4855.5
2/21/1988	1988	2	21	266	21	53	37	5	4860.5
2/22/1988	1988	2	22	267	25	56	40.5	8.5	4869

2/23/1988	1988	2	23	268	28	57	42.5	10.5	4879.5
2/24/1988	1988	2	24	269	27	58	42.5	10.5	4890
2/25/1988	1988	2	25	270	29	60	44.5	12.5	4902.5
2/26/1988	1988	2	26	271	38	61	49.5	17.5	4920
2/27/1988	1988	2	27	272	35	54	44.5	12.5	4932.5
2/28/1988	1988	2	28	273	32	56	44	12	4944.5
2/29/1988	1988	2	29	274	31	61	46	14	4958.5
3/1/1988	1988	3	1	275	22	67	44.5	12.5	4971
3/2/1988	1988	3	2	276	27	58	42.5	10.5	4981.5
3/3/1988	1988	3	3	277	32	47	39.5	7.5	4989
3/4/1988	1988	3	4	278	22	58	40	8	4997
3/5/1988	1988	3	5	279	22	62	42	10	5007
3/6/1988	1988	3	6	280	21	62	41.5	9.5	5016.5
3/7/1988	1988	3	7	281	38	48	43	11	5027.5
3/8/1988	1988	3	8	282	16	46	31	-1	5026.5
3/9/1988	1988	3	9	283	13	65	39	7	5033.5
3/10/1988	1988	3	10	284	33	47	40	8	5041.5
3/11/1988	1988	3	11	285	22	43	32.5	0.5	5042
3/12/1988	1988	3	12	286	8	48	28	-4	5038
3/13/1988	1988	3	13	287	26	40	33	1	5039
3/14/1988	1988	3	14	288	7	56	31.5	-0.5	5038.5
3/15/1988	1988	3	15	289	10	59	34.5	2.5	5041
3/16/1988	1988	3	16	290	24	46	35	3	5044
3/17/1988	1988	3	17	291	13	42	27.5	-4.5	5039.5
3/18/1988	1988	3	18	292	9	57	33	1	5040.5
3/19/1988	1988	3	19	293	14	65	39.5	7.5	5048
3/20/1988	1988	3	20	294	13	71	42	10	5058
3/21/1988	1988	3	21	295	16	74	45	13	5071
3/22/1988	1988	3	22	296	29	68	48.5	16.5	5087.5
3/23/1988	1988	3	23	297	30	74	52	20	5107.5
3/24/1988	1988	3	24	298	36	65	50.5	18.5	5126
3/25/1988	1988	3	25	299	22	73	47.5	15.5	5141.5
3/26/1988	1988	3	26	300	24	72	48	16	5157.5
3/27/1988	1988	3	27	301	26	77	51.5	19.5	5177
3/28/1988	1988	3	28	302	43	60	51.5	19.5	5196.5
3/29/1988	1988	3	29	303	23	59	41	9	5205.5
3/30/1988	1988	3	30	304	41	64	52.5	20.5	5226
3/31/1988	1988	3	31	305	25	41	33	1	5227
4/1/1988	1988	4	1	306	30	57	43.5	11.5	5238.5
4/2/1988	1988	4	2	307	21	66	43.5	11.5	5250
4/3/1988	1988	4	3	308	20	72	46	14	5264
4/4/1988	1988	4	4	309	25	72	48.5	16.5	5280.5
4/5/1988	1988	4	5	310	36	68	52	20	5300.5
4/6/1988	1988	4	6	311	26	77	51.5	19.5	5320
4/7/1988	1988	4	7	312	27	80	53.5	21.5	5341.5
4/8/1988	1988	4	8	313	35	76	55.5	23.5	5365
4/9/1988	1988	4	9	314	27	75	51	19	5384
4/10/1988	1988	4	10	315	19	66	42.5	10.5	5394.5
4/11/1988	1988	4	11	316	26	74	50	18	5412.5
4/12/1988	1988	4	12	317	23	78	50.5	18.5	5431
4/13/1988	1988	4	13	318	25	75	50	18	5449
4/14/1988	1988	4	14	319	47	60	53.5	21.5	5470.5
4/15/1988	1988	4	15	320	33	66	49.5	17.5	5488
4/16/1988	1988	4	16	321	26	48	37	5	5493
4/17/1988	1988	4	17	322	15	49	32	0	5493
4/18/1988	1988	4	18	323	30	60	45	13	5506
4/19/1988	1988	4	19	324	34	67	50.5	18.5	5524.5
4/20/1988	1988	4	20	325	32	69	50.5	18.5	5543
4/21/1988	1988	4	21	326	32	66	49	17	5560
4/22/1988	1988	4	22	327	31	66	48.5	16.5	5576.5
4/23/1988	1988	4	23	328	29	66	47.5	15.5	5592
4/24/1988	1988	4	24	329	29	60	44.5	12.5	5604.5
4/25/1988	1988	4	25	330	23	76	49.5	17.5	5622
4/26/1988	1988	4	26	331	31	71	51	19	5641
4/27/1988	1988	4	27	332	30	76	53	21	5662
4/28/1988	1988	4	28	333	36	65	50.5	18.5	5680.5
4/29/1988	1988	4	29	334	39	72	55.5	23.5	5704
4/30/1988	1988	4	30	335	33	81	57	25	5729
5/1/1988	1988	5	1	336	38	58	48	16	5745
5/2/1988	1988	5	2	337	31	61	46	14	5759
5/3/1988	1988	5	3	338	24	73	48.5	16.5	5775.5
5/4/1988	1988	5	4	339	36	78	57	25	5800.5
5/5/1988	1988	5	5	340	37	79	58	26	5826.5
5/6/1988	1988	5	6	341	36	63	49.5	17.5	5844
5/7/1988	1988	5	7	342	32	63	47.5	15.5	5859.5
5/8/1988	1988	5	8	343	40	65	52.5	20.5	5880
5/9/1988	1988	5	9	344	27	76	51.5	19.5	5899.5
5/10/1988	1988	5	10	345	35	77	56	24	5923.5
5/11/1988	1988	5	11	346	41	78	59.5	27.5	5951
5/12/1988	1988	5	12	347	41	84	62.5	30.5	5981.5
5/13/1988	1988	5	13	348	38	84	61	29	6010.5
5/14/1988	1988	5	14	349	40	84	62	30	6040.5
5/15/1988	1988	5	15	350	50	89	69.5	37.5	6078
5/16/1988	1988	5	16	351	43	86	64.5	32.5	6110.5
5/17/1988	1988	5	17	352	48	77	62.5	30.5	6141
5/18/1988	1988	5	18	353	44	63	53.5	21.5	6162.5
5/19/1988	1988	5	19	354	47	68	57.5	25.5	6188
5/20/1988	1988	5	20	355	39	63	51	19	6207
5/21/1988	1988	5	21	356	34	73	53.5	21.5	6228.5
5/22/1988	1988	5	22	357	37	78	57.5	25.5	6254
5/23/1988	1988	5	23	358	34	81	57.5	25.5	6279.5
5/24/1988	1988	5	24	359	48	79	63.5	31.5	6311
5/25/1988	1988	5	25	360	39	77	58	26	6337

5/26/1988	1988	5	26	361	39	82	60.5	28.5	6365.5
5/27/1988	1988	5	27	362	48	85	66.5	34.5	6400
5/28/1988	1988	5	28	363	42	84	63	31	6431
5/29/1988	1988	5	29	364	41	83	62	30	6461
5/30/1988	1988	5	30	365	38	58	48	16	6477
5/31/1988	1988	5	31	366	33	66	49.5	17.5	6494.5
6/1/1988	1988	6	1	1	30	76	53	21	21
6/2/1988	1988	6	2	2	39	83	61	29	50
6/3/1988	1988	6	3	3	43	83	63	31	81
6/4/1988	1988	6	4	4	52	82	67	35	116
6/5/1988	1988	6	5	5	43	78	60.5	28.5	144.5
6/6/1988	1988	6	6	6	45	87	66	34	178.5
6/7/1988	1988	6	7	7	42	88	65	33	211.5
6/8/1988	1988	6	8	8	41	87	64	32	243.5
6/9/1988	1988	6	9	9	39	84	61.5	29.5	273
6/10/1988	1988	6	10	10	54	83	68.5	36.5	309.5
6/11/1988	1988	6	11	11	44	78	61	29	338.5
6/12/1988	1988	6	12	12	49	86	67.5	35.5	374
6/13/1988	1988	6	13	13	41	82	61.5	29.5	403.5
6/14/1988	1988	6	14	14	42	85	63.5	31.5	435
6/15/1988	1988	6	15	15	49	83	66	34	469
6/16/1988	1988	6	16	16	52	86	69	37	506
6/17/1988	1988	6	17	17	49	88	68.5	36.5	542.5
6/18/1988	1988	6	18	18	49	89	69	37	579.5
6/19/1988	1988	6	19	19	52	90	71	39	618.5
6/20/1988	1988	6	20	20	53	90	71.5	39.5	658
6/21/1988	1988	6	21	21	53	93	73	41	699
6/22/1988	1988	6	22	22	54	94	74	42	741
6/23/1988	1988	6	23	23	58	91	74.5	42.5	783.5
6/24/1988	1988	6	24	24	56	87	71.5	39.5	823
6/25/1988	1988	6	25	25	58	88	73	41	864
6/26/1988	1988	6	26	26	50	84	67	35	899
6/27/1988	1988	6	27	27	56	77	66.5	34.5	933.5
6/28/1988	1988	6	28	28	57	77	67	35	968.5
6/29/1988	1988	6	29	29	55	76	65.5	33.5	1002
6/30/1988	1988	6	30	30	51	83	67	35	1037
7/1/1988	1988	7	1	31	58	88	73	41	1078
7/2/1988	1988	7	2	32	54	89	71.5	39.5	1117.5
7/3/1988	1988	7	3	33	55	85	70	38	1155.5
7/4/1988	1988	7	4	34	60	81	70.5	38.5	1194
7/5/1988	1988	7	5	35	59	88	73.5	41.5	1235.5
7/6/1988	1988	7	6	36	54	88	71	39	1274.5
7/7/1988	1988	7	7	37	63	94	78.5	46.5	1321
7/8/1988	1988	7	8	38	61	83	72	40	1361
7/9/1988	1988	7	9	39	57	78	67.5	35.5	1396.5
7/10/1988	1988	7	10	40	52	83	67.5	35.5	1432
7/11/1988	1988	7	11	41	50	89	69.5	37.5	1469.5
7/12/1988	1988	7	12	42	55	91	73	41	1510.5
7/13/1988	1988	7	13	43	58	94	76	44	1554.5
7/14/1988	1988	7	14	44	62	88	75	43	1597.5
7/15/1988	1988	7	15	45	62	93	77.5	45.5	1643
7/16/1988	1988	7	16	46	56	91	73.5	41.5	1684.5
7/17/1988	1988	7	17	47	57	91	74	42	1726.5
7/18/1988	1988	7	18	48	58	91	74.5	42.5	1769
7/19/1988	1988	7	19	49	60	87	73.5	41.5	1810.5
7/20/1988	1988	7	20	50	58	79	68.5	36.5	1847
7/21/1988	1988	7	21	51	58	89	73.5	41.5	1888.5
7/22/1988	1988	7	22	52	52	94	73	41	1929.5
7/23/1988	1988	7	23	53	62	94	78	46	1975.5
7/24/1988	1988	7	24	54	57	88	72.5	40.5	2016
7/25/1988	1988	7	25	55	53	93	73	41	2057
7/26/1988	1988	7	26	56	60	90	75	43	2100
7/27/1988	1988	7	27	57	53	89	71	39	2139
7/28/1988	1988	7	28	58	57	88	72.5	40.5	2179.5
7/29/1988	1988	7	29	59	56	82	69	37	2216.5
7/30/1988	1988	7	30	60	57	82	69.5	37.5	2254
7/31/1988	1988	7	31	61	59	81	70	38	2292
8/1/1988	1988	8	1	62	57	81	69	37	2329
8/2/1988	1988	8	2	63	54	86	70	38	2367
8/3/1988	1988	8	3	64	57	90	73.5	41.5	2408.5
8/4/1988	1988	8	4	65	58	92	75	43	2451.5
8/5/1988	1988	8	5	66	58	84	71	39	2490.5
8/6/1988	1988	8	6	67	60	79	69.5	37.5	2528
8/7/1988	1988	8	7	68	58	84	71	39	2567
8/8/1988	1988	8	8	69	51	88	69.5	37.5	2604.5
8/9/1988	1988	8	9	70	52	86	69	37	2641.5
8/10/1988	1988	8	10	71	57	84	70.5	38.5	2680
8/11/1988	1988	8	11	72	57	88	72.5	40.5	2720.5
8/12/1988	1988	8	12	73	58	87	72.5	40.5	2761
8/13/1988	1988	8	13	74	51	90	70.5	38.5	2799.5
8/14/1988	1988	8	14	75	51	92	71.5	39.5	2839
8/15/1988	1988	8	15	76	57	83	70	38	2877
8/16/1988	1988	8	16	77	58	84	71	39	2916
8/17/1988	1988	8	17	78	57	76	66.5	34.5	2950.5
8/18/1988	1988	8	18	79	51	79	65	33	2983.5
8/19/1988	1988	8	19	80	53	86	69.5	37.5	3021
8/20/1988	1988	8	20	81	52	87	69.5	37.5	3058.5
8/21/1988	1988	8	21	82	54	81	67.5	35.5	3094
8/22/1988	1988	8	22	83	59	86	72.5	40.5	3134.5
8/23/1988	1988	8	23	84	60	85	72.5	40.5	3175
8/24/1988	1988	8	24	85	60	84	72	40	3215
8/25/1988	1988	8	25	86	59	86	72.5	40.5	3255.5
8/26/1988	1988	8	26	87	55	82	68.5	36.5	3292

8/27/1988	1988	8	27	88	55	75	65	33	3325
8/28/1988	1988	8	28	89	53	64	58.5	26.5	3351.5
8/29/1988	1988	8	29	90	54	70	62	30	3381.5
8/30/1988	1988	8	30	91	57	77	67	35	3416.5
8/31/1988	1988	8	31	92	54	71	62.5	30.5	3447
9/1/1988	1988	9	1	93	55	75	65	33	3480
9/2/1988	1988	9	2	94	56	88	72	40	3520
9/3/1988	1988	9	3	95	48	79	63.5	31.5	3551.5
9/4/1988	1988	9	4	96	48	76	62	30	3581.5
9/5/1988	1988	9	5	97	44	79	61.5	29.5	3611
9/6/1988	1988	9	6	98	41	85	63	31	3642
9/7/1988	1988	9	7	99	42	88	65	33	3675
9/8/1988	1988	9	8	100	44	91	67.5	35.5	3710.5
9/9/1988	1988	9	9	101	45	89	67	35	3745.5
9/10/1988	1988	9	10	102	49	88	68.5	36.5	3782
9/11/1988	1988	9	11	103	53	83	68	36	3818
9/12/1988	1988	9	12	104	38	70	54	22	3840
9/13/1988	1988	9	13	105	48	79	63.5	31.5	3871.5
9/14/1988	1988	9	14	106	42	78	60	28	3899.5
9/15/1988	1988	9	15	107	38	78	58	26	3925.5
9/16/1988	1988	9	16	108	39	82	60.5	28.5	3954
9/17/1988	1988	9	17	109	42	81	61.5	29.5	3983.5
9/18/1988	1988	9	18	110	37	82	59.5	27.5	4011
9/19/1988	1988	9	19	111	36	83	59.5	27.5	4038.5
9/20/1988	1988	9	20	112	40	78	59	27	4065.5
9/21/1988	1988	9	21	113	46	66	56	24	4089.5
9/22/1988	1988	9	22	114	48	73	60.5	28.5	4118
9/23/1988	1988	9	23	115	36	76	56	24	4142
9/24/1988	1988	9	24	116	34	79	56.5	24.5	4166.5
9/25/1988	1988	9	25	117	36	81	58.5	26.5	4193
9/26/1988	1988	9	26	118	36	83	59.5	27.5	4220.5
9/27/1988	1988	9	27	119	40	79	59.5	27.5	4248
9/28/1988	1988	9	28	120	34	78	56	24	4272
9/29/1988	1988	9	29	121	32	70	51	19	4291
9/30/1988	1988	9	30	122	31	76	53.5	21.5	4312.5
10/1/1988	1988	10	1	123	36	82	59	27	4339.5
10/2/1988	1988	10	2	124	48	82	65	33	4372.5
10/3/1988	1988	10	3	125	37	81	59	27	4399.5
10/4/1988	1988	10	4	126	39	72	55.5	23.5	4423
10/5/1988	1988	10	5	127	48	73	60.5	28.5	4451.5
10/6/1988	1988	10	6	128	47	68	57.5	25.5	4477
10/7/1988	1988	10	7	129	35	64	49.5	17.5	4494.5
10/8/1988	1988	10	8	130	37	70	53.5	21.5	4516
10/9/1988	1988	10	9	131	37	69	53	21	4537
10/10/1988	1988	10	10	132	38	66	52	20	4557
10/11/1988	1988	10	11	133	32	68	50	18	4575
10/12/1988	1988	10	12	134	29	66	47.5	15.5	4590.5
10/13/1988	1988	10	13	135	30	73	51.5	19.5	4610
10/14/1988	1988	10	14	136	31	69	50	18	4628
10/15/1988	1988	10	15	137	46	82	64	32	4660
10/16/1988	1988	10	16	138	34	79	56.5	24.5	4684.5
10/17/1988	1988	10	17	139	34	78	56	24	4708.5
10/18/1988	1988	10	18	140	34	81	57.5	25.5	4734
10/19/1988	1988	10	19	141	36	76	56	24	4758
10/20/1988	1988	10	20	142	35	79	57	25	4783
10/21/1988	1988	10	21	143	34	79	56.5	24.5	4807.5
10/22/1988	1988	10	22	144	31	79	55	23	4830.5
10/23/1988	1988	10	23	145	35	78	56.5	24.5	4855
10/24/1988	1988	10	24	146	30	79	54.5	22.5	4877.5
10/25/1988	1988	10	25	147	29	77	53	21	4898.5
10/26/1988	1988	10	26	148	31	76	53.5	21.5	4920
10/27/1988	1988	10	27	149	29	78	53.5	21.5	4941.5
10/28/1988	1988	10	28	150	30	71	50.5	18.5	4960
10/29/1988	1988	10	29	151	31	68	49.5	17.5	4977.5
10/30/1988	1988	10	30	152	37	69	53	21	4998.5
10/31/1988	1988	10	31	153	29	73	51	19	5017.5
11/1/1988	1988	11	1	154	28	74	51	19	5036.5
11/2/1988	1988	11	2	155	32	69	50.5	18.5	5055
11/3/1988	1988	11	3	156	37	74	55.5	23.5	5078.5
11/4/1988	1988	11	4	157	52	72	62	30	5108.5
11/5/1988	1988	11	5	158	33	76	54.5	22.5	5131
11/6/1988	1988	11	6	159	29	74	51.5	19.5	5150.5
11/7/1988	1988	11	7	160	40	71	55.5	23.5	5174
11/8/1988	1988	11	8	161	46	69	57.5	25.5	5199.5
11/9/1988	1988	11	9	162	46	64	55	23	5222.5
11/10/1988	1988	11	10	163	29	68	48.5	16.5	5239
11/11/1988	1988	11	11	164	36	58	47	15	5254
11/12/1988	1988	11	12	165	26	65	45.5	13.5	5267.5
11/13/1988	1988	11	13	166	25	70	47.5	15.5	5283
11/14/1988	1988	11	14	167	33	68	50.5	18.5	5301.5
11/15/1988	1988	11	15	168	29	44	36.5	4.5	5306
11/16/1988	1988	11	16	169	15	48	31.5	-0.5	5305.5
11/17/1988	1988	11	17	170	20	58	39	7	5312.5
11/18/1988	1988	11	18	171	20	41	30.5	-1.5	5311
11/19/1988	1988	11	19	172	25	44	34.5	2.5	5313.5
11/20/1988	1988	11	20	173	15	46	30.5	-1.5	5312
11/21/1988	1988	11	21	174	17	46	31.5	-0.5	5311.5
11/22/1988	1988	11	22	175	11	56	33.5	1.5	5313
11/23/1988	1988	11	23	176	15	58	36.5	4.5	5317.5
11/24/1988	1988	11	24	177	29	58	43.5	11.5	5329
11/25/1988	1988	11	25	178	31	44	37.5	5.5	5334.5
11/26/1988	1988	11	26	179	29	39	34	2	5336.5
11/27/1988	1988	11	27	180	13	58	35.5	3.5	5340

11/28/1988	1988	11	28	181	13	58	35.5	3.5	5343.5
11/29/1988	1988	11	29	182	18	42	30	-2	5341.5
11/30/1988	1988	11	30	183	13	43	28	-4	5337.5
12/1/1988	1988	12	1	184	12	54	33	1	5338.5
12/2/1988	1988	12	2	185	18	58	38	6	5344.5
12/3/1988	1988	12	3	186	14	59	36.5	4.5	5349
12/4/1988	1988	12	4	187	19	52	35.5	3.5	5352.5
12/5/1988	1988	12	5	188	10	57	33.5	1.5	5354
12/6/1988	1988	12	6	189	12	52	32	0	5354
12/7/1988	1988	12	7	190	20	45	32.5	0.5	5354.5
12/8/1988	1988	12	8	191	20	34	27	-5	5349.5
12/9/1988	1988	12	9	192	9	46	27.5	-4.5	5345
12/10/1988	1988	12	10	193	19	44	31.5	-0.5	5344.5
12/11/1988	1988	12	11	194	12	55	33.5	1.5	5346
12/12/1988	1988	12	12	195	11	53	32	0	5346
12/13/1988	1988	12	13	196	12	62	37	5	5351
12/14/1988	1988	12	14	197	15	60	37.5	5.5	5356.5
12/15/1988	1988	12	15	198	23	38	30.5	-1.5	5355
12/16/1988	1988	12	16	199	12	51	31.5	-0.5	5354.5
12/17/1988	1988	12	17	200	20	49	34.5	2.5	5357
12/18/1988	1988	12	18	201	18	56	37	5	5362
12/19/1988	1988	12	19	202	13	41	27	-5	5357
12/20/1988	1988	12	20	203	15	45	30	-2	5355
12/21/1988	1988	12	21	204	18	44	31	-1	5354
12/22/1988	1988	12	22	205	14	44	29	-3	5351
12/23/1988	1988	12	23	206	17	37	27	-5	5346
12/24/1988	1988	12	24	207	5	46	25.5	-6.5	5339.5
12/25/1988	1988	12	25	208	22	52	37	5	5344.5
12/26/1988	1988	12	26	209	19	43	31	-1	5343.5
12/27/1988	1988	12	27	210	-1	28	13.5	-18.5	5325
12/28/1988	1988	12	28	211	-18	37	9.5	-22.5	5302.5
12/29/1988	1988	12	29	212	2	34	18	-14	5288.5
12/30/1988	1988	12	30	213	0	37	18.5	-13.5	5275
12/31/1988	1988	12	31	214	3	36	19.5	-12.5	5262.5
1/1/1989	1989	1	1	215	7	45	26	-6	5256.5
1/2/1989	1989	1	2	216	8	48	28	-4	5252.5
1/3/1989	1989	1	3	217	14	50	32	0	5252.5
1/4/1989	1989	1	4	218	25	43	34	2	5254.5
1/5/1989	1989	1	5	219	32	40	36	4	5258.5
1/6/1989	1989	1	6	220	28	39	33.5	1.5	5260
1/7/1989	1989	1	7	221	-5	26	10.5	-21.5	5238.5
1/8/1989	1989	1	8	222	-15	30	7.5	-24.5	5214
1/9/1989	1989	1	9	223	-7	42	17.5	-14.5	5199.5
1/10/1989	1989	1	10	224	-17	55	19	-13	5186.5
1/11/1989	1989	1	11	225	18	46	32	0	5186.5
1/12/1989	1989	1	12	226	3	35	19	-13	5173.5
1/13/1989	1989	1	13	227	0	36	18	-14	5159.5
1/14/1989	1989	1	14	228	2	48	25	-7	5152.5
1/15/1989	1989	1	15	229	10	35	22.5	-9.5	5143
1/16/1989	1989	1	16	230	4	46	25	-7	5136
1/17/1989	1989	1	17	231	-2	50	24	-8	5128
1/18/1989	1989	1	18	232	12	53	32.5	0.5	5128.5
1/19/1989	1989	1	19	233	10	54	32	0	5128.5
1/20/1989	1989	1	20	234	16	48	32	0	5128.5
1/21/1989	1989	1	21	235	10	47	28.5	-3.5	5125
1/22/1989	1989	1	22	236	15	58	36.5	4.5	5129.5
1/23/1989	1989	1	23	237	3	56	29.5	-2.5	5127
1/24/1989	1989	1	24	238	23	46	34.5	2.5	5129.5
1/25/1989	1989	1	25	239	21	40	30.5	-1.5	5128
1/26/1989	1989	1	26	240	22	49	35.5	3.5	5131.5
1/27/1989	1989	1	27	241	18	36	27	-5	5126.5
1/28/1989	1989	1	28	242	19	38	28.5	-3.5	5123
1/29/1989	1989	1	29	243	5	43	24	-8	5115
1/30/1989	1989	1	30	244	7	46	26.5	-5.5	5109.5
1/31/1989	1989	1	31	245	9	57	33	1	5110.5
2/1/1989	1989	2	1	246	10	54	32	0	5110.5
2/2/1989	1989	2	2	247	33	53	43	11	5121.5
2/3/1989	1989	2	3	248	29	53	41	9	5130.5
2/4/1989	1989	2	4	249	32	54	43	11	5141.5
2/5/1989	1989	2	5	250	9	26	17.5	-14.5	5127
2/6/1989	1989	2	6	251	3	22	12.5	-19.5	5107.5
2/7/1989	1989	2	7	252	6	26	16	-16	5091.5
2/8/1989	1989	2	8	253	10	40	25	-7	5084.5
2/9/1989	1989	2	9	254	10	42	26	-6	5078.5
2/10/1989	1989	2	10	255	26	53	39.5	7.5	5086
2/11/1989	1989	2	11	256	27	58	42.5	10.5	5096.5
2/12/1989	1989	2	12	257	24	51	37.5	5.5	5102
2/13/1989	1989	2	13	258	21	47	34	2	5104
2/14/1989	1989	2	14	259	19	48	33.5	1.5	5105.5
2/15/1989	1989	2	15	260	19	53	36	4	5109.5
2/16/1989	1989	2	16	261	15	53	34	2	5111.5
2/17/1989	1989	2	17	262	22	60	41	9	5120.5
2/18/1989	1989	2	18	263	20	59	39.5	7.5	5128
2/19/1989	1989	2	19	264	28	48	38	6	5134
2/20/1989	1989	2	20	265	27	47	37	5	5139
2/21/1989	1989	2	21	266	14	50	32	0	5139
2/22/1989	1989	2	22	267	14	58	36	4	5143
2/23/1989	1989	2	23	268	18	65	41.5	9.5	5152.5
2/24/1989	1989	2	24	269	20	71	45.5	13.5	5166
2/25/1989	1989	2	25	270	24	72	48	16	5182
2/26/1989	1989	2	26	271	23	70	46.5	14.5	5196.5
2/27/1989	1989	2	27	272	32	61	46.5	14.5	5211
2/28/1989	1989	2	28	273	16	61	38.5	6.5	5217.5

3/1/1989	1989	3	1	274	23	60	41.5	9.5	5227
3/2/1989	1989	3	2	275	33	57	45	13	5240
3/3/1989	1989	3	3	276	28	44	36	4	5244
3/4/1989	1989	3	4	277	18	37	27.5	-4.5	5239.5
3/5/1989	1989	3	5	278	11	48	29.5	-2.5	5237
3/6/1989	1989	3	6	279	15	61	38	6	5243
3/7/1989	1989	3	7	280	21	73	47	15	5258
3/8/1989	1989	3	8	281	27	76	51.5	19.5	5277.5
3/9/1989	1989	3	9	282	26	80	53	21	5298.5
3/10/1989	1989	3	10	283	30	81	55.5	23.5	5322
3/11/1989	1989	3	11	284	31	77	54	22	5344
3/12/1989	1989	3	12	285	26	78	52	20	5364
3/13/1989	1989	3	13	286	36	72	54	22	5386
3/14/1989	1989	3	14	287	41	68	54.5	22.5	5408.5
3/15/1989	1989	3	15	288	28	66	47	15	5423.5
3/16/1989	1989	3	16	289	29	70	49.5	17.5	5441
3/17/1989	1989	3	17	290	37	71	54	22	5463
3/18/1989	1989	3	18	291	34	74	54	22	5485
3/19/1989	1989	3	19	292	31	70	50.5	18.5	5503.5
3/20/1989	1989	3	20	293	33	49	41	9	5512.5
3/21/1989	1989	3	21	294	20	61	40.5	8.5	5521
3/22/1989	1989	3	22	295	21	67	44	12	5533
3/23/1989	1989	3	23	296	25	69	47	15	5548
3/24/1989	1989	3	24	297	35	74	54.5	22.5	5570.5
3/25/1989	1989	3	25	298	29	68	48.5	16.5	5587
3/26/1989	1989	3	26	299	31	54	42.5	10.5	5597.5
3/27/1989	1989	3	27	300	33	59	46	14	5611.5
3/28/1989	1989	3	28	301	25	68	46.5	14.5	5626
3/29/1989	1989	3	29	302	35	71	53	21	5647
3/30/1989	1989	3	30	303	29	68	48.5	16.5	5663.5
3/31/1989	1989	3	31	304	23	74	48.5	16.5	5680
4/1/1989	1989	4	1	305	36	69	52.5	20.5	5700.5
4/2/1989	1989	4	2	306	34	72	53	21	5721.5
4/3/1989	1989	4	3	307	44	74	59	27	5748.5
4/4/1989	1989	4	4	308	41	67	54	22	5770.5
4/5/1989	1989	4	5	309	27	71	49	17	5787.5
4/6/1989	1989	4	6	310	27	78	52.5	20.5	5808
4/7/1989	1989	4	7	311	26	84	55	23	5831
4/8/1989	1989	4	8	312	30	82	56	24	5855
4/9/1989	1989	4	9	313	38	81	59.5	27.5	5882.5
4/10/1989	1989	4	10	314	36	59	47.5	15.5	5898
4/11/1989	1989	4	11	315	34	78	56	24	5922
4/12/1989	1989	4	12	316	36	71	53.5	21.5	5943.5
4/13/1989	1989	4	13	317	33	67	50	18	5961.5
4/14/1989	1989	4	14	318	28	76	52	20	5981.5
4/15/1989	1989	4	15	319	33	79	56	24	6005.5
4/16/1989	1989	4	16	320	39	79	59	27	6032.5
4/17/1989	1989	4	17	321	44	81	62.5	30.5	6063
4/18/1989	1989	4	18	322	38	80	59	27	6090
4/19/1989	1989	4	19	323	36	84	60	28	6118
4/20/1989	1989	4	20	324	35	86	60.5	28.5	6146.5
4/21/1989	1989	4	21	325	39	85	62	30	6176.5
4/22/1989	1989	4	22	326	38	81	59.5	27.5	6204
4/23/1989	1989	4	23	327	35	79	57	25	6229
4/24/1989	1989	4	24	328	38	80	59	27	6256
4/25/1989	1989	4	25	329	35	76	55.5	23.5	6279.5
4/26/1989	1989	4	26	330	38	71	54.5	22.5	6302
4/27/1989	1989	4	27	331	33	71	52	20	6322
4/28/1989	1989	4	28	332	22	68	45	13	6335
4/29/1989	1989	4	29	333	26	70	48	16	6351
4/30/1989	1989	4	30	334	28	71	49.5	17.5	6368.5
5/1/1989	1989	5	1	335	31	76	53.5	21.5	6390
5/2/1989	1989	5	2	336	32	80	56	24	6414
5/3/1989	1989	5	3	337	28	82	55	23	6437
5/4/1989	1989	5	4	338	30	82	56	24	6461
5/5/1989	1989	5	5	339	28	81	54.5	22.5	6483.5
5/6/1989	1989	5	6	340	33	85	59	27	6510.5
5/7/1989	1989	5	7	341	34	87	60.5	28.5	6539
5/8/1989	1989	5	8	342	39	88	63.5	31.5	6570.5
5/9/1989	1989	5	9	343	42	81	61.5	29.5	6600
5/10/1989	1989	5	10	344	47	81	64	32	6632
5/11/1989	1989	5	11	345	36	78	57	25	6657
5/12/1989	1989	5	12	346	34	68	51	19	6676
5/13/1989	1989	5	13	347	34	69	51.5	19.5	6695.5
5/14/1989	1989	5	14	348	36	71	53.5	21.5	6717
5/15/1989	1989	5	15	349	37	68	52.5	20.5	6737.5
5/16/1989	1989	5	16	350	48	62	55	23	6760.5
5/17/1989	1989	5	17	351	35	68	51.5	19.5	6780
5/18/1989	1989	5	18	352	35	81	58	26	6806
5/19/1989	1989	5	19	353	42	83	62.5	30.5	6836.5
5/20/1989	1989	5	20	354	39	87	63	31	6867.5
5/21/1989	1989	5	21	355	42	89	65.5	33.5	6901
5/22/1989	1989	5	22	356	44	89	66.5	34.5	6935.5
5/23/1989	1989	5	23	357	53	90	71.5	39.5	6975
5/24/1989	1989	5	24	358	51	86	68.5	36.5	7011.5
5/25/1989	1989	5	25	359	46	82	64	32	7043.5
5/26/1989	1989	5	26	360	43	82	62.5	30.5	7074
5/27/1989	1989	5	27	361	41	89	65	33	7107
5/28/1989	1989	5	28	362	48	89	68.5	36.5	7143.5
5/29/1989	1989	5	29	363	49	87	68	36	7179.5
5/30/1989	1989	5	30	364	49	83	66	34	7213.5
5/31/1989	1989	5	31	365	39	83	61	29	7242.5
6/1/1989	1989	6	1	1	41	82	61.5	29.5	29.5

6/2/1989	1989	6	2	2	38	86	62	30	59.5
6/3/1989	1989	6	3	3	39	79	59	27	86.5
6/4/1989	1989	6	4	4	41	82	61.5	29.5	116
6/5/1989	1989	6	5	5	43	86	64.5	32.5	148.5
6/6/1989	1989	6	6	6	41	80	60.5	28.5	177
6/7/1989	1989	6	7	7	40	88	64	32	209
6/8/1989	1989	6	8	8	50	79	64.5	32.5	241.5
6/9/1989	1989	6	9	9	40	80	60	28	269.5
6/10/1989	1989	6	10	10	45	85	65	33	302.5
6/11/1989	1989	6	11	11	47	85	66	34	336.5
6/12/1989	1989	6	12	12	51	82	66.5	34.5	371
6/13/1989	1989	6	13	13	43	83	63	31	402
6/14/1989	1989	6	14	14	41	81	61	29	431
6/15/1989	1989	6	15	15	49	89	69	37	468
6/16/1989	1989	6	16	16	58	92	75	43	511
6/17/1989	1989	6	17	17	58	95	76.5	44.5	555.5
6/18/1989	1989	6	18	18	55	97	76	44	599.5
6/19/1989	1989	6	19	19	56	98	77	45	644.5
6/20/1989	1989	6	20	20	53	89	71	39	683.5
6/21/1989	1989	6	21	21	59	91	75	43	726.5
6/22/1989	1989	6	22	22	46	88	67	35	761.5
6/23/1989	1989	6	23	23	45	89	67	35	796.5
6/24/1989	1989	6	24	24	48	88	68	36	832.5
6/25/1989	1989	6	25	25	49	88	68.5	36.5	869
6/26/1989	1989	6	26	26	46	86	66	34	903
6/27/1989	1989	6	27	27	47	90	68.5	36.5	939.5
6/28/1989	1989	6	28	28	53	87	70	38	977.5
6/29/1989	1989	6	29	29	54	88	71	39	1016.5
6/30/1989	1989	6	30	30	59	88	73.5	41.5	1058
7/1/1989	1989	7	1	31	53	95	74	42	1100
7/2/1989	1989	7	2	32	54	99	76.5	44.5	1144.5
7/3/1989	1989	7	3	33	50	100	75	43	1187.5
7/4/1989	1989	7	4	34	51	101	76	44	1231.5
7/5/1989	1989	7	5	35	56	100	78	46	1277.5
7/6/1989	1989	7	6	36	60	97	78.5	46.5	1324
7/7/1989	1989	7	7	37	61	97	79	47	1371
7/8/1989	1989	7	8	38	60	94	77	45	1416
7/9/1989	1989	7	9	39	60	91	75.5	43.5	1459.5
7/10/1989	1989	7	10	40	56	87	71.5	39.5	1499
7/11/1989	1989	7	11	41	57	79	68	36	1535
7/12/1989	1989	7	12	42	54	87	70.5	38.5	1573.5
7/13/1989	1989	7	13	43	58	94	76	44	1617.5
7/14/1989	1989	7	14	44	58	93	75.5	43.5	1661
7/15/1989	1989	7	15	45	56	96	76	44	1705
7/16/1989	1989	7	16	46	57	92	74.5	42.5	1747.5
7/17/1989	1989	7	17	47	57	96	76.5	44.5	1792
7/18/1989	1989	7	18	48	50	98	74	42	1834
7/19/1989	1989	7	19	49	63	86	74.5	42.5	1876.5
7/20/1989	1989	7	20	50	56	91	73.5	41.5	1918
7/21/1989	1989	7	21	51	59	93	76	44	1962
7/22/1989	1989	7	22	52	56	86	71	39	2001
7/23/1989	1989	7	23	53	56	81	68.5	36.5	2037.5
7/24/1989	1989	7	24	54	56	84	70	38	2075.5
7/25/1989	1989	7	25	55	57	80	68.5	36.5	2112
7/26/1989	1989	7	26	56	56	75	65.5	33.5	2145.5
7/27/1989	1989	7	27	57	56	81	68.5	36.5	2182
7/28/1989	1989	7	28	58	54	80	67	35	2217
7/29/1989	1989	7	29	59	52	83	67.5	35.5	2252.5
7/30/1989	1989	7	30	60	55	87	71	39	2291.5
7/31/1989	1989	7	31	61	59	87	73	41	2332.5
8/1/1989	1989	8	1	62	60	77	68.5	36.5	2369
8/2/1989	1989	8	2	63	52	86	69	37	2406
8/3/1989	1989	8	3	64	51	85	68	36	2442
8/4/1989	1989	8	4	65	57	87	72	40	2482
8/5/1989	1989	8	5	66	50	89	69.5	37.5	2519.5
8/6/1989	1989	8	6	67	53	92	72.5	40.5	2560
8/7/1989	1989	8	7	68	56	88	72	40	2600
8/8/1989	1989	8	8	69	57	89	73	41	2641
8/9/1989	1989	8	9	70	57	86	71.5	39.5	2680.5
8/10/1989	1989	8	10	71	57	90	73.5	41.5	2722
8/11/1989	1989	8	11	72	56	91	73.5	41.5	2763.5
8/12/1989	1989	8	12	73	53	88	70.5	38.5	2802
8/13/1989	1989	8	13	74	54	87	70.5	38.5	2840.5
8/14/1989	1989	8	14	75	55	88	71.5	39.5	2880
8/15/1989	1989	8	15	76	58	88	73	41	2921
8/16/1989	1989	8	16	77	53	87	70	38	2959
8/17/1989	1989	8	17	78	55	89	72	40	2999
8/18/1989	1989	8	18	79	51	87	69	37	3036
8/19/1989	1989	8	19	80	52	88	70	38	3074
8/20/1989	1989	8	20	81	49	87	68	36	3110
8/21/1989	1989	8	21	82	50	84	67	35	3145
8/22/1989	1989	8	22	83	48	84	66	34	3179
8/23/1989	1989	8	23	84	45	87	66	34	3213
8/24/1989	1989	8	24	85	45	86	65.5	33.5	3246.5
8/25/1989	1989	8	25	86	43	87	65	33	3279.5
8/26/1989	1989	8	26	87	42	86	64	32	3311.5
8/27/1989	1989	8	27	88	44	82	63	31	3342.5
8/28/1989	1989	8	28	89	52	84	68	36	3378.5
8/29/1989	1989	8	29	90	44	89	66.5	34.5	3413
8/30/1989	1989	8	30	91	52	86	69	37	3450
8/31/1989	1989	8	31	92	56	83	69.5	37.5	3487.5
9/1/1989	1989	9	1	93	45	88	66.5	34.5	3522
9/2/1989	1989	9	2	94	46	89	67.5	35.5	3557.5

9/3/1989	1989	9	3	95	51	84	67.5	35.5	3593
9/4/1989	1989	9	4	96	54	81	67.5	35.5	3628.5
9/5/1989	1989	9	5	97	52	74	63	31	3659.5
9/6/1989	1989	9	6	98	51	82	66.5	34.5	3694
9/7/1989	1989	9	7	99	52	86	69	37	3731
9/8/1989	1989	9	8	100	52	83	67.5	35.5	3766.5
9/9/1989	1989	9	9	101	41	86	63.5	31.5	3798
9/10/1989	1989	9	10	102	41	82	61.5	29.5	3827.5
9/11/1989	1989	9	11	103	39	80	59.5	27.5	3855
9/12/1989	1989	9	12	104	42	79	60.5	28.5	3883.5
9/13/1989	1989	9	13	105	39	73	56	24	3907.5
9/14/1989	1989	9	14	106	34	76	55	23	3930.5
9/15/1989	1989	9	15	107	35	84	59.5	27.5	3958
9/16/1989	1989	9	16	108	34	83	58.5	26.5	3984.5
9/17/1989	1989	9	17	109	38	83	60.5	28.5	4013
9/18/1989	1989	9	18	110	48	86	67	35	4048
9/19/1989	1989	9	19	111	46	84	65	33	4081
9/20/1989	1989	9	20	112	49	81	65	33	4114
9/21/1989	1989	9	21	113	34	82	58	26	4140
9/22/1989	1989	9	22	114	48	71	59.5	27.5	4167.5
9/23/1989	1989	9	23	115	48	79	63.5	31.5	4199
9/24/1989	1989	9	24	116	42	83	62.5	30.5	4229.5
9/25/1989	1989	9	25	117	39	82	60.5	28.5	4258
9/26/1989	1989	9	26	118	43	83	63	31	4289
9/27/1989	1989	9	27	119	44	82	63	31	4320
9/28/1989	1989	9	28	120	39	86	62.5	30.5	4350.5
9/29/1989	1989	9	29	121	38	84	61	29	4379.5
9/30/1989	1989	9	30	122	40	87	63.5	31.5	4411
10/1/1989	1989	10	1	123	44	81	62.5	30.5	4441.5
10/2/1989	1989	10	2	124	42	80	61	29	4470.5
10/3/1989	1989	10	3	125	44	72	58	26	4496.5
10/4/1989	1989	10	4	126	47	64	55.5	23.5	4520
10/5/1989	1989	10	5	127	44	55	49.5	17.5	4537.5
10/6/1989	1989	10	6	128	34	69	51.5	19.5	4557
10/7/1989	1989	10	7	129	37	69	53	21	4578
10/8/1989	1989	10	8	130	36	71	53.5	21.5	4599.5
10/9/1989	1989	10	9	131	34	75	54.5	22.5	4622
10/10/1989	1989	10	10	132	33	81	57	25	4647
10/11/1989	1989	10	11	133	34	82	58	26	4673
10/12/1989	1989	10	12	134	33	82	57.5	25.5	4698.5
10/13/1989	1989	10	13	135	34	80	57	25	4723.5
10/14/1989	1989	10	14	136	35	79	57	25	4748.5
10/15/1989	1989	10	15	137	46	80	63	31	4779.5
10/16/1989	1989	10	16	138	36	72	54	22	4801.5
10/17/1989	1989	10	17	139	34	61	47.5	15.5	4817
10/18/1989	1989	10	18	140	33	60	46.5	14.5	4831.5
10/19/1989	1989	10	19	141	29	65	47	15	4846.5
10/20/1989	1989	10	20	142	31	59	45	13	4859.5
10/21/1989	1989	10	21	143	36	66	51	19	4878.5
10/22/1989	1989	10	22	144	38	65	51.5	19.5	4898
10/23/1989	1989	10	23	145	33	71	52	20	4918
10/24/1989	1989	10	24	146	30	70	50	18	4936
10/25/1989	1989	10	25	147	35	71	53	21	4957
10/26/1989	1989	10	26	148	34	59	46.5	14.5	4971.5
10/27/1989	1989	10	27	149	20	69	44.5	12.5	4984
10/28/1989	1989	10	28	150	22	65	43.5	11.5	4995.5
10/29/1989	1989	10	29	151	19	52	35.5	3.5	4999
10/30/1989	1989	10	30	152	19	54	36.5	4.5	5003.5
10/31/1989	1989	10	31	153	11	62	36.5	4.5	5008
11/1/1989	1989	11	1	154	19	54	36.5	4.5	5012.5
11/2/1989	1989	11	2	155	10	60	35	3	5015.5
11/3/1989	1989	11	3	156	-5	58	26.5	-5.5	5010
11/4/1989	1989	11	4	157	15	65	40	8	5018
11/5/1989	1989	11	5	158	25	68	46.5	14.5	5032.5
11/6/1989	1989	11	6	159	40	65	52.5	20.5	5053
11/7/1989	1989	11	7	160	30	64	47	15	5068
11/8/1989	1989	11	8	161	20	57	38.5	6.5	5074.5
11/9/1989	1989	11	9	162	18	60	39	7	5081.5
11/10/1989	1989	11	10	163	25	68	46.5	14.5	5096
11/11/1989	1989	11	11	164	24	71	47.5	15.5	5111.5
11/12/1989	1989	11	12	165	23	73	48	16	5127.5
11/13/1989	1989	11	13	166	24	68	46	14	5141.5
11/14/1989	1989	11	14	167	24	67	45.5	13.5	5155
11/15/1989	1989	11	15	168	20	53	36.5	4.5	5159.5
11/16/1989	1989	11	16	169	19	56	37.5	5.5	5165
11/17/1989	1989	11	17	170	16	50	33	1	5166
11/18/1989	1989	11	18	171	15	58	36.5	4.5	5170.5
11/19/1989	1989	11	19	172	18	63	40.5	8.5	5179
11/20/1989	1989	11	20	173	18	70	44	12	5191
11/21/1989	1989	11	21	174	25	65	45	13	5204
11/22/1989	1989	11	22	175	22	65	43.5	11.5	5215.5
11/23/1989	1989	11	23	176	19	64	41.5	9.5	5225
11/24/1989	1989	11	24	177	23	63	43	11	5236
11/25/1989	1989	11	25	178	39	64	51.5	19.5	5255.5
11/26/1989	1989	11	26	179	30	59	44.5	12.5	5268
11/27/1989	1989	11	27	180	21	47	34	2	5270
11/28/1989	1989	11	28	181	10	38	24	-8	5262
11/29/1989	1989	11	29	182	8	36	22	-10	5252
11/30/1989	1989	11	30	183	15	34	24.5	-7.5	5244.5
12/1/1989	1989	12	1	184	13	42	27.5	-4.5	5240
12/2/1989	1989	12	2	185	12	45	28.5	-3.5	5236.5
12/3/1989	1989	12	3	186	12	53	32.5	0.5	5237
12/4/1989	1989	12	4	187	14	55	34.5	2.5	5239.5

12/5/1989	1989	12	5	188	18	62	40	8	5247.5
12/6/1989	1989	12	6	189	22	53	37.5	5.5	5253
12/7/1989	1989	12	7	190	20	45	32.5	0.5	5253.5
12/8/1989	1989	12	8	191	10	54	32	0	5253.5
12/9/1989	1989	12	9	192	12	62	37	5	5258.5
12/10/1989	1989	12	10	193	12	54	33	1	5259.5
12/11/1989	1989	12	11	194	-5	32	13.5	-18.5	5241
12/12/1989	1989	12	12	195	0	41	20.5	-11.5	5229.5
12/13/1989	1989	12	13	196	4	45	24.5	-7.5	5222
12/14/1989	1989	12	14	197	11	53	32	0	5222
12/15/1989	1989	12	15	198	16	58	37	5	5227
12/16/1989	1989	12	16	199	20	49	34.5	2.5	5229.5
12/17/1989	1989	12	17	200	9	49	29	-3	5226.5
12/18/1989	1989	12	18	201	20	50	35	3	5229.5
12/19/1989	1989	12	19	202	15	50	32.5	0.5	5230
12/20/1989	1989	12	20	203	10	51	30.5	-1.5	5228.5
12/21/1989	1989	12	21	204	9	47	28	-4	5224.5
12/22/1989	1989	12	22	205	9	45	27	-5	5219.5
12/23/1989	1989	12	23	206	10	52	31	-1	5218.5
12/24/1989	1989	12	24	207	12	52	32	0	5218.5
12/25/1989	1989	12	25	208	10	53	31.5	-0.5	5218
12/26/1989	1989	12	26	209	9	55	32	0	5218
12/27/1989	1989	12	27	210	8	51	29.5	-2.5	5215.5
12/28/1989	1989	12	28	211	14	51	32.5	0.5	5216
12/29/1989	1989	12	29	212	16	44	30	-2	5214
12/30/1989	1989	12	30	213	17	42	29.5	-2.5	5211.5
12/31/1989	1989	12	31	214	8	43	25.5	-6.5	5205
1/1/1990	1990	1	1	215	4	49	26.5	-5.5	5199.5
1/2/1990	1990	1	2	216	9	39	24	-8	5191.5
1/3/1990	1990	1	3	217	18	39	28.5	-3.5	5188
1/4/1990	1990	1	4	218	-3	34	15.5	-16.5	5171.5
1/5/1990	1990	1	5	219	-1	32	15.5	-16.5	5155
1/6/1990	1990	1	6	220	-1	42	20.5	-11.5	5143.5
1/7/1990	1990	1	7	221	2	52	27	-5	5138.5
1/8/1990	1990	1	8	222	5	55	30	-2	5136.5
1/9/1990	1990	1	9	223	11	61	36	4	5140.5
1/10/1990	1990	1	10	224	10	62	36	4	5144.5
1/11/1990	1990	1	11	225	9	66	37.5	5.5	5150
1/12/1990	1990	1	12	226	11	47	29	-3	5147
1/13/1990	1990	1	13	227	20	59	39.5	7.5	5154.5
1/14/1990	1990	1	14	228	15	59	37	5	5159.5
1/15/1990	1990	1	15	229	14	50	32	0	5159.5
1/16/1990	1990	1	16	230	11	46	28.5	-3.5	5156
1/17/1990	1990	1	17	231	4	43	23.5	-8.5	5147.5
1/18/1990	1990	1	18	232	6	37	21.5	-10.5	5137
1/19/1990	1990	1	19	233	10	38	24	-8	5129
1/20/1990	1990	1	20	234	15	47	31	-1	5128
1/21/1990	1990	1	21	235	8	38	23	-9	5119
1/22/1990	1990	1	22	236	-1	35	17	-15	5104
1/23/1990	1990	1	23	237	11	49	30	-2	5102
1/24/1990	1990	1	24	238	9	36	22.5	-9.5	5092.5
1/25/1990	1990	1	25	239	-1	47	23	-9	5083.5
1/26/1990	1990	1	26	240	5	59	32	0	5083.5
1/27/1990	1990	1	27	241	10	42	26	-6	5077.5
1/28/1990	1990	1	28	242	4	40	22	-10	5067.5
1/29/1990	1990	1	29	243	-3	49	23	-9	5058.5
1/30/1990	1990	1	30	244	5	48	26.5	-5.5	5053
1/31/1990	1990	1	31	245	15	43	29	-3	5050
2/1/1990	1990	2	1	246	20	42	31	-1	5049
2/2/1990	1990	2	2	247	21	35	28	-4	5045
2/3/1990	1990	2	3	248	9	42	25.5	-6.5	5038.5
2/4/1990	1990	2	4	249	8	42	25	-7	5031.5
2/5/1990	1990	2	5	250	14	41	27.5	-4.5	5027
2/6/1990	1990	2	6	251	10	50	30	-2	5025
2/7/1990	1990	2	7	252	10	55	32.5	0.5	5025.5
2/8/1990	1990	2	8	253	23	50	36.5	4.5	5030
2/9/1990	1990	2	9	254	20	47	33.5	1.5	5031.5
2/10/1990	1990	2	10	255	18	53	35.5	3.5	5035
2/11/1990	1990	2	11	256	20	63	41.5	9.5	5044.5
2/12/1990	1990	2	12	257	20	64	42	10	5054.5
2/13/1990	1990	2	13	258	36	59	47.5	15.5	5070
2/14/1990	1990	2	14	259	33	51	42	10	5080
2/15/1990	1990	2	15	260	13	33	23	-9	5071
2/16/1990	1990	2	16	261	3	42	22.5	-9.5	5061.5
2/17/1990	1990	2	17	262	12	52	32	0	5061.5
2/18/1990	1990	2	18	263	15	54	34.5	2.5	5064
2/19/1990	1990	2	19	264	26	41	33.5	1.5	5065.5
2/20/1990	1990	2	20	265	6	41	23.5	-8.5	5057
2/21/1990	1990	2	21	266	15	47	31	-1	5056
2/22/1990	1990	2	22	267	18	52	35	3	5059
2/23/1990	1990	2	23	268	16	59	37.5	5.5	5064.5
2/24/1990	1990	2	24	269	15	66	40.5	8.5	5073
2/25/1990	1990	2	25	270	18	67	42.5	10.5	5083.5
2/26/1990	1990	2	26	271	26	64	45	13	5096.5
2/27/1990	1990	2	27	272	33	47	40	8	5104.5
2/28/1990	1990	2	28	273	30	46	38	6	5110.5
3/1/1990	1990	3	1	274	30	55	42.5	10.5	5121
3/2/1990	1990	3	2	275	22	59	40.5	8.5	5129.5
3/3/1990	1990	3	3	276	23	49	36	4	5133.5
3/4/1990	1990	3	4	277	22	62	42	10	5143.5
3/5/1990	1990	3	5	278	28	64	46	14	5157.5
3/6/1990	1990	3	6	279	20	56	38	6	5163.5
3/7/1990	1990	3	7	280	22	58	40	8	5171.5

3/8/1990	1990	3	8	281	17	65	41	9	5180.5
3/9/1990	1990	3	9	282	31	64	47.5	15.5	5196
3/10/1990	1990	3	10	283	33	52	42.5	10.5	5206.5
3/11/1990	1990	3	11	284	34	48	41	9	5215.5
3/12/1990	1990	3	12	285	28	57	42.5	10.5	5226
3/13/1990	1990	3	13	286	27	38	32.5	0.5	5226.5
3/14/1990	1990	3	14	287	20	42	31	-1	5225.5
3/15/1990	1990	3	15	288	18	45	31.5	-0.5	5225
3/16/1990	1990	3	16	289	14	52	33	1	5226
3/17/1990	1990	3	17	290	18	63	40.5	8.5	5234.5
3/18/1990	1990	3	18	291	25	64	44.5	12.5	5247
3/19/1990	1990	3	19	292	31	64	47.5	15.5	5262.5
3/20/1990	1990	3	20	293	29	72	50.5	18.5	5281
3/21/1990	1990	3	21	294	35	71	53	21	5302
3/22/1990	1990	3	22	295	26	75	50.5	18.5	5320.5
3/23/1990	1990	3	23	296	34	75	54.5	22.5	5343
3/24/1990	1990	3	24	297	28	75	51.5	19.5	5362.5
3/25/1990	1990	3	25	298	39	72	55.5	23.5	5386
3/26/1990	1990	3	26	299	33	70	51.5	19.5	5405.5
3/27/1990	1990	3	27	300	42	68	55	23	5428.5
3/28/1990	1990	3	28	301	30	62	46	14	5442.5
3/29/1990	1990	3	29	302	28	49	38.5	6.5	5449
3/30/1990	1990	3	30	303	29	52	40.5	8.5	5457.5
3/31/1990	1990	3	31	304	33	53	43	11	5468.5
4/1/1990	1990	4	1	305	28	54	41	9	5477.5
4/2/1990	1990	4	2	306	27	46	36.5	4.5	5482
4/3/1990	1990	4	3	307	29	62	45.5	13.5	5495.5
4/4/1990	1990	4	4	308	28	69	48.5	16.5	5512
4/5/1990	1990	4	5	309	41	63	52	20	5532
4/6/1990	1990	4	6	310	29	62	45.5	13.5	5545.5
4/7/1990	1990	4	7	311	35	64	49.5	17.5	5563
4/8/1990	1990	4	8	312	38	65	51.5	19.5	5582.5
4/9/1990	1990	4	9	313	35	64	49.5	17.5	5600
4/10/1990	1990	4	10	314	31	70	50.5	18.5	5618.5
4/11/1990	1990	4	11	315	33	74	53.5	21.5	5640
4/12/1990	1990	4	12	316	34	75	54.5	22.5	5662.5
4/13/1990	1990	4	13	317	33	79	56	24	5686.5
4/14/1990	1990	4	14	318	32	82	57	25	5711.5
4/15/1990	1990	4	15	319	39	81	60	28	5739.5
4/16/1990	1990	4	16	320	36	78	57	25	5764.5
4/17/1990	1990	4	17	321	35	55	45	13	5777.5
4/18/1990	1990	4	18	322	38	54	46	14	5791.5
4/19/1990	1990	4	19	323	30	62	46	14	5805.5
4/20/1990	1990	4	20	324	32	73	52.5	20.5	5826
4/21/1990	1990	4	21	325	39	76	57.5	25.5	5851.5
4/22/1990	1990	4	22	326	40	77	58.5	26.5	5878
4/23/1990	1990	4	23	327	42	69	55.5	23.5	5901.5
4/24/1990	1990	4	24	328	36	64	50	18	5919.5
4/25/1990	1990	4	25	329	32	64	48	16	5935.5
4/26/1990	1990	4	26	330	34	69	51.5	19.5	5955
4/27/1990	1990	4	27	331	34	73	53.5	21.5	5976.5
4/28/1990	1990	4	28	332	38	78	58	26	6002.5
4/29/1990	1990	4	29	333	43	76	59.5	27.5	6030
4/30/1990	1990	4	30	334	36	62	49	17	6047
5/1/1990	1990	5	1	335	36	55	45.5	13.5	6060.5
5/2/1990	1990	5	2	336	33	45	39	7	6067.5
5/3/1990	1990	5	3	337	31	59	45	13	6080.5
5/4/1990	1990	5	4	338	35	66	50.5	18.5	6099
5/5/1990	1990	5	5	339	36	66	51	19	6118
5/6/1990	1990	5	6	340	36	75	55.5	23.5	6141.5
5/7/1990	1990	5	7	341	42	77	59.5	27.5	6169
5/8/1990	1990	5	8	342	49	78	63.5	31.5	6200.5
5/9/1990	1990	5	9	343	38	76	57	25	6225.5
5/10/1990	1990	5	10	344	34	78	56	24	6249.5
5/11/1990	1990	5	11	345	39	70	54.5	22.5	6272
5/12/1990	1990	5	12	346	44	76	60	28	6300
5/13/1990	1990	5	13	347	40	81	60.5	28.5	6328.5
5/14/1990	1990	5	14	348	39	80	59.5	27.5	6356
5/15/1990	1990	5	15	349	40	76	58	26	6382
5/16/1990	1990	5	16	350	39	75	57	25	6407
5/17/1990	1990	5	17	351	43	79	61	29	6436
5/18/1990	1990	5	18	352	42	79	60.5	28.5	6464.5
5/19/1990	1990	5	19	353	42	75	58.5	26.5	6491
5/20/1990	1990	5	20	354	41	73	57	25	6516
5/21/1990	1990	5	21	355	39	82	60.5	28.5	6544.5
5/22/1990	1990	5	22	356	44	87	65.5	33.5	6578
5/23/1990	1990	5	23	357	44	86	65	33	6611
5/24/1990	1990	5	24	358	49	85	67	35	6646
5/25/1990	1990	5	25	359	40	84	62	30	6676
5/26/1990	1990	5	26	360	39	82	60.5	28.5	6704.5
5/27/1990	1990	5	27	361	42	85	63.5	31.5	6736
5/28/1990	1990	5	28	362	45	85	65	33	6769
5/29/1990	1990	5	29	363	38	76	57	25	6794
5/30/1990	1990	5	30	364	38	78	58	26	6820
5/31/1990	1990	5	31	365	42	83	62.5	30.5	6850.5
6/1/1990	1990	6	1	1	40	82	61	29	29
6/2/1990	1990	6	2	2	42	85	63.5	31.5	60.5
6/3/1990	1990	6	3	3	45	89	67	35	95.5
6/4/1990	1990	6	4	4	48	96	72	40	135.5
6/5/1990	1990	6	5	5	52	92	72	40	175.5
6/6/1990	1990	6	6	6	52	92	72	40	215.5
6/7/1990	1990	6	7	7	49	91	70	38	253.5
6/8/1990	1990	6	8	8	50	92	71	39	292.5

6/9/1990	1990	6	9	9	50	87	68.5	36.5	329
6/10/1990	1990	6	10	10	42	74	58	26	355
6/11/1990	1990	6	11	11	50	87	68.5	36.5	391.5
6/12/1990	1990	6	12	12	49	91	70	38	429.5
6/13/1990	1990	6	13	13	52	91	71.5	39.5	469
6/14/1990	1990	6	14	14	48	92	70	38	507
6/15/1990	1990	6	15	15	50	89	69.5	37.5	544.5
6/16/1990	1990	6	16	16	46	86	66	34	578.5
6/17/1990	1990	6	17	17	40	95	67.5	35.5	614
6/18/1990	1990	6	18	18	46	97	71.5	39.5	653.5
6/19/1990	1990	6	19	19	58	96	77	45	698.5
6/20/1990	1990	6	20	20	50	92	71	39	737.5
6/21/1990	1990	6	21	21	48	97	72.5	40.5	778
6/22/1990	1990	6	22	22	50	95	72.5	40.5	818.5
6/23/1990	1990	6	23	23	52	97	74.5	42.5	861
6/24/1990	1990	6	24	24	54	99	76.5	44.5	905.5
6/25/1990	1990	6	25	25	62	98	80	48	953.5
6/26/1990	1990	6	26	26	58	98	78	46	999.5
6/27/1990	1990	6	27	27	60	94	77	45	1044.5
6/28/1990	1990	6	28	28	48	97	72.5	40.5	1085
6/29/1990	1990	6	29	29	61	98	79.5	47.5	1132.5
6/30/1990	1990	6	30	30	60	98	79	47	1179.5
7/1/1990	1990	7	1	31	58	96	77	45	1224.5
7/2/1990	1990	7	2	32	55	95	75	43	1267.5
7/3/1990	1990	7	3	33	57	87	72	40	1307.5
7/4/1990	1990	7	4	34	54	87	70.5	38.5	1346
7/5/1990	1990	7	5	35	54	79	66.5	34.5	1380.5
7/6/1990	1990	7	6	36	55	77	66	34	1414.5
7/7/1990	1990	7	7	37	55	83	69	37	1451.5
7/8/1990	1990	7	8	38	54	82	68	36	1487.5
7/9/1990	1990	7	9	39	59	80	69.5	37.5	1525
7/10/1990	1990	7	10	40	60	85	72.5	40.5	1565.5
7/11/1990	1990	7	11	41	60	85	72.5	40.5	1606
7/12/1990	1990	7	12	42	55	85	70	38	1644
7/13/1990	1990	7	13	43	55	86	70.5	38.5	1682.5
7/14/1990	1990	7	14	44	55	77	66	34	1716.5
7/15/1990	1990	7	15	45	49	84	66.5	34.5	1751
7/16/1990	1990	7	16	46	61	84	72.5	40.5	1791.5
7/17/1990	1990	7	17	47	56	86	71	39	1830.5
7/18/1990	1990	7	18	48	55	90	72.5	40.5	1871
7/19/1990	1990	7	19	49	61	91	76	44	1915
7/20/1990	1990	7	20	50	58	86	72	40	1955
7/21/1990	1990	7	21	51	55	89	72	40	1995
7/22/1990	1990	7	22	52	57	89	73	41	2036
7/23/1990	1990	7	23	53	58	87	72.5	40.5	2076.5
7/24/1990	1990	7	24	54	58	85	71.5	39.5	2116
7/25/1990	1990	7	25	55	55	89	72	40	2156
7/26/1990	1990	7	26	56	57	91	74	42	2198
7/27/1990	1990	7	27	57	53	89	71	39	2237
7/28/1990	1990	7	28	58	53	89	71	39	2276
7/29/1990	1990	7	29	59	57	84	70.5	38.5	2314.5
7/30/1990	1990	7	30	60	59	86	72.5	40.5	2355
7/31/1990	1990	7	31	61	57	89	73	41	2396
8/1/1990	1990	8	1	62	52	80	66	34	2430
8/2/1990	1990	8	2	63	54	83	68.5	36.5	2466.5
8/3/1990	1990	8	3	64	50	89	69.5	37.5	2504
8/4/1990	1990	8	4	65	52	87	69.5	37.5	2541.5
8/5/1990	1990	8	5	66	55	84	69.5	37.5	2579
8/6/1990	1990	8	6	67	53	80	66.5	34.5	2613.5
8/7/1990	1990	8	7	68	54	86	70	38	2651.5
8/8/1990	1990	8	8	69	50	92	71	39	2690.5
8/9/1990	1990	8	9	70	55	93	74	42	2732.5
8/10/1990	1990	8	10	71	50	93	71.5	39.5	2772
8/11/1990	1990	8	11	72	52	89	70.5	38.5	2810.5
8/12/1990	1990	8	12	73	55	89	72	40	2850.5
8/13/1990	1990	8	13	74	52	72	62	30	2880.5
8/14/1990	1990	8	14	75	50	74	62	30	2910.5
8/15/1990	1990	8	15	76	52	72	62	30	2940.5
8/16/1990	1990	8	16	77	51	74	62.5	30.5	2971
8/17/1990	1990	8	17	78	49	75	62	30	3001
8/18/1990	1990	8	18	79	48	82	65	33	3034
8/19/1990	1990	8	19	80	49	86	67.5	35.5	3069.5
8/20/1990	1990	8	20	81	52	79	65.5	33.5	3103
8/21/1990	1990	8	21	82	51	81	66	34	3137
8/22/1990	1990	8	22	83	46	78	62	30	3167
8/23/1990	1990	8	23	84	48	85	66.5	34.5	3201.5
8/24/1990	1990	8	24	85	50	85	67.5	35.5	3237
8/25/1990	1990	8	25	86	41	83	62	30	3267
8/26/1990	1990	8	26	87	48	84	66	34	3301
8/27/1990	1990	8	27	88	48	89	68.5	36.5	3337.5
8/28/1990	1990	8	28	89	53	95	74	42	3379.5
8/29/1990	1990	8	29	90	54	92	73	41	3420.5
8/30/1990	1990	8	30	91	54	92	73	41	3461.5
8/31/1990	1990	8	31	92	53	92	72.5	40.5	3502
9/1/1990	1990	9	1	93	51	91	71	39	3541
9/2/1990	1990	9	2	94	52	89	70.5	38.5	3579.5
9/3/1990	1990	9	3	95	52	85	68.5	36.5	3616
9/4/1990	1990	9	4	96	54	78	66	34	3650
9/5/1990	1990	9	5	97	55	82	68.5	36.5	3686.5
9/6/1990	1990	9	6	98	55	84	69.5	37.5	3724
9/7/1990	1990	9	7	99	52	84	68	36	3760
9/8/1990	1990	9	8	100	52	85	68.5	36.5	3796.5
9/9/1990	1990	9	9	101	49	90	69.5	37.5	3834

9/10/1990	1990	9	10	102	49	89	69	37	3871
9/11/1990	1990	9	11	103	48	91	69.5	37.5	3908.5
9/12/1990	1990	9	12	104	48	90	69	37	3945.5
9/13/1990	1990	9	13	105	48	92	70	38	3983.5
9/14/1990	1990	9	14	106	48	85	66.5	34.5	4018
9/15/1990	1990	9	15	107	47	82	64.5	32.5	4050.5
9/16/1990	1990	9	16	108	56	72	64	32	4082.5
9/17/1990	1990	9	17	109	47	82	64.5	32.5	4115
9/18/1990	1990	9	18	110	48	74	61	29	4144
9/19/1990	1990	9	19	111	46	78	62	30	4174
9/20/1990	1990	9	20	112	47	69	58	26	4200
9/21/1990	1990	9	21	113	48	80	64	32	4232
9/22/1990	1990	9	22	114	52	69	60.5	28.5	4260.5
9/23/1990	1990	9	23	115	51	60	55.5	23.5	4284
9/24/1990	1990	9	24	116	50	75	62.5	30.5	4314.5
9/25/1990	1990	9	25	117	45	80	62.5	30.5	4345
9/26/1990	1990	9	26	118	45	85	65	33	4378
9/27/1990	1990	9	27	119	44	82	63	31	4409
9/28/1990	1990	9	28	120	49	70	59.5	27.5	4436.5
9/29/1990	1990	9	29	121	49	73	61	29	4465.5
9/30/1990	1990	9	30	122	48	68	58	26	4491.5
10/1/1990	1990	10	1	123	47	66	56.5	24.5	4516
10/2/1990	1990	10	2	124	44	68	56	24	4540
10/3/1990	1990	10	3	125	39	75	57	25	4565
10/4/1990	1990	10	4	126	40	79	59.5	27.5	4592.5
10/5/1990	1990	10	5	127	37	80	58.5	26.5	4619
10/6/1990	1990	10	6	128	41	78	59.5	27.5	4646.5
10/7/1990	1990	10	7	129	41	78	59.5	27.5	4674
10/8/1990	1990	10	8	130	45	72	58.5	26.5	4700.5
10/9/1990	1990	10	9	131	29	60	44.5	12.5	4713
10/10/1990	1990	10	10	132	29	72	50.5	18.5	4731.5
10/11/1990	1990	10	11	133	27	76	51.5	19.5	4751
10/12/1990	1990	10	12	134	27	72	49.5	17.5	4768.5
10/13/1990	1990	10	13	135	27	78	52.5	20.5	4789
10/14/1990	1990	10	14	136	35	79	57	25	4814
10/15/1990	1990	10	15	137	33	79	56	24	4838
10/16/1990	1990	10	16	138	31	76	53.5	21.5	4859.5
10/17/1990	1990	10	17	139	42	69	55.5	23.5	4883
10/18/1990	1990	10	18	140	28	73	50.5	18.5	4901.5
10/19/1990	1990	10	19	141	38	75	56.5	24.5	4926
10/20/1990	1990	10	20	142	35	58	46.5	14.5	4940.5
10/21/1990	1990	10	21	143	26	53	39.5	7.5	4948
10/22/1990	1990	10	22	144	25	68	46.5	14.5	4962.5
10/23/1990	1990	10	23	145	18	67	42.5	10.5	4973
10/24/1990	1990	10	24	146	28	73	50.5	18.5	4991.5
10/25/1990	1990	10	25	147	28	75	51.5	19.5	5011
10/26/1990	1990	10	26	148	30	73	51.5	19.5	5030.5
10/27/1990	1990	10	27	149	30	74	52	20	5050.5
10/28/1990	1990	10	28	150	37	74	55.5	23.5	5074
10/29/1990	1990	10	29	151	31	75	53	21	5095
10/30/1990	1990	10	30	152	33	75	54	22	5117
10/31/1990	1990	10	31	153	30	73	51.5	19.5	5136.5
11/1/1990	1990	11	1	154	33	68	50.5	18.5	5155
11/2/1990	1990	11	2	155	33	50	41.5	9.5	5164.5
11/3/1990	1990	11	3	156	28	48	38	6	5170.5
11/4/1990	1990	11	4	157	27	50	38.5	6.5	5177
11/5/1990	1990	11	5	158	24	64	44	12	5189
11/6/1990	1990	11	6	159	26	61	43.5	11.5	5200.5
11/7/1990	1990	11	7	160	25	46	35.5	3.5	5204
11/8/1990	1990	11	8	161	22	46	34	2	5206
11/9/1990	1990	11	9	162	24	55	39.5	7.5	5213.5
11/10/1990	1990	11	10	163	24	56	40	8	5221.5
11/11/1990	1990	11	11	164	26	60	43	11	5232.5
11/12/1990	1990	11	12	165	22	68	45	13	5245.5
11/13/1990	1990	11	13	166	22	68	45	13	5258.5
11/14/1990	1990	11	14	167	23	71	47	15	5273.5
11/15/1990	1990	11	15	168	25	72	48.5	16.5	5290
11/16/1990	1990	11	16	169	25	61	43	11	5301
11/17/1990	1990	11	17	170	26	66	46	14	5315
11/18/1990	1990	11	18	171	26	68	47	15	5330
11/19/1990	1990	11	19	172	27	65	46	14	5344
11/20/1990	1990	11	20	173	36	61	48.5	16.5	5360.5
11/21/1990	1990	11	21	174	31	52	41.5	9.5	5370
11/22/1990	1990	11	22	175	18	52	35	3	5373
11/23/1990	1990	11	23	176	18	58	38	6	5379
11/24/1990	1990	11	24	177	18	65	41.5	9.5	5388.5
11/25/1990	1990	11	25	178	18	68	43	11	5399.5
11/26/1990	1990	11	26	179	27	55	41	9	5408.5
11/27/1990	1990	11	27	180	22	43	32.5	0.5	5409
11/28/1990	1990	11	28	181	10	38	24	-8	5401
11/29/1990	1990	11	29	182	8	48	28	-4	5397
11/30/1990	1990	11	30	183	9	57	33	1	5398
12/1/1990	1990	12	1	184	12	58	35	3	5401
12/2/1990	1990	12	2	185	15	42	28.5	-3.5	5397.5
12/3/1990	1990	12	3	186	12	41	26.5	-5.5	5392
12/4/1990	1990	12	4	187	7	53	30	-2	5390
12/5/1990	1990	12	5	188	5	56	30.5	-1.5	5388.5
12/6/1990	1990	12	6	189	10	42	26	-6	5382.5
12/7/1990	1990	12	7	190	8	53	30.5	-1.5	5381
12/8/1990	1990	12	8	191	8	58	33	1	5382
12/9/1990	1990	12	9	192	9	58	33.5	1.5	5383.5
12/10/1990	1990	12	10	193	11	60	35.5	3.5	5387
12/11/1990	1990	12	11	194	13	63	38	6	5393

12/12/1990	1990	12	12	195	22	55	38.5	6.5	5399.5
12/13/1990	1990	12	13	196	33	47	40	8	5407.5
12/14/1990	1990	12	14	197	35	50	42.5	10.5	5418
12/15/1990	1990	12	15	198	20	47	33.5	1.5	5419.5
12/16/1990	1990	12	16	199	28	38	33	1	5420.5
12/17/1990	1990	12	17	200	19	37	28	-4	5416.5
12/18/1990	1990	12	18	201	11	41	26	-6	5410.5
12/19/1990	1990	12	19	202	9	49	29	-3	5407.5
12/20/1990	1990	12	20	203	26	40	33	1	5408.5
12/21/1990	1990	12	21	204	15	26	20.5	-11.5	5397
12/22/1990	1990	12	22	205	-2	25	11.5	-20.5	5376.5
12/23/1990	1990	12	23	206	-7	24	8.5	-23.5	5353
12/24/1990	1990	12	24	207	-21	21	0	-32	5321
12/25/1990	1990	12	25	208	-33	21	-6	-38	5283
12/26/1990	1990	12	26	209	-28	28	0	-32	5251
12/27/1990	1990	12	27	210	-19	33	7	-25	5226
12/28/1990	1990	12	28	211	-10	47	18.5	-13.5	5212.5
12/29/1990	1990	12	29	212	5	48	26.5	-5.5	5207
12/30/1990	1990	12	30	213	-9	34	12.5	-19.5	5187.5
12/31/1990	1990	12	31	214	-12	37	12.5	-19.5	5168
1/1/1991	1991	1	1	215	-6	41	17.5	-14.5	5153.5
1/2/1991	1991	1	2	216	-7	45	19	-13	5140.5
1/3/1991	1991	1	3	217	-3	39	18	-14	5126.5
1/4/1991	1991	1	4	218	15	46	30.5	-1.5	5125
1/5/1991	1991	1	5	219	17	47	32	0	5125
1/6/1991	1991	1	6	220	15	39	27	-5	5120
1/7/1991	1991	1	7	221	15	39	27	-5	5115
1/8/1991	1991	1	8	222	5	44	24.5	-7.5	5107.5
1/9/1991	1991	1	9	223	8	44	26	-6	5101.5
1/10/1991	1991	1	10	224	10	40	25	-7	5094.5
1/11/1991	1991	1	11	225	18	47	32.5	0.5	5095
1/12/1991	1991	1	12	226	16	45	30.5	-1.5	5093.5
1/13/1991	1991	1	13	227	21	49	35	3	5096.5
1/14/1991	1991	1	14	228	23	41	32	0	5096.5
1/15/1991	1991	1	15	229	19	50	34.5	2.5	5099
1/16/1991	1991	1	16	230	24	39	31.5	-0.5	5098.5
1/17/1991	1991	1	17	231	16	39	27.5	-4.5	5094
1/18/1991	1991	1	18	232	15	49	32	0	5094
1/19/1991	1991	1	19	233	15	51	33	1	5095
1/20/1991	1991	1	20	234	20	40	30	-2	5093
1/21/1991	1991	1	21	235	-2	34	16	-16	5077
1/22/1991	1991	1	22	236	16	35	25.5	-6.5	5070.5
1/23/1991	1991	1	23	237	11	39	25	-7	5063.5
1/24/1991	1991	1	24	238	11	48	29.5	-2.5	5061
1/25/1991	1991	1	25	239	15	48	31.5	-0.5	5060.5
1/26/1991	1991	1	26	240	-5	52	23.5	-8.5	5052
1/27/1991	1991	1	27	241	2	46	24	-8	5044
1/28/1991	1991	1	28	242	10	46	28	-4	5040
1/29/1991	1991	1	29	243	25	37	31	-1	5039
1/30/1991	1991	1	30	244	1	40	20.5	-11.5	5027.5
1/31/1991	1991	1	31	245	8	54	31	-1	5026.5
2/1/1991	1991	2	1	246	6	54	30	-2	5024.5
2/2/1991	1991	2	2	247	3	58	30.5	-1.5	5023
2/3/1991	1991	2	3	248	12	53	32.5	0.5	5023.5
2/4/1991	1991	2	4	249	2	55	28.5	-3.5	5020
2/5/1991	1991	2	5	250	12	57	34.5	2.5	5022.5
2/6/1991	1991	2	6	251	16	57	36.5	4.5	5027
2/7/1991	1991	2	7	252	20	59	39.5	7.5	5034.5
2/8/1991	1991	2	8	253	24	56	40	8	5042.5
2/9/1991	1991	2	9	254	10	56	33	1	5043.5
2/10/1991	1991	2	10	255	15	59	37	5	5048.5
2/11/1991	1991	2	11	256	19	59	39	7	5055.5
2/12/1991	1991	2	12	257	24	55	39.5	7.5	5063
2/13/1991	1991	2	13	258	25	61	43	11	5074
2/14/1991	1991	2	14	259	26	56	41	9	5083
2/15/1991	1991	2	15	260	24	65	44.5	12.5	5095.5
2/16/1991	1991	2	16	261	15	58	36.5	4.5	5100
2/17/1991	1991	2	17	262	30	56	43	11	5111
2/18/1991	1991	2	18	263	8	42	25	-7	5104
2/19/1991	1991	2	19	264	2	45	23.5	-8.5	5095.5
2/20/1991	1991	2	20	265	8	55	31.5	-0.5	5095
2/21/1991	1991	2	21	266	8	59	33.5	1.5	5096.5
2/22/1991	1991	2	22	267	6	64	35	3	5099.5
2/23/1991	1991	2	23	268	18	63	40.5	8.5	5108
2/24/1991	1991	2	24	269	20	60	40	8	5116
2/25/1991	1991	2	25	270	15	55	35	3	5119
2/26/1991	1991	2	26	271	17	55	36	4	5123
2/27/1991	1991	2	27	272	17	61	39	7	5130
2/28/1991	1991	2	28	273	28	54	41	9	5139
3/1/1991	1991	3	1	274	23	49	36	4	5143
3/2/1991	1991	3	2	275	23	51	37	5	5148
3/3/1991	1991	3	3	276	23	59	41	9	5157
3/4/1991	1991	3	4	277	23	67	45	13	5170
3/5/1991	1991	3	5	278	30	52	41	9	5179
3/6/1991	1991	3	6	279	29	50	39.5	7.5	5186.5
3/7/1991	1991	3	7	280	25	46	35.5	3.5	5190
3/8/1991	1991	3	8	281	14	53	33.5	1.5	5191.5
3/9/1991	1991	3	9	282	16	54	35	3	5194.5
3/10/1991	1991	3	10	283	26	68	47	15	5209.5
3/11/1991	1991	3	11	284	32	61	46.5	14.5	5224
3/12/1991	1991	3	12	285	20	56	38	6	5230
3/13/1991	1991	3	13	286	20	58	39	7	5237
3/14/1991	1991	3	14	287	22	58	40	8	5245

3/15/1991	1991	3	15	288	23	50	36.5	4.5	5249.5
3/16/1991	1991	3	16	289	20	43	31.5	-0.5	5249
3/17/1991	1991	3	17	290	19	61	40	8	5257
3/18/1991	1991	3	18	291	22	68	45	13	5270
3/19/1991	1991	3	19	292	31	64	47.5	15.5	5285.5
3/20/1991	1991	3	20	293	28	54	41	9	5294.5
3/21/1991	1991	3	21	294	25	40	32.5	0.5	5295
3/22/1991	1991	3	22	295	23	46	34.5	2.5	5297.5
3/23/1991	1991	3	23	296	17	58	37.5	5.5	5303
3/24/1991	1991	3	24	297	28	66	47	15	5318
3/25/1991	1991	3	25	298	28	64	46	14	5332
3/26/1991	1991	3	26	299	30	54	42	10	5342
3/27/1991	1991	3	27	300	29	54	41.5	9.5	5351.5
3/28/1991	1991	3	28	301	24	49	36.5	4.5	5356
3/29/1991	1991	3	29	302	29	52	40.5	8.5	5364.5
3/30/1991	1991	3	30	303	24	55	39.5	7.5	5372
3/31/1991	1991	3	31	304	25	63	44	12	5384
4/1/1991	1991	4	1	305	33	73	53	21	5405
4/2/1991	1991	4	2	306	33	67	50	18	5423
4/3/1991	1991	4	3	307	32	69	50.5	18.5	5441.5
4/4/1991	1991	4	4	308	29	73	51	19	5460.5
4/5/1991	1991	4	5	309	27	79	53	21	5481.5
4/6/1991	1991	4	6	310	31	82	56.5	24.5	5506
4/7/1991	1991	4	7	311	37	74	55.5	23.5	5529.5
4/8/1991	1991	4	8	312	35	68	51.5	19.5	5549
4/9/1991	1991	4	9	313	27	70	48.5	16.5	5565.5
4/10/1991	1991	4	10	314	30	71	50.5	18.5	5584
4/11/1991	1991	4	11	315	28	67	47.5	15.5	5599.5
4/12/1991	1991	4	12	316	30	57	43.5	11.5	5611
4/13/1991	1991	4	13	317	20	52	36	4	5615
4/14/1991	1991	4	14	318	13	65	39	7	5622
4/15/1991	1991	4	15	319	18	75	46.5	14.5	5636.5
4/16/1991	1991	4	16	320	37	74	55.5	23.5	5660
4/17/1991	1991	4	17	321	39	72	55.5	23.5	5683.5
4/18/1991	1991	4	18	322	34	74	54	22	5705.5
4/19/1991	1991	4	19	323	27	74	50.5	18.5	5724
4/20/1991	1991	4	20	324	33	80	56.5	24.5	5748.5
4/21/1991	1991	4	21	325	32	70	51	19	5767.5
4/22/1991	1991	4	22	326	37	72	54.5	22.5	5790
4/23/1991	1991	4	23	327	35	70	52.5	20.5	5810.5
4/24/1991	1991	4	24	328	35	72	53.5	21.5	5832
4/25/1991	1991	4	25	329	37	73	55	23	5855
4/26/1991	1991	4	26	330	30	57	43.5	11.5	5866.5
4/27/1991	1991	4	27	331	25	63	44	12	5878.5
4/28/1991	1991	4	28	332	20	51	35.5	3.5	5882
4/29/1991	1991	4	29	333	22	64	43	11	5893
4/30/1991	1991	4	30	334	31	65	48	16	5909
5/1/1991	1991	5	1	335	29	79	54	22	5931
5/2/1991	1991	5	2	336	22	73	47.5	15.5	5946.5
5/3/1991	1991	5	3	337	27	68	47.5	15.5	5962
5/4/1991	1991	5	4	338	29	66	47.5	15.5	5977.5
5/5/1991	1991	5	5	339	29	70	49.5	17.5	5995
5/6/1991	1991	5	6	340	30	76	53	21	6016
5/7/1991	1991	5	7	341	36	79	57.5	25.5	6041.5
5/8/1991	1991	5	8	342	36	86	61	29	6070.5
5/9/1991	1991	5	9	343	49	83	66	34	6104.5
5/10/1991	1991	5	10	344	43	80	61.5	29.5	6134
5/11/1991	1991	5	11	345	38	78	58	26	6160
5/12/1991	1991	5	12	346	35	77	56	24	6184
5/13/1991	1991	5	13	347	35	84	59.5	27.5	6211.5
5/14/1991	1991	5	14	348	35	80	57.5	25.5	6237
5/15/1991	1991	5	15	349	35	70	52.5	20.5	6257.5
5/16/1991	1991	5	16	350	33	79	56	24	6281.5
5/17/1991	1991	5	17	351	39	83	61	29	6310.5
5/18/1991	1991	5	18	352	40	86	63	31	6341.5
5/19/1991	1991	5	19	353	38	83	60.5	28.5	6370
5/20/1991	1991	5	20	354	40	74	57	25	6395
5/21/1991	1991	5	21	355	44	66	55	23	6418
5/22/1991	1991	5	22	356	40	79	59.5	27.5	6445.5
5/23/1991	1991	5	23	357	40	79	59.5	27.5	6473
5/24/1991	1991	5	24	358	37	81	59	27	6500
5/25/1991	1991	5	25	359	38	83	60.5	28.5	6528.5
5/26/1991	1991	5	26	360	40	87	63.5	31.5	6560
5/27/1991	1991	5	27	361	40	87	63.5	31.5	6591.5
5/28/1991	1991	5	28	362	35	83	59	27	6618.5
5/29/1991	1991	5	29	363	35	83	59	27	6645.5
5/30/1991	1991	5	30	364	41	83	62	30	6675.5
5/31/1991	1991	5	31	365	42	76	59	27	6702.5
6/1/1991	1991	6	1	1	33	73	53	21	21
6/2/1991	1991	6	2	2	33	72	52.5	20.5	41.5
6/3/1991	1991	6	3	3	39	75	57	25	66.5
6/4/1991	1991	6	4	4	40	85	62.5	30.5	97
6/5/1991	1991	6	5	5	43	84	63.5	31.5	128.5
6/6/1991	1991	6	6	6	45	74	59.5	27.5	156
6/7/1991	1991	6	7	7	39	88	63.5	31.5	187.5
6/8/1991	1991	6	8	8	48	87	67.5	35.5	223
6/9/1991	1991	6	9	9	49	82	65.5	33.5	256.5
6/10/1991	1991	6	10	10	46	80	63	31	287.5
6/11/1991	1991	6	11	11	37	76	56.5	24.5	312
6/12/1991	1991	6	12	12	45	71	58	26	338
6/13/1991	1991	6	13	13	49	72	60.5	28.5	366.5
6/14/1991	1991	6	14	14	42	70	56	24	390.5
6/15/1991	1991	6	15	15	41	83	62	30	420.5

6/16/1991	1991	6	16	16	46	87	66.5	34.5	455
6/17/1991	1991	6	17	17	49	90	69.5	37.5	492.5
6/18/1991	1991	6	18	18	48	91	69.5	37.5	530
6/19/1991	1991	6	19	19	51	87	69	37	567
6/20/1991	1991	6	20	20	44	89	66.5	34.5	601.5
6/21/1991	1991	6	21	21	42	89	65.5	33.5	635
6/22/1991	1991	6	22	22	44	92	68	36	671
6/23/1991	1991	6	23	23	48	92	70	38	709
6/24/1991	1991	6	24	24	46	94	70	38	747
6/25/1991	1991	6	25	25	45	92	68.5	36.5	783.5
6/26/1991	1991	6	26	26	44	93	68.5	36.5	820
6/27/1991	1991	6	27	27	45	89	67	35	855
6/28/1991	1991	6	28	28	52	92	72	40	895
6/29/1991	1991	6	29	29	57	89	73	41	936
6/30/1991	1991	6	30	30	54	92	73	41	977
7/1/1991	1991	7	1	31	49	95	72	40	1017
7/2/1991	1991	7	2	32	53	90	71.5	39.5	1056.5
7/3/1991	1991	7	3	33	54	95	74.5	42.5	1099
7/4/1991	1991	7	4	34	59	89	74	42	1141
7/5/1991	1991	7	5	35	58	84	71	39	1180
7/6/1991	1991	7	6	36	54	94	74	42	1222
7/7/1991	1991	7	7	37	57	98	77.5	45.5	1267.5
7/8/1991	1991	7	8	38	60	88	74	42	1309.5
7/9/1991	1991	7	9	39	57	91	74	42	1351.5
7/10/1991	1991	7	10	40	58	89	73.5	41.5	1393
7/11/1991	1991	7	11	41	51	88	69.5	37.5	1430.5
7/12/1991	1991	7	12	42	55	84	69.5	37.5	1468
7/13/1991	1991	7	13	43	50	84	67	35	1503
7/14/1991	1991	7	14	44	55	84	69.5	37.5	1540.5
7/15/1991	1991	7	15	45	56	88	72	40	1580.5
7/16/1991	1991	7	16	46	57	89	73	41	1621.5
7/17/1991	1991	7	17	47	57	86	71.5	39.5	1661
7/18/1991	1991	7	18	48	57	84	70.5	38.5	1699.5
7/19/1991	1991	7	19	49	59	85	72	40	1739.5
7/20/1991	1991	7	20	50	55	84	69.5	37.5	1777
7/21/1991	1991	7	21	51	56	86	71	39	1816
7/22/1991	1991	7	22	52	55	87	71	39	1855
7/23/1991	1991	7	23	53	54	81	67.5	35.5	1890.5
7/24/1991	1991	7	24	54	53	82	67.5	35.5	1926
7/25/1991	1991	7	25	55	54	81	67.5	35.5	1961.5
7/26/1991	1991	7	26	56	50	80	65	33	1994.5
7/27/1991	1991	7	27	57	49	89	69	37	2031.5
7/28/1991	1991	7	28	58	56	89	72.5	40.5	2072
7/29/1991	1991	7	29	59	52	89	70.5	38.5	2110.5
7/30/1991	1991	7	30	60	55	89	72	40	2150.5
7/31/1991	1991	7	31	61	56	90	73	41	2191.5
8/1/1991	1991	8	1	62	57	84	70.5	38.5	2230
8/2/1991	1991	8	2	63	55	87	71	39	2269
8/3/1991	1991	8	3	64	56	79	67.5	35.5	2304.5
8/4/1991	1991	8	4	65	56	80	68	36	2340.5
8/5/1991	1991	8	5	66	57	81	69	37	2377.5
8/6/1991	1991	8	6	67	54	86	70	38	2415.5
8/7/1991	1991	8	7	68	55	87	71	39	2454.5
8/8/1991	1991	8	8	69	52	90	71	39	2493.5
8/9/1991	1991	8	9	70	55	81	68	36	2529.5
8/10/1991	1991	8	10	71	56	83	69.5	37.5	2567
8/11/1991	1991	8	11	72	56	77	66.5	34.5	2601.5
8/12/1991	1991	8	12	73	55	86	70.5	38.5	2640
8/13/1991	1991	8	13	74	56	90	73	41	2681
8/14/1991	1991	8	14	75	56	89	72.5	40.5	2721.5
8/15/1991	1991	8	15	76	57	86	71.5	39.5	2761
8/16/1991	1991	8	16	77	55	88	71.5	39.5	2800.5
8/17/1991	1991	8	17	78	55	87	71	39	2839.5
8/18/1991	1991	8	18	79	55	77	66	34	2873.5
8/19/1991	1991	8	19	80	57	85	71	39	2912.5
8/20/1991	1991	8	20	81	54	92	73	41	2953.5
8/21/1991	1991	8	21	82	54	94	74	42	2995.5
8/22/1991	1991	8	22	83	54	94	74	42	3037.5
8/23/1991	1991	8	23	84	55	90	72.5	40.5	3078
8/24/1991	1991	8	24	85	53	77	65	33	3111
8/25/1991	1991	8	25	86	52	91	71.5	39.5	3150.5
8/26/1991	1991	8	26	87	49	89	69	37	3187.5
8/27/1991	1991	8	27	88	48	91	69.5	37.5	3225
8/28/1991	1991	8	28	89	50	84	67	35	3260
8/29/1991	1991	8	29	90	49	89	69	37	3297
8/30/1991	1991	8	30	91	50	87	68.5	36.5	3333.5
8/31/1991	1991	8	31	92	55	83	69	37	3370.5
9/1/1991	1991	9	1	93	55	89	72	40	3410.5
9/2/1991	1991	9	2	94	55	88	71.5	39.5	3450
9/3/1991	1991	9	3	95	49	94	71.5	39.5	3489.5
9/4/1991	1991	9	4	96	58	81	69.5	37.5	3527
9/5/1991	1991	9	5	97	54	70	62	30	3557
9/6/1991	1991	9	6	98	54	77	65.5	33.5	3590.5
9/7/1991	1991	9	7	99	50	81	65.5	33.5	3624
9/8/1991	1991	9	8	100	50	80	65	33	3657
9/9/1991	1991	9	9	101	48	80	64	32	3689
9/10/1991	1991	9	10	102	56	77	66.5	34.5	3723.5
9/11/1991	1991	9	11	103	54	78	66	34	3757.5
9/12/1991	1991	9	12	104	52	79	65.5	33.5	3791
9/13/1991	1991	9	13	105	52	79	65.5	33.5	3824.5
9/14/1991	1991	9	14	106	45	79	62	30	3854.5
9/15/1991	1991	9	15	107	46	78	62	30	3884.5
9/16/1991	1991	9	16	108	35	82	58.5	26.5	3911

9/17/1991	1991	9	17	109	41	84	62.5	30.5	3941.5
9/18/1991	1991	9	18	110	40	76	58	26	3967.5
9/19/1991	1991	9	19	111	40	69	54.5	22.5	3990
9/20/1991	1991	9	20	112	41	72	56.5	24.5	4014.5
9/21/1991	1991	9	21	113	48	83	65.5	33.5	4048
9/22/1991	1991	9	22	114	44	82	63	31	4079
9/23/1991	1991	9	23	115	46	80	63	31	4110
9/24/1991	1991	9	24	116	38	85	61.5	29.5	4139.5
9/25/1991	1991	9	25	117	38	87	62.5	30.5	4170
9/26/1991	1991	9	26	118	45	80	62.5	30.5	4200.5
9/27/1991	1991	9	27	119	43	81	62	30	4230.5
9/28/1991	1991	9	28	120	41	77	59	27	4257.5
9/29/1991	1991	9	29	121	40	78	59	27	4284.5
9/30/1991	1991	9	30	122	40	76	58	26	4310.5
10/1/1991	1991	10	1	123	41	78	59.5	27.5	4338
10/2/1991	1991	10	2	124	39	82	60.5	28.5	4366.5
10/3/1991	1991	10	3	125	35	82	58.5	26.5	4393
10/4/1991	1991	10	4	126	33	82	57.5	25.5	4418.5
10/5/1991	1991	10	5	127	34	79	56.5	24.5	4443
10/6/1991	1991	10	6	128	34	83	58.5	26.5	4469.5
10/7/1991	1991	10	7	129	30	83	56.5	24.5	4494
10/8/1991	1991	10	8	130	33	84	58.5	26.5	4520.5
10/9/1991	1991	10	9	131	36	83	59.5	27.5	4548
10/10/1991	1991	10	10	132	35	84	59.5	27.5	4575.5
10/11/1991	1991	10	11	133	34	85	59.5	27.5	4603
10/12/1991	1991	10	12	134	34	76	55	23	4626
10/13/1991	1991	10	13	135	35	80	57.5	25.5	4651.5
10/14/1991	1991	10	14	136	33	77	55	23	4674.5
10/15/1991	1991	10	15	137	35	83	59	27	4701.5
10/16/1991	1991	10	16	138	31	87	59	27	4728.5
10/17/1991	1991	10	17	139	39	82	60.5	28.5	4757
10/18/1991	1991	10	18	140	31	80	55.5	23.5	4780.5
10/19/1991	1991	10	19	141	28	80	54	22	4802.5
10/20/1991	1991	10	20	142	28	70	49	17	4819.5
10/21/1991	1991	10	21	143	36	71	53.5	21.5	4841
10/22/1991	1991	10	22	144	35	70	52.5	20.5	4861.5
10/23/1991	1991	10	23	145	34	70	52	20	4881.5
10/24/1991	1991	10	24	146	41	68	54.5	22.5	4904
10/25/1991	1991	10	25	147	36	66	51	19	4923
10/26/1991	1991	10	26	148	25	69	47	15	4938
10/27/1991	1991	10	27	149	32	65	48.5	16.5	4954.5
10/28/1991	1991	10	28	150	32	40	36	4	4958.5
10/29/1991	1991	10	29	151	20	53	36.5	4.5	4963
10/30/1991	1991	10	30	152	32	48	40	8	4971
10/31/1991	1991	10	31	153	19	38	28.5	-3.5	4967.5
11/1/1991	1991	11	1	154	14	50	32	0	4967.5
11/2/1991	1991	11	2	155	20	59	39.5	7.5	4975
11/3/1991	1991	11	3	156	15	46	30.5	-1.5	4973.5
11/4/1991	1991	11	4	157	17	49	33	1	4974.5
11/5/1991	1991	11	5	158	23	60	41.5	9.5	4984
11/6/1991	1991	11	6	159	22	69	45.5	13.5	4997.5
11/7/1991	1991	11	7	160	25	69	47	15	5012.5
11/8/1991	1991	11	8	161	25	69	47	15	5027.5
11/9/1991	1991	11	9	162	24	73	48.5	16.5	5044
11/10/1991	1991	11	10	163	43	53	48	16	5060
11/11/1991	1991	11	11	164	39	49	44	12	5072
11/12/1991	1991	11	12	165	29	58	43.5	11.5	5083.5
11/13/1991	1991	11	13	166	27	64	45.5	13.5	5097
11/14/1991	1991	11	14	167	36	59	47.5	15.5	5112.5
11/15/1991	1991	11	15	168	37	51	44	12	5124.5
11/16/1991	1991	11	16	169	26	40	33	1	5125.5
11/17/1991	1991	11	17	170	25	59	42	10	5135.5
11/18/1991	1991	11	18	171	29	49	39	7	5142.5
11/19/1991	1991	11	19	172	26	47	36.5	4.5	5147
11/20/1991	1991	11	20	173	20	49	34.5	2.5	5149.5
11/21/1991	1991	11	21	174	20	64	42	10	5159.5
11/22/1991	1991	11	22	175	25	45	35	3	5162.5
11/23/1991	1991	11	23	176	20	43	31.5	-0.5	5162
11/24/1991	1991	11	24	177	18	50	34	2	5164
11/25/1991	1991	11	25	178	18	56	37	5	5169
11/26/1991	1991	11	26	179	18	61	39.5	7.5	5176.5
11/27/1991	1991	11	27	180	24	66	45	13	5189.5
11/28/1991	1991	11	28	181	28	64	46	14	5203.5
11/29/1991	1991	11	29	182	23	44	33.5	1.5	5205
11/30/1991	1991	11	30	183	22	38	30	-2	5203
12/1/1991	1991	12	1	184	16	35	25.5	-6.5	5196.5
12/2/1991	1991	12	2	185	2	38	20	-12	5184.5
12/3/1991	1991	12	3	186	5	39	22	-10	5174.5
12/4/1991	1991	12	4	187	5	49	27	-5	5169.5
12/5/1991	1991	12	5	188	15	50	32.5	0.5	5170
12/6/1991	1991	12	6	189	16	58	37	5	5175
12/7/1991	1991	12	7	190	16	55	35.5	3.5	5178.5
12/8/1991	1991	12	8	191	21	55	38	6	5184.5
12/9/1991	1991	12	9	192	19	58	38.5	6.5	5191
12/10/1991	1991	12	10	193	19	56	37.5	5.5	5196.5
12/11/1991	1991	12	11	194	28	40	34	2	5198.5
12/12/1991	1991	12	12	195	32	48	40	8	5206.5
12/13/1991	1991	12	13	196	19	45	32	0	5206.5
12/14/1991	1991	12	14	197	12	48	30	-2	5204.5
12/15/1991	1991	12	15	198	12	50	31	-1	5203.5
12/16/1991	1991	12	16	199	2	52	27	-5	5198.5
12/17/1991	1991	12	17	200	20	47	33.5	1.5	5200
12/18/1991	1991	12	18	201	32	40	36	4	5204

12/19/1991	1991	12	19	202	30	41	35.5	3.5	5207.5
12/20/1991	1991	12	20	203	31	40	35.5	3.5	5211
12/21/1991	1991	12	21	204	31	38	34.5	2.5	5213.5
12/22/1991	1991	12	22	205	30	46	38	6	5219.5
12/23/1991	1991	12	23	206	20	43	31.5	-0.5	5219
12/24/1991	1991	12	24	207	26	44	35	3	5222
12/25/1991	1991	12	25	208	20	37	28.5	-3.5	5218.5
12/26/1991	1991	12	26	209	24	45	34.5	2.5	5221
12/27/1991	1991	12	27	210	20	46	33	1	5222
12/28/1991	1991	12	28	211	21	43	32	0	5222
12/29/1991	1991	12	29	212	20	48	34	2	5224
12/30/1991	1991	12	30	213	18	43	30.5	-1.5	5222.5
12/31/1991	1991	12	31	214	25	43	34	2	5224.5
1/1/1992	1992	1	1	215	16	36	26	-6	5218.5
1/2/1992	1992	1	2	216	15	43	29	-3	5215.5
1/3/1992	1992	1	3	217	14	33	23.5	-8.5	5207
1/4/1992	1992	1	4	218	28	42	35	3	5210
1/5/1992	1992	1	5	219	15	43	29	-3	5207
1/6/1992	1992	1	6	220	25	47	36	4	5211
1/7/1992	1992	1	7	221	23	40	31.5	-0.5	5210.5
1/8/1992	1992	1	8	222	12	36	24	-8	5202.5
1/9/1992	1992	1	9	223	12	42	27	-5	5197.5
1/10/1992	1992	1	10	224	10	50	30	-2	5195.5
1/11/1992	1992	1	11	225	19	39	29	-3	5192.5
1/12/1992	1992	1	12	226	20	32	26	-6	5186.5
1/13/1992	1992	1	13	227	6	33	19.5	-12.5	5174
1/14/1992	1992	1	14	228	-9	37	14	-18	5156
1/15/1992	1992	1	15	229	-7	30	11.5	-20.5	5135.5
1/16/1992	1992	1	16	230	-8	37	14.5	-17.5	5118
1/17/1992	1992	1	17	231	0	35	17.5	-14.5	5103.5
1/18/1992	1992	1	18	232	-3	32	14.5	-17.5	5086
1/19/1992	1992	1	19	233	-2	36	17	-15	5071
1/20/1992	1992	1	20	234	-2	39	18.5	-13.5	5057.5
1/21/1992	1992	1	21	235	8	46	27	-5	5052.5
1/22/1992	1992	1	22	236	11	46	28.5	-3.5	5049
1/23/1992	1992	1	23	237	8	42	25	-7	5042
1/24/1992	1992	1	24	238	10	55	32.5	0.5	5042.5
1/25/1992	1992	1	25	239	15	49	32	0	5042.5
1/26/1992	1992	1	26	240	20	51	35.5	3.5	5046
1/27/1992	1992	1	27	241	20	52	36	4	5050
1/28/1992	1992	1	28	242	18	51	34.5	2.5	5052.5
1/29/1992	1992	1	29	243	20	55	37.5	5.5	5058
1/30/1992	1992	1	30	244	20	52	36	4	5062
1/31/1992	1992	1	31	245	19	58	38.5	6.5	5068.5
2/1/1992	1992	2	1	246	19	55	37	5	5073.5
2/2/1992	1992	2	2	247	25	49	37	5	5078.5
2/3/1992	1992	2	3	248	28	41	34.5	2.5	5081
2/4/1992	1992	2	4	249	26	42	34	2	5083
2/5/1992	1992	2	5	250	22	51	36.5	4.5	5087.5
2/6/1992	1992	2	6	251	19	49	34	2	5089.5
2/7/1992	1992	2	7	252	19	46	32.5	0.5	5090
2/8/1992	1992	2	8	253	21	51	36	4	5094
2/9/1992	1992	2	9	254	26	47	36.5	4.5	5098.5
2/10/1992	1992	2	10	255	27	49	38	6	5104.5
2/11/1992	1992	2	11	256	26	47	36.5	4.5	5109
2/12/1992	1992	2	12	257	28	52	40	8	5117
2/13/1992	1992	2	13	258	29	48	38.5	6.5	5123.5
2/14/1992	1992	2	14	259	34	47	40.5	8.5	5132
2/15/1992	1992	2	15	260	20	50	35	3	5135
2/16/1992	1992	2	16	261	24	43	33.5	1.5	5136.5
2/17/1992	1992	2	17	262	22	46	34	2	5138.5
2/18/1992	1992	2	18	263	15	46	30.5	-1.5	5137
2/19/1992	1992	2	19	264	16	58	37	5	5142
2/20/1992	1992	2	20	265	19	60	39.5	7.5	5149.5
2/21/1992	1992	2	21	266	29	59	44	12	5161.5
2/22/1992	1992	2	22	267	21	65	43	11	5172.5
2/23/1992	1992	2	23	268	33	49	41	9	5181.5
2/24/1992	1992	2	24	269	24	54	39	7	5188.5
2/25/1992	1992	2	25	270	19	52	35.5	3.5	5192
2/26/1992	1992	2	26	271	20	51	35.5	3.5	5195.5
2/27/1992	1992	2	27	272	16	63	39.5	7.5	5203
2/28/1992	1992	2	28	273	19	62	40.5	8.5	5211.5
2/29/1992	1992	2	29	274	20	64	42	10	5221.5
3/1/1992	1992	3	1	275	25	61	43	11	5232.5
3/2/1992	1992	3	2	276	23	61	42	10	5242.5
3/3/1992	1992	3	3	277	31	52	41.5	9.5	5252
3/4/1992	1992	3	4	278	32	52	42	10	5262
3/5/1992	1992	3	5	279	35	55	45	13	5275
3/6/1992	1992	3	6	280	25	63	44	12	5287
3/7/1992	1992	3	7	281	24	62	43	11	5298
3/8/1992	1992	3	8	282	28	48	38	6	5304
3/9/1992	1992	3	9	283	22	48	35	3	5307
3/10/1992	1992	3	10	284	17	58	37.5	5.5	5312.5
3/11/1992	1992	3	11	285	16	57	36.5	4.5	5317
3/12/1992	1992	3	12	286	15	66	40.5	8.5	5325.5
3/13/1992	1992	3	13	287	18	69	43.5	11.5	5337
3/14/1992	1992	3	14	288	21	70	45.5	13.5	5350.5
3/15/1992	1992	3	15	289	23	68	45.5	13.5	5364
3/16/1992	1992	3	16	290	24	68	46	14	5378
3/17/1992	1992	3	17	291	31	60	45.5	13.5	5391.5
3/18/1992	1992	3	18	292	30	55	42.5	10.5	5402
3/19/1992	1992	3	19	293	18	60	39	7	5409
3/20/1992	1992	3	20	294	17	69	43	11	5420

3/21/1992	1992	3	21	295	22	61	41.5	9.5	5429.5
3/22/1992	1992	3	22	296	33	56	44.5	12.5	5442
3/23/1992	1992	3	23	297	24	60	42	10	5452
3/24/1992	1992	3	24	298	25	62	43.5	11.5	5463.5
3/25/1992	1992	3	25	299	24	69	46.5	14.5	5478
3/26/1992	1992	3	26	300	27	67	47	15	5493
3/27/1992	1992	3	27	301	36	54	45	13	5506
3/28/1992	1992	3	28	302	37	51	44	12	5518
3/29/1992	1992	3	29	303	34	53	43.5	11.5	5529.5
3/30/1992	1992	3	30	304	29	62	45.5	13.5	5543
3/31/1992	1992	3	31	305	35	52	43.5	11.5	5554.5
4/1/1992	1992	4	1	306	30	53	41.5	9.5	5564
4/2/1992	1992	4	2	307	29	60	44.5	12.5	5576.5
4/3/1992	1992	4	3	308	34	69	51.5	19.5	5596
4/4/1992	1992	4	4	309	33	70	51.5	19.5	5615.5
4/5/1992	1992	4	5	310	34	65	49.5	17.5	5633
4/6/1992	1992	4	6	311	31	72	51.5	19.5	5652.5
4/7/1992	1992	4	7	312	31	77	54	22	5674.5
4/8/1992	1992	4	8	313	30	76	53	21	5695.5
4/9/1992	1992	4	9	314	36	75	55.5	23.5	5719
4/10/1992	1992	4	10	315	41	79	60	28	5747
4/11/1992	1992	4	11	316	37	78	57.5	25.5	5772.5
4/12/1992	1992	4	12	317	34	80	57	25	5797.5
4/13/1992	1992	4	13	318	36	74	55	23	5820.5
4/14/1992	1992	4	14	319	38	74	56	24	5844.5
4/15/1992	1992	4	15	320	37	67	52	20	5864.5
4/16/1992	1992	4	16	321	37	68	52.5	20.5	5885
4/17/1992	1992	4	17	322	34	73	53.5	21.5	5906.5
4/18/1992	1992	4	18	323	43	63	53	21	5927.5
4/19/1992	1992	4	19	324	33	62	47.5	15.5	5943
4/20/1992	1992	4	20	325	33	65	49	17	5960
4/21/1992	1992	4	21	326	33	74	53.5	21.5	5981.5
4/22/1992	1992	4	22	327	36	73	54.5	22.5	6004
4/23/1992	1992	4	23	328	37	78	57.5	25.5	6029.5
4/24/1992	1992	4	24	329	38	83	60.5	28.5	6058
4/25/1992	1992	4	25	330	37	80	58.5	26.5	6084.5
4/26/1992	1992	4	26	331	44	81	62.5	30.5	6115
4/27/1992	1992	4	27	332	34	87	60.5	28.5	6143.5
4/28/1992	1992	4	28	333	42	87	64.5	32.5	6176
4/29/1992	1992	4	29	334	39	89	64	32	6208
4/30/1992	1992	4	30	335	48	84	66	34	6242
5/1/1992	1992	5	1	336	45	86	65.5	33.5	6275.5
5/2/1992	1992	5	2	337	44	80	62	30	6305.5
5/3/1992	1992	5	3	338	43	70	56.5	24.5	6330
5/4/1992	1992	5	4	339	42	75	58.5	26.5	6356.5
5/5/1992	1992	5	5	340	40	76	58	26	6382.5
5/6/1992	1992	5	6	341	42	66	54	22	6404.5
5/7/1992	1992	5	7	342	42	67	54.5	22.5	6427
5/8/1992	1992	5	8	343	40	72	56	24	6451
5/9/1992	1992	5	9	344	43	70	56.5	24.5	6475.5
5/10/1992	1992	5	10	345	43	70	56.5	24.5	6500
5/11/1992	1992	5	11	346	39	78	58.5	26.5	6526.5
5/12/1992	1992	5	12	347	45	81	63	31	6557.5
5/13/1992	1992	5	13	348	45	83	64	32	6589.5
5/14/1992	1992	5	14	349	40	85	62.5	30.5	6620
5/15/1992	1992	5	15	350	39	81	60	28	6648
5/16/1992	1992	5	16	351	40	82	61	29	6677
5/17/1992	1992	5	17	352	40	82	61	29	6706
5/18/1992	1992	5	18	353	38	79	58.5	26.5	6732.5
5/19/1992	1992	5	19	354	42	80	61	29	6761.5
5/20/1992	1992	5	20	355	45	64	54.5	22.5	6784
5/21/1992	1992	5	21	356	42	67	54.5	22.5	6806.5
5/22/1992	1992	5	22	357	43	65	54	22	6828.5
5/23/1992	1992	5	23	358	43	60	51.5	19.5	6848
5/24/1992	1992	5	24	359	41	62	51.5	19.5	6867.5
5/25/1992	1992	5	25	360	39	67	53	21	6888.5
5/26/1992	1992	5	26	361	39	72	55.5	23.5	6912
5/27/1992	1992	5	27	362	48	74	61	29	6941
5/28/1992	1992	5	28	363	43	78	60.5	28.5	6969.5
5/29/1992	1992	5	29	364	48	72	60	28	6997.5
5/30/1992	1992	5	30	365	45	71	58	26	7023.5
5/31/1992	1992	5	31	366	40	80	60	28	7051.5
6/1/1992	1992	6	1	1	42	75	58.5	26.5	26.5
6/2/1992	1992	6	2	2	37	81	59	27	53.5
6/3/1992	1992	6	3	3	46	78	62	30	83.5
6/4/1992	1992	6	4	4	45	85	65	33	116.5
6/5/1992	1992	6	5	5	48	86	67	35	151.5
6/6/1992	1992	6	6	6	46	85	65.5	33.5	185
6/7/1992	1992	6	7	7	54	78	66	34	219
6/8/1992	1992	6	8	8	42	69	55.5	23.5	242.5
6/9/1992	1992	6	9	9	40	75	57.5	25.5	268
6/10/1992	1992	6	10	10	40	81	60.5	28.5	296.5
6/11/1992	1992	6	11	11	43	88	65.5	33.5	330
6/12/1992	1992	6	12	12	47	89	68	36	366
6/13/1992	1992	6	13	13	43	85	64	32	398
6/14/1992	1992	6	14	14	48	88	68	36	434
6/15/1992	1992	6	15	15	47	84	65.5	33.5	467.5
6/16/1992	1992	6	16	16	45	79	62	30	497.5
6/17/1992	1992	6	17	17	40	87	63.5	31.5	529
6/18/1992	1992	6	18	18	47	92	69.5	37.5	566.5
6/19/1992	1992	6	19	19	47	92	69.5	37.5	604
6/20/1992	1992	6	20	20	48	94	71	39	643
6/21/1992	1992	6	21	21	50	89	69.5	37.5	680.5

6/22/1992	1992	6	22	22	50	90	70	38	718.5
6/23/1992	1992	6	23	23	50	86	68	36	754.5
6/24/1992	1992	6	24	24	47	87	67	35	789.5
6/25/1992	1992	6	25	25	47	78	62.5	30.5	820
6/26/1992	1992	6	26	26	45	87	66	34	854
6/27/1992	1992	6	27	27	44	88	66	34	888
6/28/1992	1992	6	28	28	46	92	69	37	925
6/29/1992	1992	6	29	29	54	90	72	40	965
6/30/1992	1992	6	30	30	50	90	70	38	1003
7/1/1992	1992	7	1	31	49	86	67.5	35.5	1038.5
7/2/1992	1992	7	2	32	49	86	67.5	35.5	1074
7/3/1992	1992	7	3	33	48	86	67	35	1109
7/4/1992	1992	7	4	34	50	96	73	41	1150
7/5/1992	1992	7	5	35	50	99	74.5	42.5	1192.5
7/6/1992	1992	7	6	36	54	97	75.5	43.5	1236
7/7/1992	1992	7	7	37	60	92	76	44	1280
7/8/1992	1992	7	8	38	56	92	74	42	1322
7/9/1992	1992	7	9	39	57	88	72.5	40.5	1362.5
7/10/1992	1992	7	10	40	58	83	70.5	38.5	1401
7/11/1992	1992	7	11	41	56	77	66.5	34.5	1435.5
7/12/1992	1992	7	12	42	56	78	67	35	1470.5
7/13/1992	1992	7	13	43	49	82	65.5	33.5	1504
7/14/1992	1992	7	14	44	48	83	65.5	33.5	1537.5
7/15/1992	1992	7	15	45	47	83	65	33	1570.5
7/16/1992	1992	7	16	46	48	89	68.5	36.5	1607
7/17/1992	1992	7	17	47	45	85	65	33	1640
7/18/1992	1992	7	18	48	45	83	64	32	1672
7/19/1992	1992	7	19	49	48	89	68.5	36.5	1708.5
7/20/1992	1992	7	20	50	49	90	69.5	37.5	1746
7/21/1992	1992	7	21	51	60	86	73	41	1787
7/22/1992	1992	7	22	52	55	92	73.5	41.5	1828.5
7/23/1992	1992	7	23	53	58	83	70.5	38.5	1867
7/24/1992	1992	7	24	54	58	73	65.5	33.5	1900.5
7/25/1992	1992	7	25	55	56	77	66.5	34.5	1935
7/26/1992	1992	7	26	56	58	84	71	39	1974
7/27/1992	1992	7	27	57	54	89	71.5	39.5	2013.5
7/28/1992	1992	7	28	58	55	89	72	40	2053.5
7/29/1992	1992	7	29	59	53	92	72.5	40.5	2094
7/30/1992	1992	7	30	60	54	87	70.5	38.5	2132.5
7/31/1992	1992	7	31	61	58	87	72.5	40.5	2173
8/1/1992	1992	8	1	62	52	88	70	38	2211
8/2/1992	1992	8	2	63	58	92	75	43	2254
8/3/1992	1992	8	3	64	54	91	72.5	40.5	2294.5
8/4/1992	1992	8	4	65	51	90	70.5	38.5	2333
8/5/1992	1992	8	5	66	55	86	70.5	38.5	2371.5
8/6/1992	1992	8	6	67	54	86	70	38	2409.5
8/7/1992	1992	8	7	68	51	73	62	30	2439.5
8/8/1992	1992	8	8	69	50	85	67.5	35.5	2475
8/9/1992	1992	8	9	70	54	90	72	40	2515
8/10/1992	1992	8	10	71	52	92	72	40	2555
8/11/1992	1992	8	11	72	54	88	71	39	2594
8/12/1992	1992	8	12	73	51	86	68.5	36.5	2630.5
8/13/1992	1992	8	13	74	53	91	72	40	2670.5
8/14/1992	1992	8	14	75	58	90	74	42	2712.5
8/15/1992	1992	8	15	76	56	90	73	41	2753.5
8/16/1992	1992	8	16	77	54	87	70.5	38.5	2792
8/17/1992	1992	8	17	78	53	88	70.5	38.5	2830.5
8/18/1992	1992	8	18	79	50	90	70	38	2868.5
8/19/1992	1992	8	19	80	54	91	72.5	40.5	2909
8/20/1992	1992	8	20	81	56	92	74	42	2951
8/21/1992	1992	8	21	82	54	89	71.5	39.5	2990.5
8/22/1992	1992	8	22	83	50	85	67.5	35.5	3026
8/23/1992	1992	8	23	84	56	75	65.5	33.5	3059.5
8/24/1992	1992	8	24	85	52	67	59.5	27.5	3087
8/25/1992	1992	8	25	86	44	80	62	30	3117
8/26/1992	1992	8	26	87	50	82	66	34	3151
8/27/1992	1992	8	27	88	45	82	63.5	31.5	3182.5
8/28/1992	1992	8	28	89	41	87	64	32	3214.5
8/29/1992	1992	8	29	90	48	82	65	33	3247.5
8/30/1992	1992	8	30	91	46	79	62.5	30.5	3278
8/31/1992	1992	8	31	92	47	83	65	33	3311
9/1/1992	1992	9	1	93	46	82	64	32	3343
9/2/1992	1992	9	2	94	45	83	64	32	3375
9/3/1992	1992	9	3	95	43	93	68	36	3411
9/4/1992	1992	9	4	96	41	89	65	33	3444
9/5/1992	1992	9	5	97	42	83	62.5	30.5	3474.5
9/6/1992	1992	9	6	98	39	86	62.5	30.5	3505
9/7/1992	1992	9	7	99	44	88	66	34	3539
9/8/1992	1992	9	8	100	40	88	64	32	3571
9/9/1992	1992	9	9	101	41	89	65	33	3604
9/10/1992	1992	9	10	102	40	90	65	33	3637
9/11/1992	1992	9	11	103	55	90	72.5	40.5	3677.5
9/12/1992	1992	9	12	104	48	88	68	36	3713.5
9/13/1992	1992	9	13	105	46	84	65	33	3746.5
9/14/1992	1992	9	14	106	49	84	66.5	34.5	3781
9/15/1992	1992	9	15	107	49	80	64.5	32.5	3813.5
9/16/1992	1992	9	16	108	49	88	68.5	36.5	3850
9/17/1992	1992	9	17	109	45	86	65.5	33.5	3883.5
9/18/1992	1992	9	18	110	44	84	64	32	3915.5
9/19/1992	1992	9	19	111	54	66	60	28	3943.5
9/20/1992	1992	9	20	112	50	79	64.5	32.5	3976
9/21/1992	1992	9	21	113	42	82	62	30	4006
9/22/1992	1992	9	22	114	42	82	62	30	4036

9/23/1992	1992	9	23	115	42	86	64	32	4068
9/24/1992	1992	9	24	116	42	84	63	31	4099
9/25/1992	1992	9	25	117	43	84	63.5	31.5	4130.5
9/26/1992	1992	9	26	118	33	82	57.5	25.5	4156
9/27/1992	1992	9	27	119	33	85	59	27	4183
9/28/1992	1992	9	28	120	37	80	58.5	26.5	4209.5
9/29/1992	1992	9	29	121	45	81	63	31	4240.5
9/30/1992	1992	9	30	122	38	84	61	29	4269.5
10/1/1992	1992	10	1	123	36	86	61	29	4298.5
10/2/1992	1992	10	2	124	55	84	69.5	37.5	4336
10/3/1992	1992	10	3	125	33	83	58	26	4362
10/4/1992	1992	10	4	126	37	83	60	28	4390
10/5/1992	1992	10	5	127	35	80	57.5	25.5	4415.5
10/6/1992	1992	10	6	128	37	80	58.5	26.5	4442
10/7/1992	1992	10	7	129	38	75	56.5	24.5	4466.5
10/8/1992	1992	10	8	130	19	67	43	11	4477.5
10/9/1992	1992	10	9	131	22	78	50	18	4495.5
10/10/1992	1992	10	10	132	30	76	53	21	4516.5
10/11/1992	1992	10	11	133	28	79	53.5	21.5	4538
10/12/1992	1992	10	12	134	28	82	55	23	4561
10/13/1992	1992	10	13	135	28	80	54	22	4583
10/14/1992	1992	10	14	136	36	75	55.5	23.5	4606.5
10/15/1992	1992	10	15	137	36	75	55.5	23.5	4630
10/16/1992	1992	10	16	138	30	71	50.5	18.5	4648.5
10/17/1992	1992	10	17	139	29	77	53	21	4669.5
10/18/1992	1992	10	18	140	29	78	53.5	21.5	4691
10/19/1992	1992	10	19	141	34	75	54.5	22.5	4713.5
10/20/1992	1992	10	20	142	32	77	54.5	22.5	4736
10/21/1992	1992	10	21	143	40	72	56	24	4760
10/22/1992	1992	10	22	144	36	69	52.5	20.5	4780.5
10/23/1992	1992	10	23	145	41	71	56	24	4804.5
10/24/1992	1992	10	24	146	39	66	52.5	20.5	4825
10/25/1992	1992	10	25	147	40	70	55	23	4848
10/26/1992	1992	10	26	148	35	69	52	20	4868
10/27/1992	1992	10	27	149	33	73	53	21	4889
10/28/1992	1992	10	28	150	44	55	49.5	17.5	4906.5
10/29/1992	1992	10	29	151	41	58	49.5	17.5	4924
10/30/1992	1992	10	30	152	40	64	52	20	4944
10/31/1992	1992	10	31	153	40	59	49.5	17.5	4961.5
11/1/1992	1992	11	1	154	30	55	42.5	10.5	4972
11/2/1992	1992	11	2	155	26	61	43.5	11.5	4983.5
11/3/1992	1992	11	3	156	25	42	33.5	1.5	4985
11/4/1992	1992	11	4	157	19	45	32	0	4985
11/5/1992	1992	11	5	158	19	48	33.5	1.5	4986.5
11/6/1992	1992	11	6	159	17	50	33.5	1.5	4988
11/7/1992	1992	11	7	160	17	61	39	7	4995
11/8/1992	1992	11	8	161	20	65	42.5	10.5	5005.5
11/9/1992	1992	11	9	162	22	54	38	6	5011.5
11/10/1992	1992	11	10	163	25	55	40	8	5019.5
11/11/1992	1992	11	11	164	30	45	37.5	5.5	5025
11/12/1992	1992	11	12	165	18	52	35	3	5028
11/13/1992	1992	11	13	166	18	55	36.5	4.5	5032.5
11/14/1992	1992	11	14	167	22	66	44	12	5044.5
11/15/1992	1992	11	15	168	21	68	44.5	12.5	5057
11/16/1992	1992	11	16	169	20	53	36.5	4.5	5061.5
11/17/1992	1992	11	17	170	20	60	40	8	5069.5
11/18/1992	1992	11	18	171	16	56	36	4	5073.5
11/19/1992	1992	11	19	172	24	55	39.5	7.5	5081
11/20/1992	1992	11	20	173	32	44	38	6	5087
11/21/1992	1992	11	21	174	20	42	31	-1	5086
11/22/1992	1992	11	22	175	15	45	30	-2	5084
11/23/1992	1992	11	23	176	30	42	36	4	5088
11/24/1992	1992	11	24	177	11	38	24.5	-7.5	5080.5
11/25/1992	1992	11	25	178	11	34	22.5	-9.5	5071
11/26/1992	1992	11	26	179	12	38	25	-7	5064
11/27/1992	1992	11	27	180	12	45	28.5	-3.5	5060.5
11/28/1992	1992	11	28	181	7	49	28	-4	5056.5
11/29/1992	1992	11	29	182	12	44	28	-4	5052.5
11/30/1992	1992	11	30	183	10	44	27	-5	5047.5
12/1/1992	1992	12	1	184	8	52	30	-2	5045.5
12/2/1992	1992	12	2	185	10	53	31.5	-0.5	5045
12/3/1992	1992	12	3	186	30	55	42.5	10.5	5055.5
12/4/1992	1992	12	4	187	30	38	34	2	5057.5
12/5/1992	1992	12	5	188	15	30	22.5	-9.5	5048
12/6/1992	1992	12	6	189	2	35	18.5	-13.5	5034.5
12/7/1992	1992	12	7	190	0	33	16.5	-15.5	5019
12/8/1992	1992	12	8	191	14	36	25	-7	5012
12/9/1992	1992	12	9	192	12	45	28.5	-3.5	5008.5
12/10/1992	1992	12	10	193	13	43	28	-4	5004.5
12/11/1992	1992	12	11	194	7	42	24.5	-7.5	4997
12/12/1992	1992	12	12	195	16	39	27.5	-4.5	4992.5
12/13/1992	1992	12	13	196	5	33	19	-13	4979.5
12/14/1992	1992	12	14	197	11	32	21.5	-10.5	4969
12/15/1992	1992	12	15	198	-2	29	13.5	-18.5	4950.5
12/16/1992	1992	12	16	199	6	30	18	-14	4936.5
12/17/1992	1992	12	17	200	-8	29	10.5	-21.5	4915
12/18/1992	1992	12	18	201	15	43	29	-3	4912
12/19/1992	1992	12	19	202	23	32	27.5	-4.5	4907.5
12/20/1992	1992	12	20	203	-8	30	11	-21	4886.5
12/21/1992	1992	12	21	204	-4	34	15	-17	4869.5
12/22/1992	1992	12	22	205	0	40	20	-12	4857.5
12/23/1992	1992	12	23	206	-3	42	19.5	-12.5	4845
12/24/1992	1992	12	24	207	1	39	20	-12	4833

12/25/1992	1992	12	25	208	3	40	21.5	-10.5	4822.5
12/26/1992	1992	12	26	209	8	42	25	-7	4815.5
12/27/1992	1992	12	27	210	6	38	22	-10	4805.5
12/28/1992	1992	12	28	211	3	46	24.5	-7.5	4798
12/29/1992	1992	12	29	212	33	53	43	11	4809
12/30/1992	1992	12	30	213	33	54	43.5	11.5	4820.5
12/31/1992	1992	12	31	214	24	43	33.5	1.5	4822
1/1/1993	1993	1	1	215	29	42	35.5	3.5	4825.5
1/2/1993	1993	1	2	216	30	53	41.5	9.5	4835
1/3/1993	1993	1	3	217	7	44	25.5	-6.5	4828.5
1/4/1993	1993	1	4	218	-4	30	13	-19	4809.5
1/5/1993	1993	1	5	219	10	42	26	-6	4803.5
1/6/1993	1993	1	6	220	18	43	30.5	-1.5	4802
1/7/1993	1993	1	7	221	28	50	39	7	4809
1/8/1993	1993	1	8	222	34	54	44	12	4821
1/9/1993	1993	1	9	223	29	45	37	5	4826
1/10/1993	1993	1	10	224	28	37	32.5	0.5	4826.5
1/11/1993	1993	1	11	225	30	43	36.5	4.5	4831
1/12/1993	1993	1	12	226	18	46	32	0	4831
1/13/1993	1993	1	13	227	24	42	33	1	4832
1/14/1993	1993	1	14	228	29	45	37	5	4837
1/15/1993	1993	1	15	229	25	48	36.5	4.5	4841.5
1/16/1993	1993	1	16	230	23	47	35	3	4844.5
1/17/1993	1993	1	17	231	35	49	42	10	4854.5
1/18/1993	1993	1	18	232	32	48	40	8	4862.5
1/19/1993	1993	1	19	233	28	43	35.5	3.5	4866
1/20/1993	1993	1	20	234	24	44	34	2	4868
1/21/1993	1993	1	21	235	21	53	37	5	4873
1/22/1993	1993	1	22	236	24	62	43	11	4884
1/23/1993	1993	1	23	237	30	55	42.5	10.5	4894.5
1/24/1993	1993	1	24	238	21	52	36.5	4.5	4899
1/25/1993	1993	1	25	239	15	49	32	0	4899
1/26/1993	1993	1	26	240	16	57	36.5	4.5	4903.5
1/27/1993	1993	1	27	241	20	62	41	9	4912.5
1/28/1993	1993	1	28	242	18	60	39	7	4919.5
1/29/1993	1993	1	29	243	26	42	34	2	4921.5
1/30/1993	1993	1	30	244	30	42	36	4	4925.5
1/31/1993	1993	1	31	245	29	47	38	6	4931.5
2/1/1993	1993	2	1	246	27	48	37.5	5.5	4937
2/2/1993	1993	2	2	247	17	50	33.5	1.5	4938.5
2/3/1993	1993	2	3	248	18	48	33	1	4939.5
2/4/1993	1993	2	4	249	14	47	30.5	-1.5	4938
2/5/1993	1993	2	5	250	10	50	30	-2	4936
2/6/1993	1993	2	6	251	12	56	34	2	4938
2/7/1993	1993	2	7	252	18	61	39.5	7.5	4945.5
2/8/1993	1993	2	8	253	22	55	38.5	6.5	4952
2/9/1993	1993	2	9	254	29	53	41	9	4961
2/10/1993	1993	2	10	255	28	44	36	4	4965
2/11/1993	1993	2	11	256	28	48	38	6	4971
2/12/1993	1993	2	12	257	21	52	36.5	4.5	4975.5
2/13/1993	1993	2	13	258	21	51	36	4	4979.5
2/14/1993	1993	2	14	259	27	42	34.5	2.5	4982
2/15/1993	1993	2	15	260	21	42	31.5	-0.5	4981.5
2/16/1993	1993	2	16	261	31	50	40.5	8.5	4990
2/17/1993	1993	2	17	262	23	56	39.5	7.5	4997.5
2/18/1993	1993	2	18	263	19	51	35	3	5000.5
2/19/1993	1993	2	19	264	33	60	46.5	14.5	5015
2/20/1993	1993	2	20	265	37	48	42.5	10.5	5025.5
2/21/1993	1993	2	21	266	32	48	40	8	5033.5
2/22/1993	1993	2	22	267	28	51	39.5	7.5	5041
2/23/1993	1993	2	23	268	21	58	39.5	7.5	5048.5
2/24/1993	1993	2	24	269	25	44	34.5	2.5	5051
2/25/1993	1993	2	25	270	28	47	37.5	5.5	5056.5
2/26/1993	1993	2	26	271	19	57	38	6	5062.5
2/27/1993	1993	2	27	272	27	57	42	10	5072.5
2/28/1993	1993	2	28	273	32	42	37	5	5077.5
3/1/1993	1993	3	1	274	29	42	35.5	3.5	5081
3/2/1993	1993	3	2	275	23	51	37	5	5086
3/3/1993	1993	3	3	276	19	59	39	7	5093
3/4/1993	1993	3	4	277	17	54	35.5	3.5	5096.5
3/5/1993	1993	3	5	278	24	58	41	9	5105.5
3/6/1993	1993	3	6	279	28	60	44	12	5117.5
3/7/1993	1993	3	7	280	29	67	48	16	5133.5
3/8/1993	1993	3	8	281	18	70	44	12	5145.5
3/9/1993	1993	3	9	282	20	71	45.5	13.5	5159
3/10/1993	1993	3	10	283	28	62	45	13	5172
3/11/1993	1993	3	11	284	24	55	39.5	7.5	5179.5
3/12/1993	1993	3	12	285	26	51	38.5	6.5	5186
3/13/1993	1993	3	13	286	12	59	35.5	3.5	5189.5
3/14/1993	1993	3	14	287	18	58	38	6	5195.5
3/15/1993	1993	3	15	288	19	69	44	12	5207.5
3/16/1993	1993	3	16	289	30	67	48.5	16.5	5224
3/17/1993	1993	3	17	290	25	65	45	13	5237
3/18/1993	1993	3	18	291	30	65	47.5	15.5	5252.5
3/19/1993	1993	3	19	292	30	64	47	15	5267.5
3/20/1993	1993	3	20	293	25	65	45	13	5280.5
3/21/1993	1993	3	21	294	31	70	50.5	18.5	5299
3/22/1993	1993	3	22	295	24	70	47	15	5314
3/23/1993	1993	3	23	296	24	73	48.5	16.5	5330.5
3/24/1993	1993	3	24	297	35	63	49	17	5347.5
3/25/1993	1993	3	25	298	29	72	50.5	18.5	5366
3/26/1993	1993	3	26	299	32	68	50	18	5384
3/27/1993	1993	3	27	300	32	50	41	9	5393

3/28/1993	1993	3	28	301	31	60	45.5	13.5	5406.5
3/29/1993	1993	3	29	302	30	48	39	7	5413.5
3/30/1993	1993	3	30	303	29	59	44	12	5425.5
3/31/1993	1993	3	31	304	31	64	47.5	15.5	5441
4/1/1993	1993	4	1	305	24	69	46.5	14.5	5455.5
4/2/1993	1993	4	2	306	32	68	50	18	5473.5
4/3/1993	1993	4	3	307	30	63	46.5	14.5	5488
4/4/1993	1993	4	4	308	25	71	48	16	5504
4/5/1993	1993	4	5	309	30	68	49	17	5521
4/6/1993	1993	4	6	310	35	52	43.5	11.5	5532.5
4/7/1993	1993	4	7	311	22	53	37.5	5.5	5538
4/8/1993	1993	4	8	312	25	60	42.5	10.5	5548.5
4/9/1993	1993	4	9	313	24	71	47.5	15.5	5564
4/10/1993	1993	4	10	314	40	75	57.5	25.5	5589.5
4/11/1993	1993	4	11	315	34	72	53	21	5610.5
4/12/1993	1993	4	12	316	34	69	51.5	19.5	5630
4/13/1993	1993	4	13	317	28	59	43.5	11.5	5641.5
4/14/1993	1993	4	14	318	23	58	40.5	8.5	5650
4/15/1993	1993	4	15	319	20	65	42.5	10.5	5660.5
4/16/1993	1993	4	16	320	38	63	50.5	18.5	5679
4/17/1993	1993	4	17	321	35	74	54.5	22.5	5701.5
4/18/1993	1993	4	18	322	37	74	55.5	23.5	5725
4/19/1993	1993	4	19	323	33	61	47	15	5740
4/20/1993	1993	4	20	324	18	74	46	14	5754
4/21/1993	1993	4	21	325	24	72	48	16	5770
4/22/1993	1993	4	22	326	31	83	57	25	5795
4/23/1993	1993	4	23	327	36	76	56	24	5819
4/24/1993	1993	4	24	328	43	71	57	25	5844
4/25/1993	1993	4	25	329	38	75	56.5	24.5	5868.5
4/26/1993	1993	4	26	330	35	83	59	27	5895.5
4/27/1993	1993	4	27	331	38	78	58	26	5921.5
4/28/1993	1993	4	28	332	43	75	59	27	5948.5
4/29/1993	1993	4	29	333	31	77	54	22	5970.5
4/30/1993	1993	4	30	334	34	78	56	24	5994.5
5/1/1993	1993	5	1	335	33	64	48.5	16.5	6011
5/2/1993	1993	5	2	336	35	74	54.5	22.5	6033.5
5/3/1993	1993	5	3	337	30	72	51	19	6052.5
5/4/1993	1993	5	4	338	40	79	59.5	27.5	6080
5/5/1993	1993	5	5	339	39	68	53.5	21.5	6101.5
5/6/1993	1993	5	6	340	28	70	49	17	6118.5
5/7/1993	1993	5	7	341	38	69	53.5	21.5	6140
5/8/1993	1993	5	8	342	30	65	47.5	15.5	6155.5
5/9/1993	1993	5	9	343	28	68	48	16	6171.5
5/10/1993	1993	5	10	344	26	79	52.5	20.5	6192
5/11/1993	1993	5	11	345	31	81	56	24	6216
5/12/1993	1993	5	12	346	45	82	63.5	31.5	6247.5
5/13/1993	1993	5	13	347	44	80	62	30	6277.5
5/14/1993	1993	5	14	348	40	82	61	29	6306.5
5/15/1993	1993	5	15	349	48	75	61.5	29.5	6336
5/16/1993	1993	5	16	350	43	75	59	27	6363
5/17/1993	1993	5	17	351	43	75	59	27	6390
5/18/1993	1993	5	18	352	40	78	59	27	6417
5/19/1993	1993	5	19	353	46	81	63.5	31.5	6448.5
5/20/1993	1993	5	20	354	42	81	61.5	29.5	6478
5/21/1993	1993	5	21	355	42	82	62	30	6508
5/22/1993	1993	5	22	356	45	80	62.5	30.5	6538.5
5/23/1993	1993	5	23	357	45	81	63	31	6569.5
5/24/1993	1993	5	24	358	46	82	64	32	6601.5
5/25/1993	1993	5	25	359	48	79	63.5	31.5	6633
5/26/1993	1993	5	26	360	49	85	67	35	6668
5/27/1993	1993	5	27	361	51	83	67	35	6703
5/28/1993	1993	5	28	362	53	75	64	32	6735
5/29/1993	1993	5	29	363	48	84	66	34	6769
5/30/1993	1993	5	30	364	44	88	66	34	6803
5/31/1993	1993	5	31	365	41	91	66	34	6837
6/1/1993	1993	6	1	1	43	86	64.5	32.5	32.5
6/2/1993	1993	6	2	2	44	84	64	32	64.5
6/3/1993	1993	6	3	3	44	79	61.5	29.5	94
6/4/1993	1993	6	4	4	48	84	66	34	128
6/5/1993	1993	6	5	5	42	80	61	29	157
6/6/1993	1993	6	6	6	42	85	63.5	31.5	188.5
6/7/1993	1993	6	7	7	37	72	54.5	22.5	211
6/8/1993	1993	6	8	8	34	75	54.5	22.5	233.5
6/9/1993	1993	6	9	9	40	72	56	24	257.5
6/10/1993	1993	6	10	10	36	79	57.5	25.5	283
6/11/1993	1993	6	11	11	41	89	65	33	316
6/12/1993	1993	6	12	12	42	91	66.5	34.5	350.5
6/13/1993	1993	6	13	13	42	95	68.5	36.5	387
6/14/1993	1993	6	14	14	39	95	67	35	422
6/15/1993	1993	6	15	15	56	86	71	39	461
6/16/1993	1993	6	16	16	55	88	71.5	39.5	500.5
6/17/1993	1993	6	17	17	47	87	67	35	535.5
6/18/1993	1993	6	18	18	45	86	65.5	33.5	569
6/19/1993	1993	6	19	19	41	90	65.5	33.5	602.5
6/20/1993	1993	6	20	20	54	81	67.5	35.5	638
6/21/1993	1993	6	21	21	55	80	67.5	35.5	673.5
6/22/1993	1993	6	22	22	42	92	67	35	708.5
6/23/1993	1993	6	23	23	45	92	68.5	36.5	745
6/24/1993	1993	6	24	24	37	92	64.5	32.5	777.5
6/25/1993	1993	6	25	25	39	93	66	34	811.5
6/26/1993	1993	6	26	26	44	95	69.5	37.5	849
6/27/1993	1993	6	27	27	46	98	72	40	889
6/28/1993	1993	6	28	28	50	93	71.5	39.5	928.5

6/29/1993	1993	6	29	29	52	97	74.5	42.5	971
6/30/1993	1993	6	30	30	45	94	69.5	37.5	1008.5
7/1/1993	1993	7	1	31	45	98	71.5	39.5	1048
7/2/1993	1993	7	2	32	46	95	70.5	38.5	1086.5
7/3/1993	1993	7	3	33	45	98	71.5	39.5	1126
7/4/1993	1993	7	4	34	50	89	69.5	37.5	1163.5
7/5/1993	1993	7	5	35	55	91	73	41	1204.5
7/6/1993	1993	7	6	36	50	94	72	40	1244.5
7/7/1993	1993	7	7	37	50	97	73.5	41.5	1286
7/8/1993	1993	7	8	38	48	96	72	40	1326
7/9/1993	1993	7	9	39	56	96	76	44	1370
7/10/1993	1993	7	10	40	55	91	73	41	1411
7/11/1993	1993	7	11	41	50	91	70.5	38.5	1449.5
7/12/1993	1993	7	12	42	54	89	71.5	39.5	1489
7/13/1993	1993	7	13	43	56	88	72	40	1529
7/14/1993	1993	7	14	44	50	89	69.5	37.5	1566.5
7/15/1993	1993	7	15	45	40	87	63.5	31.5	1598
7/16/1993	1993	7	16	46	55	88	71.5	39.5	1637.5
7/17/1993	1993	7	17	47	55	87	71	39	1676.5
7/18/1993	1993	7	18	48	52	90	71	39	1715.5
7/19/1993	1993	7	19	49	51	92	71.5	39.5	1755
7/20/1993	1993	7	20	50	55	92	73.5	41.5	1796.5
7/21/1993	1993	7	21	51	54	91	72.5	40.5	1837
7/22/1993	1993	7	22	52	47	90	68.5	36.5	1873.5
7/23/1993	1993	7	23	53	48	92	70	38	1911.5
7/24/1993	1993	7	24	54	54	89	71.5	39.5	1951
7/25/1993	1993	7	25	55	54	94	74	42	1993
7/26/1993	1993	7	26	56	48	95	71.5	39.5	2032.5
7/27/1993	1993	7	27	57	50	93	71.5	39.5	2072
7/28/1993	1993	7	28	58	52	95	73.5	41.5	2113.5
7/29/1993	1993	7	29	59	53	95	74	42	2155.5
7/30/1993	1993	7	30	60	52	89	70.5	38.5	2194
7/31/1993	1993	7	31	61	55	97	76	44	2238
8/1/1993	1993	8	1	62	53	91	72	40	2278
8/2/1993	1993	8	2	63	55	96	75.5	43.5	2321.5
8/3/1993	1993	8	3	64	53	93	73	41	2362.5
8/4/1993	1993	8	4	65	58	84	71	39	2401.5
8/5/1993	1993	8	5	66	57	84	70.5	38.5	2440
8/6/1993	1993	8	6	67	56	91	73.5	41.5	2481.5
8/7/1993	1993	8	7	68	58	84	71	39	2520.5
8/8/1993	1993	8	8	69	50	80	65	33	2553.5
8/9/1993	1993	8	9	70	54	87	70.5	38.5	2592
8/10/1993	1993	8	10	71	57	86	71.5	39.5	2631.5
8/11/1993	1993	8	11	72	52	95	73.5	41.5	2673
8/12/1993	1993	8	12	73	50	91	70.5	38.5	2711.5
8/13/1993	1993	8	13	74	51	81	66	34	2745.5
8/14/1993	1993	8	14	75	51	81	66	34	2779.5
8/15/1993	1993	8	15	76	50	84	67	35	2814.5
8/16/1993	1993	8	16	77	50	82	66	34	2848.5
8/17/1993	1993	8	17	78	56	78	67	35	2883.5
8/18/1993	1993	8	18	79	17	84	50.5	18.5	2902
8/19/1993	1993	8	19	80	54	83	68.5	36.5	2938.5
8/20/1993	1993	8	20	81	56	76	66	34	2972.5
8/21/1993	1993	8	21	82	54	82	68	36	3008.5
8/22/1993	1993	8	22	83	51	83	67	35	3043.5
8/23/1993	1993	8	23	84	50	84	67	35	3078.5
8/24/1993	1993	8	24	85	46	90	68	36	3114.5
8/25/1993	1993	8	25	86	50	86	68	36	3150.5
8/26/1993	1993	8	26	87	53	71	62	30	3180.5
8/27/1993	1993	8	27	88	53	70	61.5	29.5	3210
8/28/1993	1993	8	28	89	54	71	62.5	30.5	3240.5
8/29/1993	1993	8	29	90	52	76	64	32	3272.5
8/30/1993	1993	8	30	91	49	75	62	30	3302.5
8/31/1993	1993	8	31	92	50	70	60	28	3330.5
9/1/1993	1993	9	1	93	50	83	66.5	34.5	3365
9/2/1993	1993	9	2	94	48	87	67.5	35.5	3400.5
9/3/1993	1993	9	3	95	48	86	67	35	3435.5
9/4/1993	1993	9	4	96	43	88	65.5	33.5	3469
9/5/1993	1993	9	5	97	52	82	67	35	3504
9/6/1993	1993	9	6	98	51	81	66	34	3538
9/7/1993	1993	9	7	99	48	80	64	32	3570
9/8/1993	1993	9	8	100	42	84	63	31	3601
9/9/1993	1993	9	9	101	50	86	68	36	3637
9/10/1993	1993	9	10	102	45	86	65.5	33.5	3670.5
9/11/1993	1993	9	11	103	48	84	66	34	3704.5
9/12/1993	1993	9	12	104	48	82	65	33	3737.5
9/13/1993	1993	9	13	105	44	69	56.5	24.5	3762
9/14/1993	1993	9	14	106	38	73	55.5	23.5	3785.5
9/15/1993	1993	9	15	107	39	73	56	24	3809.5
9/16/1993	1993	9	16	108	41	81	61	29	3838.5
9/17/1993	1993	9	17	109	40	81	60.5	28.5	3867
9/18/1993	1993	9	18	110	40	81	60.5	28.5	3895.5
9/19/1993	1993	9	19	111	41	82	61.5	29.5	3925
9/20/1993	1993	9	20	112	37	81	59	27	3952
9/21/1993	1993	9	21	113	38	89	63.5	31.5	3983.5
9/22/1993	1993	9	22	114	44	88	66	34	4017.5
9/23/1993	1993	9	23	115	47	89	68	36	4053.5
9/24/1993	1993	9	24	116	48	89	68.5	36.5	4090
9/25/1993	1993	9	25	117	48	89	68.5	36.5	4126.5
9/26/1993	1993	9	26	118	46	83	64.5	32.5	4159
9/27/1993	1993	9	27	119	35	81	58	26	4185
9/28/1993	1993	9	28	120	31	81	56	24	4209
9/29/1993	1993	9	29	121	31	82	56.5	24.5	4233.5

9/30/1993	1993	9	30	122	38	84	61	29	4262.5
10/1/1993	1993	10	1	123	38	84	61	29	4291.5
10/2/1993	1993	10	2	124	32	84	58	26	4317.5
10/3/1993	1993	10	3	125	39	87	63	31	4348.5
10/4/1993	1993	10	4	126	36	85	60.5	28.5	4377
10/5/1993	1993	10	5	127	39	83	61	29	4406
10/6/1993	1993	10	6	128	37	84	60.5	28.5	4434.5
10/7/1993	1993	10	7	129	41	80	60.5	28.5	4463
10/8/1993	1993	10	8	130	44	73	58.5	26.5	4489.5
10/9/1993	1993	10	9	131	44	73	58.5	26.5	4516
10/10/1993	1993	10	10	132	33	77	55	23	4539
10/11/1993	1993	10	11	133	44	79	61.5	29.5	4568.5
10/12/1993	1993	10	12	134	30	71	50.5	18.5	4587
10/13/1993	1993	10	13	135	30	73	51.5	19.5	4606.5
10/14/1993	1993	10	14	136	33	75	54	22	4628.5
10/15/1993	1993	10	15	137	35	65	50	18	4646.5
10/16/1993	1993	10	16	138	35	73	54	22	4668.5
10/17/1993	1993	10	17	139	35	73	54	22	4690.5
10/18/1993	1993	10	18	140	30	61	45.5	13.5	4704
10/19/1993	1993	10	19	141	34	64	49	17	4721
10/20/1993	1993	10	20	142	28	59	43.5	11.5	4732.5
10/21/1993	1993	10	21	143	24	65	44.5	12.5	4745
10/22/1993	1993	10	22	144	26	67	46.5	14.5	4759.5
10/23/1993	1993	10	23	145	27	67	47	15	4774.5
10/24/1993	1993	10	24	146	24	74	49	17	4791.5
10/25/1993	1993	10	25	147	24	73	48.5	16.5	4808
10/26/1993	1993	10	26	148	36	68	52	20	4828
10/27/1993	1993	10	27	149	30	56	43	11	4839
10/28/1993	1993	10	28	150	17	57	37	5	4844
10/29/1993	1993	10	29	151	36	67	51.5	19.5	4863.5
10/30/1993	1993	10	30	152	15	52	33.5	1.5	4865
10/31/1993	1993	10	31	153	11	53	32	0	4865
11/1/1993	1993	11	1	154	26	64	45	13	4878
11/2/1993	1993	11	2	155	22	66	44	12	4890
11/3/1993	1993	11	3	156	20	59	39.5	7.5	4897.5
11/4/1993	1993	11	4	157	29	68	48.5	16.5	4914
11/5/1993	1993	11	5	158	22	65	43.5	11.5	4925.5
11/6/1993	1993	11	6	159	12	63	37.5	5.5	4931
11/7/1993	1993	11	7	160	10	57	33.5	1.5	4932.5
11/8/1993	1993	11	8	161	16	65	40.5	8.5	4941
11/9/1993	1993	11	9	162	13	67	40	8	4949
11/10/1993	1993	11	10	163	14	63	38.5	6.5	4955.5
11/11/1993	1993	11	11	164	37	65	51	19	4974.5
11/12/1993	1993	11	12	165	35	64	49.5	17.5	4992
11/13/1993	1993	11	13	166	27	53	40	8	5000
11/15/1993	1993	11	15	167	27	50	38.5	6.5	5006.5
11/16/1993	1993	11	16	168	22	37	29.5	-2.5	5004
11/17/1993	1993	11	17	169	20	52	36	4	5008
11/18/1993	1993	11	18	170	26	58	42	10	5018
11/19/1993	1993	11	19	171	21	62	41.5	9.5	5027.5
11/20/1993	1993	11	20	172	12	51	31.5	-0.5	5027
11/21/1993	1993	11	21	173	12	55	33.5	1.5	5028.5
11/22/1993	1993	11	22	174	29	56	42.5	10.5	5039
11/23/1993	1993	11	23	175	44	66	55	23	5062
11/24/1993	1993	11	24	176	35	57	46	14	5076
11/25/1993	1993	11	25	177	9	52	30.5	-1.5	5074.5
11/26/1993	1993	11	26	178	2	35	18.5	-13.5	5061
11/27/1993	1993	11	27	179	9	40	24.5	-7.5	5053.5
11/28/1993	1993	11	28	180	13	52	32.5	0.5	5054
11/29/1993	1993	11	29	181	13	54	33.5	1.5	5055.5
11/30/1993	1993	11	30	182	16	61	38.5	6.5	5062
12/1/1993	1993	12	1	183	16	60	38	6	5068
12/2/1993	1993	12	2	184	11	52	31.5	-0.5	5067.5
12/3/1993	1993	12	3	185	19	57	38	6	5073.5
12/4/1993	1993	12	4	186	8	57	32.5	0.5	5074
12/5/1993	1993	12	5	187	12	60	36	4	5078
12/6/1993	1993	12	6	188	12	58	35	3	5081
12/7/1993	1993	12	7	189	15	62	38.5	6.5	5087.5
12/8/1993	1993	12	8	190	10	62	36	4	5091.5
12/9/1993	1993	12	9	191	16	54	35	3	5094.5
12/10/1993	1993	12	10	192	13	63	38	6	5100.5
12/11/1993	1993	12	11	193	21	62	41.5	9.5	5110
12/12/1993	1993	12	12	194	36	61	48.5	16.5	5126.5
12/13/1993	1993	12	13	195	16	42	29	-3	5123.5
12/14/1993	1993	12	14	196	10	46	28	-4	5119.5
12/15/1993	1993	12	15	197	31	51	41	9	5128.5
12/16/1993	1993	12	16	198	23	44	33.5	1.5	5130
12/17/1993	1993	12	17	199	6	37	21.5	-10.5	5119.5
12/18/1993	1993	12	18	200	10	47	28.5	-3.5	5116
12/19/1993	1993	12	19	201	12	50	31	-1	5115
12/20/1993	1993	12	20	202	17	49	33	1	5116
12/21/1993	1993	12	21	203	4	40	22	-10	5106
12/22/1993	1993	12	22	204	4	44	24	-8	5098
12/23/1993	1993	12	23	205	1	32	16.5	-15.5	5082.5
12/24/1993	1993	12	24	206	9	34	21.5	-10.5	5072
12/25/1993	1993	12	25	207	9	34	21.5	-10.5	5061.5
12/26/1993	1993	12	26	208	4	57	30.5	-1.5	5060
12/27/1993	1993	12	27	209	25	57	41	9	5069
12/28/1993	1993	12	28	210	30	51	40.5	8.5	5077.5
12/29/1993	1993	12	29	211	15	49	32	0	5077.5
12/30/1993	1993	12	30	212	7	50	28.5	-3.5	5074
12/31/1993	1993	12	31	213	12	55	33.5	1.5	5075.5
1/1/1994	1994	1	1	214	6	57	31.5	-0.5	5075

1/2/1994	1994	1	2	215	21	55	38	6	5081
1/3/1994	1994	1	3	216	11	52	31.5	-0.5	5080.5
1/4/1994	1994	1	4	217	14	61	37.5	5.5	5086
1/5/1994	1994	1	5	218	44	66	55	23	5109
1/6/1994	1994	1	6	219	23	66	44.5	12.5	5121.5
1/7/1994	1994	1	7	220	4	37	20.5	-11.5	5110
1/8/1994	1994	1	8	221	2	44	23	-9	5101
1/9/1994	1994	1	9	222	4	50	27	-5	5096
1/10/1994	1994	1	10	223	9	46	27.5	-4.5	5091.5
1/11/1994	1994	1	11	224	3	44	23.5	-8.5	5083
1/12/1994	1994	1	12	225	9	53	31	-1	5082
1/13/1994	1994	1	13	226	7	46	26.5	-5.5	5076.5
1/14/1994	1994	1	14	227	9	54	31.5	-0.5	5076
1/15/1994	1994	1	15	228	15	57	36	4	5080
1/16/1994	1994	1	16	229	9	49	29	-3	5077
1/17/1994	1994	1	17	230	9	49	29	-3	5074
1/18/1994	1994	1	18	231	9	56	32.5	0.5	5074.5
1/19/1994	1994	1	19	232	7	56	31.5	-0.5	5074
1/20/1994	1994	1	20	233	8	63	35.5	3.5	5077.5
1/21/1994	1994	1	21	234	5	63	34	2	5079.5
1/22/1994	1994	1	22	235	5	60	32.5	0.5	5080
1/23/1994	1994	1	23	236	10	62	36	4	5084
1/24/1994	1994	1	24	237	16	51	33.5	1.5	5085.5
1/25/1994	1994	1	25	238	10	62	36	4	5089.5
1/26/1994	1994	1	26	239	25	59	42	10	5099.5
1/27/1994	1994	1	27	240	23	59	41	9	5108.5
1/28/1994	1994	1	28	241	22	42	32	0	5108.5
1/29/1994	1994	1	29	242	22	28	25	-7	5101.5
1/30/1994	1994	1	30	243	14	42	28	-4	5097.5
1/31/1994	1994	1	31	244	0	36	18	-14	5083.5
2/1/1994	1994	2	1	245	-3	28	12.5	-19.5	5064
2/2/1994	1994	2	2	246	-1	36	17.5	-14.5	5049.5
2/3/1994	1994	2	3	247	10	41	25.5	-6.5	5043
2/4/1994	1994	2	4	248	20	55	37.5	5.5	5048.5
2/5/1994	1994	2	5	249	28	52	40	8	5056.5
2/6/1994	1994	2	6	250	9	44	26.5	-5.5	5051
2/7/1994	1994	2	7	251	16	57	36.5	4.5	5055.5
2/8/1994	1994	2	8	252	36	54	45	13	5068.5
2/9/1994	1994	2	9	253	21	46	33.5	1.5	5070
2/10/1994	1994	2	10	254	10	50	30	-2	5068
2/11/1994	1994	2	11	255	24	58	41	9	5077
2/12/1994	1994	2	12	256	13	52	32.5	0.5	5077.5
2/13/1994	1994	2	13	257	-2	40	19	-13	5064.5
2/14/1994	1994	2	14	258	0	44	22	-10	5054.5
2/15/1994	1994	2	15	259	7	57	32	0	5054.5
2/16/1994	1994	2	16	260	11	60	35.5	3.5	5058
2/17/1994	1994	2	17	261	26	66	46	14	5072
2/18/1994	1994	2	18	262	35	67	51	19	5091
2/19/1994	1994	2	19	263	8	54	31	-1	5090
2/20/1994	1994	2	20	264	-3	50	23.5	-8.5	5081.5
2/21/1994	1994	2	21	265	3	41	22	-10	5071.5
2/22/1994	1994	2	22	266	15	51	33	1	5072.5
2/23/1994	1994	2	23	267	6	41	23.5	-8.5	5064
2/24/1994	1994	2	24	268	9	44	26.5	-5.5	5058.5
2/25/1994	1994	2	25	269	16	62	39	7	5065.5
2/26/1994	1994	2	26	270	18	66	42	10	5075.5
2/27/1994	1994	2	27	271	6	65	35.5	3.5	5079
2/28/1994	1994	2	28	272	31	54	42.5	10.5	5089.5
3/1/1994	1994	3	1	273	15	47	31	-1	5088.5
3/2/1994	1994	3	2	274	15	57	36	4	5092.5
3/3/1994	1994	3	3	275	14	68	41	9	5101.5
3/4/1994	1994	3	4	276	20	70	45	13	5114.5
3/5/1994	1994	3	5	277	23	70	46.5	14.5	5129
3/6/1994	1994	3	6	278	19	67	43	11	5140
3/7/1994	1994	3	7	279	26	61	43.5	11.5	5151.5
3/8/1994	1994	3	8	280	31	57	44	12	5163.5
3/9/1994	1994	3	9	281	25	43	34	2	5165.5
3/10/1994	1994	3	10	282	17	54	35.5	3.5	5169
3/11/1994	1994	3	11	283	25	60	42.5	10.5	5179.5
3/12/1994	1994	3	12	284	32	59	45.5	13.5	5193
3/13/1994	1994	3	13	285	5	42	23.5	-8.5	5184.5
3/14/1994	1994	3	14	286	21	54	37.5	5.5	5190
3/15/1994	1994	3	15	287	23	68	45.5	13.5	5203.5
3/16/1994	1994	3	16	288	24	74	49	17	5220.5
3/17/1994	1994	3	17	289	33	76	54.5	22.5	5243
3/18/1994	1994	3	18	290	28	71	49.5	17.5	5260.5
3/19/1994	1994	3	19	291	32	71	51.5	19.5	5280
3/20/1994	1994	3	20	292	37	61	49	17	5297
3/21/1994	1994	3	21	293	21	57	39	7	5304
3/22/1994	1994	3	22	294	24	69	46.5	14.5	5318.5
3/23/1994	1994	3	23	295	43	68	55.5	23.5	5342
3/24/1994	1994	3	24	296	28	65	46.5	14.5	5356.5
3/25/1994	1994	3	25	297	25	65	45	13	5369.5
3/26/1994	1994	3	26	298	27	66	46.5	14.5	5384
3/27/1994	1994	3	27	299	25	55	40	8	5392
3/28/1994	1994	3	28	300	7	53	30	-2	5390
3/29/1994	1994	3	29	301	16	62	39	7	5397
3/30/1994	1994	3	30	302	30	67	48.5	16.5	5413.5
3/31/1994	1994	3	31	303	20	61	40.5	8.5	5422
4/1/1994	1994	4	1	304	23	69	46	14	5436
4/2/1994	1994	4	2	305	25	72	48.5	16.5	5452.5
4/3/1994	1994	4	3	306	28	65	46.5	14.5	5467
4/4/1994	1994	4	4	307	43	75	59	27	5494

4/5/1994	1994	4	5	308	27	66	46.5	14.5	5508.5
4/6/1994	1994	4	6	309	16	52	34	2	5510.5
4/7/1994	1994	4	7	310	26	67	46.5	14.5	5525
4/8/1994	1994	4	8	311	36	67	51.5	19.5	5544.5
4/9/1994	1994	4	9	312	36	57	46.5	14.5	5559
4/10/1994	1994	4	10	313	26	60	43	11	5570
4/11/1994	1994	4	11	314	27	60	43.5	11.5	5581.5
4/12/1994	1994	4	12	315	22	54	38	6	5587.5
4/13/1994	1994	4	13	316	25	66	45.5	13.5	5601
4/14/1994	1994	4	14	317	35	74	54.5	22.5	5623.5
4/15/1994	1994	4	15	318	33	74	53.5	21.5	5645
4/16/1994	1994	4	16	319	25	77	51	19	5664
4/17/1994	1994	4	17	320	36	81	58.5	26.5	5690.5
4/18/1994	1994	4	18	321	37	80	58.5	26.5	5717
4/19/1994	1994	4	19	322	45	83	64	32	5749
4/20/1994	1994	4	20	323	41	79	60	28	5777
4/21/1994	1994	4	21	324	33	78	55.5	23.5	5800.5
4/22/1994	1994	4	22	325	44	80	62	30	5830.5
4/23/1994	1994	4	23	326	42	77	59.5	27.5	5858
4/24/1994	1994	4	24	327	40	79	59.5	27.5	5885.5
4/25/1994	1994	4	25	328	29	75	52	20	5905.5
4/26/1994	1994	4	26	329	35	54	44.5	12.5	5918
4/27/1994	1994	4	27	330	31	61	46	14	5932
4/28/1994	1994	4	28	331	25	57	41	9	5941
4/29/1994	1994	4	29	332	28	77	52.5	20.5	5961.5
4/30/1994	1994	4	30	333	25	59	42	10	5971.5
5/1/1994	1994	5	1	334	37	73	55	23	5994.5
5/2/1994	1994	5	2	335	30	72	51	19	6013.5
5/3/1994	1994	5	3	336	42	70	56	24	6037.5
5/4/1994	1994	5	4	337	32	75	53.5	21.5	6059
5/5/1994	1994	5	5	338	39	82	60.5	28.5	6087.5
5/6/1994	1994	5	6	339	33	86	59.5	27.5	6115
5/7/1994	1994	5	7	340	31	84	57.5	25.5	6140.5
5/8/1994	1994	5	8	341	28	84	56	24	6164.5
5/9/1994	1994	5	9	342	30	82	56	24	6188.5
5/10/1994	1994	5	10	343	36	73	54.5	22.5	6211
5/11/1994	1994	5	11	344	38	68	53	21	6232
5/12/1994	1994	5	12	345	36	69	52.5	20.5	6252.5
5/13/1994	1994	5	13	346	39	66	52.5	20.5	6273
5/14/1994	1994	5	14	347	42	73	57.5	25.5	6298.5
5/15/1994	1994	5	15	348	40	80	60	28	6326.5
5/16/1994	1994	5	16	349	41	82	61.5	29.5	6356
5/17/1994	1994	5	17	350	44	83	63.5	31.5	6387.5
5/18/1994	1994	5	18	351	45	85	65	33	6420.5
5/19/1994	1994	5	19	352	40	85	62.5	30.5	6451
5/20/1994	1994	5	20	353	35	85	60	28	6479
5/21/1994	1994	5	21	354	31	80	55.5	23.5	6502.5
5/22/1994	1994	5	22	355	37	87	62	30	6532.5
5/23/1994	1994	5	23	356	40	87	63.5	31.5	6564
5/24/1994	1994	5	24	357	47	80	63.5	31.5	6595.5
5/25/1994	1994	5	25	358	47	77	62	30	6625.5
5/26/1994	1994	5	26	359	45	69	57	25	6650.5
5/27/1994	1994	5	27	360	44	63	53.5	21.5	6672
5/28/1994	1994	5	28	361	43	75	59	27	6699
5/29/1994	1994	5	29	362	46	83	64.5	32.5	6731.5
5/30/1994	1994	5	30	363	43	82	62.5	30.5	6762
5/31/1994	1994	5	31	364	46	91	68.5	36.5	6798.5
6/1/1994	1994	6	1	1	46	91	68.5	36.5	36.5
6/2/1994	1994	6	2	2	44	90	67	35	71.5
6/3/1994	1994	6	3	3	58	89	73.5	41.5	113
6/4/1994	1994	6	4	4	48	86	67	35	148
6/5/1994	1994	6	5	5	44	87	65.5	33.5	181.5
6/6/1994	1994	6	6	6	39	89	64	32	213.5
6/7/1994	1994	6	7	7	47	92	69.5	37.5	251
6/8/1994	1994	6	8	8	50	86	68	36	287
6/9/1994	1994	6	9	9	42	88	65	33	320
6/10/1994	1994	6	10	10	43	93	68	36	356
6/11/1994	1994	6	11	11	45	93	69	37	393
6/12/1994	1994	6	12	12	50	94	72	40	433
6/13/1994	1994	6	13	13	55	93	74	42	475
6/14/1994	1994	6	14	14	51	93	72	40	515
6/15/1994	1994	6	15	15	57	93	75	43	558
6/16/1994	1994	6	16	16	42	90	66	34	592
6/17/1994	1994	6	17	17	50	91	70.5	38.5	630.5
6/18/1994	1994	6	18	18	51	92	71.5	39.5	670
6/19/1994	1994	6	19	19	56	89	72.5	40.5	710.5
6/20/1994	1994	6	20	20	51	87	69	37	747.5
6/21/1994	1994	6	21	21	56	90	73	41	788.5
6/22/1994	1994	6	22	22	52	87	69.5	37.5	826
6/23/1994	1994	6	23	23	49	88	68.5	36.5	862.5
6/24/1994	1994	6	24	24	47	93	70	38	900.5
6/25/1994	1994	6	25	25	48	99	73.5	41.5	942
6/26/1994	1994	6	26	26	56	101	78.5	46.5	988.5
6/27/1994	1994	6	27	27	58	101	79.5	47.5	1036
6/28/1994	1994	6	28	28	54	100	77	45	1081
6/29/1994	1994	6	29	29	56	99	77.5	45.5	1126.5
6/30/1994	1994	6	30	30	49	98	73.5	41.5	1168
7/1/1994	1994	7	1	31	49	98	73.5	41.5	1209.5
7/2/1994	1994	7	2	32	60	97	78.5	46.5	1256
7/3/1994	1994	7	3	33	59	96	77.5	45.5	1301.5
7/4/1994	1994	7	4	34	53	96	74.5	42.5	1344
7/5/1994	1994	7	5	35	54	94	74	42	1386
7/6/1994	1994	7	6	36	53	93	73	41	1427

7/7/1994	1994	7	7	37	50	91	70.5	38.5	1465.5
7/8/1994	1994	7	8	38	55	91	73	41	1506.5
7/9/1994	1994	7	9	39	54	89	71.5	39.5	1546
7/10/1994	1994	7	10	40	58	96	77	45	1591
7/11/1994	1994	7	11	41	58	98	78	46	1637
7/12/1994	1994	7	12	42	58	98	78	46	1683
7/13/1994	1994	7	13	43	58	98	78	46	1729
7/14/1994	1994	7	14	44	62	96	79	47	1776
7/15/1994	1994	7	15	45	59	95	77	45	1821
7/16/1994	1994	7	16	46	56	97	76.5	44.5	1865.5
7/17/1994	1994	7	17	47	63	99	81	49	1914.5
7/18/1994	1994	7	18	48	58	87	72.5	40.5	1955
7/19/1994	1994	7	19	49	54	89	71.5	39.5	1994.5
7/20/1994	1994	7	20	50	52	93	72.5	40.5	2035
7/21/1994	1994	7	21	51	51	88	69.5	37.5	2072.5
7/22/1994	1994	7	22	52	49	88	68.5	36.5	2109
7/23/1994	1994	7	23	53	50	90	70	38	2147
7/24/1994	1994	7	24	54	45	90	67.5	35.5	2182.5
7/25/1994	1994	7	25	55	44	90	67	35	2217.5
7/26/1994	1994	7	26	56	50	91	70.5	38.5	2256
7/27/1994	1994	7	27	57	57	90	73.5	41.5	2297.5
7/28/1994	1994	7	28	58	53	92	72.5	40.5	2338
7/29/1994	1994	7	29	59	57	88	72.5	40.5	2378.5
7/30/1994	1994	7	30	60	47	92	69.5	37.5	2416
7/31/1994	1994	7	31	61	59	91	75	43	2459
8/1/1994	1994	8	1	62	59	90	74.5	42.5	2501.5
8/2/1994	1994	8	2	63	58	91	74.5	42.5	2544
8/3/1994	1994	8	3	64	52	94	73	41	2585
8/4/1994	1994	8	4	65	55	96	75.5	43.5	2628.5
8/5/1994	1994	8	5	66	52	92	72	40	2668.5
8/6/1994	1994	8	6	67	56	89	72.5	40.5	2709
8/7/1994	1994	8	7	68	56	93	74.5	42.5	2751.5
8/8/1994	1994	8	8	69	58	98	78	46	2797.5
8/9/1994	1994	8	9	70	59	89	74	42	2839.5
8/10/1994	1994	8	10	71	59	86	72.5	40.5	2880
8/11/1994	1994	8	11	72	60	87	73.5	41.5	2921.5
8/12/1994	1994	8	12	73	58	89	73.5	41.5	2963
8/13/1994	1994	8	13	74	59	93	76	44	3007
8/14/1994	1994	8	14	75	62	97	79.5	47.5	3054.5
8/15/1994	1994	8	15	76	55	89	72	40	3094.5
8/16/1994	1994	8	16	77	45	83	64	32	3126.5
8/17/1994	1994	8	17	78	57	91	74	42	3168.5
8/18/1994	1994	8	18	79	57	96	76.5	44.5	3213
8/19/1994	1994	8	19	80	58	94	76	44	3257
8/20/1994	1994	8	20	81	48	86	67	35	3292
8/21/1994	1994	8	21	82	54	80	67	35	3327
8/22/1994	1994	8	22	83	55	82	68.5	36.5	3363.5
8/23/1994	1994	8	23	84	51	85	68	36	3399.5
8/24/1994	1994	8	24	85	53	91	72	40	3439.5
8/25/1994	1994	8	25	86	59	87	73	41	3480.5
8/26/1994	1994	8	26	87	56	86	71	39	3519.5
8/27/1994	1994	8	27	88	55	89	72	40	3559.5
8/28/1994	1994	8	28	89	49	92	70.5	38.5	3598
8/29/1994	1994	8	29	90	57	88	72.5	40.5	3638.5
8/30/1994	1994	8	30	91	45	85	65	33	3671.5
8/31/1994	1994	8	31	92	44	84	64	32	3703.5
9/1/1994	1994	9	1	93	45	85	65	33	3736.5
9/2/1994	1994	9	2	94	55	83	69	37	3773.5
9/3/1994	1994	9	3	95	59	84	71.5	39.5	3813
9/4/1994	1994	9	4	96	53	63	58	26	3839
9/5/1994	1994	9	5	97	50	82	66	34	3873
9/6/1994	1994	9	6	98	53	87	70	38	3911
9/7/1994	1994	9	7	99	52	82	67	35	3946
9/8/1994	1994	9	8	100	47	86	66.5	34.5	3980.5
9/9/1994	1994	9	9	101	49	88	68.5	36.5	4017
9/10/1994	1994	9	10	102	50	89	69.5	37.5	4054.5
9/11/1994	1994	9	11	103	56	85	70.5	38.5	4093
9/12/1994	1994	9	12	104	53	85	69	37	4130
9/13/1994	1994	9	13	105	55	81	68	36	4166
9/14/1994	1994	9	14	106	51	75	63	31	4197
9/15/1994	1994	9	15	107	37	76	56.5	24.5	4221.5
9/16/1994	1994	9	16	108	38	76	57	25	4246.5
9/17/1994	1994	9	17	109	49	76	62.5	30.5	4277
9/18/1994	1994	9	18	110	43	76	59.5	27.5	4304.5
9/19/1994	1994	9	19	111	42	77	59.5	27.5	4332
9/20/1994	1994	9	20	112	52	81	66.5	34.5	4366.5
9/21/1994	1994	9	21	113	44	76	60	28	4394.5
9/22/1994	1994	9	22	114	39	76	57.5	25.5	4420
9/23/1994	1994	9	23	115	35	80	57.5	25.5	4445.5
9/24/1994	1994	9	24	116	36	80	58	26	4471.5
9/25/1994	1994	9	25	117	35	83	59	27	4498.5
9/26/1994	1994	9	26	118	37	83	60	28	4526.5
9/27/1994	1994	9	27	119	36	82	59	27	4553.5
9/28/1994	1994	9	28	120	36	86	61	29	4582.5
9/29/1994	1994	9	29	121	50	85	67.5	35.5	4618
9/30/1994	1994	9	30	122	50	85	67.5	35.5	4653.5
10/1/1994	1994	10	1	123	53	79	66	34	4687.5
10/2/1994	1994	10	2	124	36	76	56	24	4711.5
10/3/1994	1994	10	3	125	35	76	55.5	23.5	4735
10/4/1994	1994	10	4	126	50	72	61	29	4764
10/5/1994	1994	10	5	127	54	75	64.5	32.5	4796.5
10/6/1994	1994	10	6	128	39	70	54.5	22.5	4819
10/7/1994	1994	10	7	129	38	65	51.5	19.5	4838.5

10/8/1994	1994	10	8	130	28	67	47.5	15.5	4854
10/9/1994	1994	10	9	131	22	68	45	13	4867
10/10/1994	1994	10	10	132	28	71	49.5	17.5	4884.5
10/11/1994	1994	10	11	133	29	74	51.5	19.5	4904
10/12/1994	1994	10	12	134	29	74	51.5	19.5	4923.5
10/13/1994	1994	10	13	135	32	75	53.5	21.5	4945
10/14/1994	1994	10	14	136	46	72	59	27	4972
10/15/1994	1994	10	15	137	35	46	40.5	8.5	4980.5
10/16/1994	1994	10	16	138	33	55	44	12	4992.5
10/17/1994	1994	10	17	139	33	45	39	7	4999.5
10/18/1994	1994	10	18	140	26	53	39.5	7.5	5007
10/19/1994	1994	10	19	141	31	62	46.5	14.5	5021.5
10/20/1994	1994	10	20	142	30	66	48	16	5037.5
10/21/1994	1994	10	21	143	30	70	50	18	5055.5
10/22/1994	1994	10	22	144	34	71	52.5	20.5	5076
10/23/1994	1994	10	23	145	30	70	50	18	5094
10/24/1994	1994	10	24	146	34	71	52.5	20.5	5114.5
10/25/1994	1994	10	25	147	33	69	51	19	5133.5
10/26/1994	1994	10	26	148	40	62	51	19	5152.5
10/27/1994	1994	10	27	149	30	63	46.5	14.5	5167
10/28/1994	1994	10	28	150	34	70	52	20	5187
10/29/1994	1994	10	29	151	32	77	54.5	22.5	5209.5
10/30/1994	1994	10	30	152	34	74	54	22	5231.5
10/31/1994	1994	10	31	153	21	74	47.5	15.5	5247
11/1/1994	1994	11	1	154	25	70	47.5	15.5	5262.5
11/2/1994	1994	11	2	155	40	72	56	24	5286.5
11/3/1994	1994	11	3	156	39	67	53	21	5307.5
11/4/1994	1994	11	4	157	26	50	38	6	5313.5
11/5/1994	1994	11	5	158	25	49	37	5	5318.5
11/6/1994	1994	11	6	159	28	62	45	13	5331.5
11/7/1994	1994	11	7	160	35	68	51.5	19.5	5351
11/8/1994	1994	11	8	161	37	66	51.5	19.5	5370.5
11/9/1994	1994	11	9	162	22	58	40	8	5378.5
11/10/1994	1994	11	10	163	36	60	48	16	5394.5
11/11/1994	1994	11	11	164	36	61	48.5	16.5	5411
11/12/1994	1994	11	12	165	41	43	42	10	5421
11/13/1994	1994	11	13	166	32	53	42.5	10.5	5431.5
11/14/1994	1994	11	14	167	22	47	34.5	2.5	5434
11/15/1994	1994	11	15	168	15	44	29.5	-2.5	5431.5
11/16/1994	1994	11	16	169	33	47	40	8	5439.5
11/17/1994	1994	11	17	170	28	54	41	9	5448.5
11/18/1994	1994	11	18	171	25	44	34.5	2.5	5451
11/19/1994	1994	11	19	172	27	58	42.5	10.5	5461.5
11/20/1994	1994	11	20	173	20	42	31	-1	5460.5
11/21/1994	1994	11	21	174	16	45	30.5	-1.5	5459
11/22/1994	1994	11	22	175	20	59	39.5	7.5	5466.5
11/23/1994	1994	11	23	176	17	47	32	0	5466.5
11/24/1994	1994	11	24	177	19	44	31.5	-0.5	5466
11/25/1994	1994	11	25	178	28	64	46	14	5480
11/26/1994	1994	11	26	179	28	57	42.5	10.5	5490.5
11/27/1994	1994	11	27	180	15	55	35	3	5493.5
11/28/1994	1994	11	28	181	8	35	21.5	-10.5	5483
11/29/1994	1994	11	29	182	11	37	24	-8	5475
11/30/1994	1994	11	30	183	13	37	25	-7	5468
12/1/1994	1994	12	1	184	13	50	31.5	-0.5	5467.5
12/2/1994	1994	12	2	185	15	62	38.5	6.5	5474
12/3/1994	1994	12	3	186	15	63	39	7	5481
12/4/1994	1994	12	4	187	18	60	39	7	5488
12/5/1994	1994	12	5	188	33	58	45.5	13.5	5501.5
12/6/1994	1994	12	6	189	38	45	41.5	9.5	5511
12/7/1994	1994	12	7	190	23	55	39	7	5518
12/8/1994	1994	12	8	191	29	56	42.5	10.5	5528.5
12/9/1994	1994	12	9	192	9	48	28.5	-3.5	5525
12/10/1994	1994	12	10	193	8	58	33	1	5526
12/11/1994	1994	12	11	194	22	44	33	1	5527
12/12/1994	1994	12	12	195	16	50	33	1	5528
12/13/1994	1994	12	13	196	15	50	32.5	0.5	5528.5
12/14/1994	1994	12	14	197	23	53	38	6	5534.5
12/15/1994	1994	12	15	198	12	47	29.5	-2.5	5532
12/16/1994	1994	12	16	199	11	49	30	-2	5530
12/17/1994	1994	12	17	200	13	50	31.5	-0.5	5529.5
12/18/1994	1994	12	18	201	12	58	35	3	5532.5
12/19/1994	1994	12	19	202	14	58	36	4	5536.5
12/20/1994	1994	12	20	203	14	58	36	4	5540.5
12/21/1994	1994	12	21	204	14	53	33.5	1.5	5542
12/22/1994	1994	12	22	205	14	60	37	5	5547
12/23/1994	1994	12	23	206	37	60	48.5	16.5	5563.5
12/24/1994	1994	12	24	207	34	60	47	15	5578.5
12/25/1994	1994	12	25	208	24	60	42	10	5588.5
12/26/1994	1994	12	26	209	25	51	38	6	5594.5
12/27/1994	1994	12	27	210	20	56	38	6	5600.5
12/28/1994	1994	12	28	211	15	54	34.5	2.5	5603
12/29/1994	1994	12	29	212	15	58	36.5	4.5	5607.5
12/30/1994	1994	12	30	213	20	52	36	4	5611.5
12/31/1994	1994	12	31	214	19	39	29	-3	5608.5
1/1/1995	1995	1	1	215	14	53	33.5	1.5	5610
1/2/1995	1995	1	2	216	25	46	35.5	3.5	5613.5
1/3/1995	1995	1	3	217	16	48	32	0	5613.5
1/4/1995	1995	1	4	218	28	48	38	6	5619.5
1/5/1995	1995	1	5	219	26	38	32	0	5619.5
1/6/1995	1995	1	6	220	29	42	35.5	3.5	5623
1/7/1995	1995	1	7	221	11	40	25.5	-6.5	5616.5
1/8/1995	1995	1	8	222	31	47	39	7	5623.5

1/9/1995	1995	1	9	223	21	54	37.5	5.5	5629
1/10/1995	1995	1	10	224	19	53	36	4	5633
1/11/1995	1995	1	11	225	21	61	41	9	5642
1/12/1995	1995	1	12	226	34	54	44	12	5654
1/13/1995	1995	1	13	227	26	52	39	7	5661
1/14/1995	1995	1	14	228	21	49	35	3	5664
1/15/1995	1995	1	15	229	27	64	45.5	13.5	5677.5
1/16/1995	1995	1	16	230	27	58	42.5	10.5	5688
1/17/1995	1995	1	17	231	21	40	30.5	-1.5	5686.5
1/18/1995	1995	1	18	232	9	38	23.5	-8.5	5678
1/19/1995	1995	1	19	233	11	42	26.5	-5.5	5672.5
1/20/1995	1995	1	20	234	16	50	33	1	5673.5
1/21/1995	1995	1	21	235	24	51	37.5	5.5	5679
1/22/1995	1995	1	22	236	20	48	34	2	5681
1/23/1995	1995	1	23	237	12	43	27.5	-4.5	5676.5
1/24/1995	1995	1	24	238	27	49	38	6	5682.5
1/25/1995	1995	1	25	239	22	53	37.5	5.5	5688
1/26/1995	1995	1	26	240	24	55	39.5	7.5	5695.5
1/27/1995	1995	1	27	241	32	46	39	7	5702.5
1/28/1995	1995	1	28	242	17	48	32.5	0.5	5703
1/29/1995	1995	1	29	243	15	48	31.5	-0.5	5702.5
1/30/1995	1995	1	30	244	10	40	25	-7	5695.5
1/31/1995	1995	1	31	245	16	48	32	0	5695.5
2/1/1995	1995	2	1	246	25	61	43	11	5706.5
2/2/1995	1995	2	2	247	22	61	41.5	9.5	5716
2/3/1995	1995	2	3	248	25	64	44.5	12.5	5728.5
2/4/1995	1995	2	4	249	26	62	44	12	5740.5
2/5/1995	1995	2	5	250	13	67	40	8	5748.5
2/6/1995	1995	2	6	251	12	67	39.5	7.5	5756
2/7/1995	1995	2	7	252	16	67	41.5	9.5	5765.5
2/8/1995	1995	2	8	253	30	64	47	15	5780.5
2/9/1995	1995	2	9	254	26	57	41.5	9.5	5790
2/10/1995	1995	2	10	255	20	59	39.5	7.5	5797.5
2/11/1995	1995	2	11	256	27	55	41	9	5806.5
2/12/1995	1995	2	12	257	35	53	44	12	5818.5
2/13/1995	1995	2	13	258	28	58	43	11	5829.5
2/14/1995	1995	2	14	259	33	56	44.5	12.5	5842
2/15/1995	1995	2	15	260	35	59	47	15	5857
2/16/1995	1995	2	16	261	26	54	40	8	5865
2/17/1995	1995	2	17	262	18	55	36.5	4.5	5869.5
2/18/1995	1995	2	18	263	18	59	38.5	6.5	5876
2/19/1995	1995	2	19	264	19	62	40.5	8.5	5884.5
2/20/1995	1995	2	20	265	22	68	45	13	5897.5
2/21/1995	1995	2	21	266	24	69	46.5	14.5	5912
2/22/1995	1995	2	22	267	27	68	47.5	15.5	5927.5
2/23/1995	1995	2	23	268	27	68	47.5	15.5	5943
2/24/1995	1995	2	24	269	37	65	51	19	5962
2/25/1995	1995	2	25	270	32	60	46	14	5976
2/26/1995	1995	2	26	271	33	60	46.5	14.5	5990.5
2/27/1995	1995	2	27	272	27	57	42	10	6000.5
2/28/1995	1995	2	28	273	35	64	49.5	17.5	6018
3/1/1995	1995	3	1	274	37	59	48	16	6034
3/2/1995	1995	3	2	275	33	53	43	11	6045
3/3/1995	1995	3	3	276	37	57	47	15	6060
3/4/1995	1995	3	4	277	41	58	49.5	17.5	6077.5
3/5/1995	1995	3	5	278	38	58	48	16	6093.5
3/6/1995	1995	3	6	279	42	56	49	17	6110.5
3/7/1995	1995	3	7	280	17	54	35.5	3.5	6114
3/8/1995	1995	3	8	281	14	52	33	1	6115
3/9/1995	1995	3	9	282	28	62	45	13	6128
3/10/1995	1995	3	10	283	21	69	45	13	6141
3/11/1995	1995	3	11	284	28	73	50.5	18.5	6159.5
3/12/1995	1995	3	12	285	31	69	50	18	6177.5
3/13/1995	1995	3	13	286	24	56	40	8	6185.5
3/14/1995	1995	3	14	287	23	64	43.5	11.5	6197
3/15/1995	1995	3	15	288	31	71	51	19	6216
3/16/1995	1995	3	16	289	27	69	48	16	6232
3/17/1995	1995	3	17	290	40	70	55	23	6255
3/18/1995	1995	3	18	291	24	62	43	11	6266
3/19/1995	1995	3	19	292	34	72	53	21	6287
3/20/1995	1995	3	20	293	33	77	55	23	6310
3/21/1995	1995	3	21	294	38	71	54.5	22.5	6332.5
3/22/1995	1995	3	22	295	42	77	59.5	27.5	6360
3/23/1995	1995	3	23	296	22	62	42	10	6370
3/24/1995	1995	3	24	297	33	72	52.5	20.5	6390.5
3/25/1995	1995	3	25	298	27	63	45	13	6403.5
3/26/1995	1995	3	26	299	16	45	30.5	-1.5	6402
3/27/1995	1995	3	27	300	13	54	33.5	1.5	6403.5
3/28/1995	1995	3	28	301	20	59	39.5	7.5	6411
3/29/1995	1995	3	29	302	24	52	38	6	6417
3/30/1995	1995	3	30	303	16	56	36	4	6421
3/31/1995	1995	3	31	304	14	53	33.5	1.5	6422.5
4/1/1995	1995	4	1	305	15	62	38.5	6.5	6429
4/2/1995	1995	4	2	306	31	64	47.5	15.5	6444.5
4/3/1995	1995	4	3	307	25	60	42.5	10.5	6455
4/4/1995	1995	4	4	308	22	64	43	11	6466
4/5/1995	1995	4	5	309	24	69	46.5	14.5	6480.5
4/6/1995	1995	4	6	310	33	75	54	22	6502.5
4/7/1995	1995	4	7	311	35	76	55.5	23.5	6526
4/8/1995	1995	4	8	312	32	73	52.5	20.5	6546.5
4/9/1995	1995	4	9	313	44	74	59	27	6573.5
4/10/1995	1995	4	10	314	28	63	45.5	13.5	6587
4/11/1995	1995	4	11	315	20	51	35.5	3.5	6590.5

4/12/1995	1995	4	12	316	22	62	42	10	6600.5
4/13/1995	1995	4	13	317	33	74	53.5	21.5	6622
4/14/1995	1995	4	14	318	47	78	62.5	30.5	6652.5
4/15/1995	1995	4	15	319	37	70	53.5	21.5	6674
4/16/1995	1995	4	16	320	32	69	50.5	18.5	6692.5
4/17/1995	1995	4	17	321	30	72	51	19	6711.5
4/18/1995	1995	4	18	322	23	47	35	3	6714.5
4/19/1995	1995	4	19	323	32	62	47	15	6729.5
4/20/1995	1995	4	20	324	29	51	40	8	6737.5
4/21/1995	1995	4	21	325	33	54	43.5	11.5	6749
4/22/1995	1995	4	22	326	24	56	40	8	6757
4/23/1995	1995	4	23	327	28	52	40	8	6765
4/24/1995	1995	4	24	328	25	63	44	12	6777
4/25/1995	1995	4	25	329	21	63	42	10	6787
4/26/1995	1995	4	26	330	40	74	57	25	6812
4/27/1995	1995	4	27	331	40	75	57.5	25.5	6837.5
4/28/1995	1995	4	28	332	39	75	57	25	6862.5
4/29/1995	1995	4	29	333	41	76	58.5	26.5	6889
4/30/1995	1995	4	30	334	51	80	65.5	33.5	6922.5
5/1/1995	1995	5	1	335	40	76	58	26	6948.5
5/2/1995	1995	5	2	336	47	73	60	28	6976.5
5/3/1995	1995	5	3	337	36	73	54.5	22.5	6999
5/4/1995	1995	5	4	338	31	72	51.5	19.5	7018.5
5/5/1995	1995	5	5	339	48	78	63	31	7049.5
5/6/1995	1995	5	6	340	30	73	51.5	19.5	7069
5/7/1995	1995	5	7	341	32	65	48.5	16.5	7085.5
5/8/1995	1995	5	8	342	32	48	40	8	7093.5
5/9/1995	1995	5	9	343	37	63	50	18	7111.5
5/10/1995	1995	5	10	344	31	74	52.5	20.5	7132
5/11/1995	1995	5	11	345	32	71	51.5	19.5	7151.5
5/12/1995	1995	5	12	346	48	78	63	31	7182.5
5/13/1995	1995	5	13	347	45	75	60	28	7210.5
5/14/1995	1995	5	14	348	41	76	58.5	26.5	7237
5/15/1995	1995	5	15	349	34	84	59	27	7264
5/16/1995	1995	5	16	350	46	87	66.5	34.5	7298.5
5/17/1995	1995	5	17	351	37	81	59	27	7325.5
5/18/1995	1995	5	18	352	36	60	48	16	7341.5
5/19/1995	1995	5	19	353	34	74	54	22	7363.5
5/20/1995	1995	5	20	354	42	81	61.5	29.5	7393
5/21/1995	1995	5	21	355	43	82	62.5	30.5	7423.5
5/22/1995	1995	5	22	356	46	84	65	33	7456.5
5/23/1995	1995	5	23	357	34	85	59.5	27.5	7484
5/24/1995	1995	5	24	358	44	74	59	27	7511
5/25/1995	1995	5	25	359	35	73	54	22	7533
5/26/1995	1995	5	26	360	32	79	55.5	23.5	7556.5
5/27/1995	1995	5	27	361	39	79	59	27	7583.5
5/28/1995	1995	5	28	362	45	75	60	28	7611.5
5/29/1995	1995	5	29	363	40	69	54.5	22.5	7634
5/30/1995	1995	5	30	364	35	68	51.5	19.5	7653.5
5/31/1995	1995	5	31	365	35	75	55	23	7676.5
6/1/1995	1995	6	1	1	38	80	59	27	27
6/2/1995	1995	6	2	2	46	85	65.5	33.5	60.5
6/3/1995	1995	6	3	3	36	85	60.5	28.5	89
6/4/1995	1995	6	4	4	40	76	58	26	115
6/5/1995	1995	6	5	5	39	79	59	27	142
6/6/1995	1995	6	6	6	43	85	64	32	174
6/7/1995	1995	6	7	7	46	85	65.5	33.5	207.5
6/8/1995	1995	6	8	8	46	82	64	32	239.5
6/9/1995	1995	6	9	9	34	81	57.5	25.5	265
6/10/1995	1995	6	10	10	38	82	60	28	293
6/11/1995	1995	6	11	11	39	80	59.5	27.5	320.5
6/12/1995	1995	6	12	12	43	86	64.5	32.5	353
6/13/1995	1995	6	13	13	45	91	68	36	389
6/14/1995	1995	6	14	14	49	94	71.5	39.5	428.5
6/15/1995	1995	6	15	15	51	90	70.5	38.5	467
6/16/1995	1995	6	16	16	46	84	65	33	500
6/17/1995	1995	6	17	17	60	85	72.5	40.5	540.5
6/18/1995	1995	6	18	18	37	84	60.5	28.5	569
6/19/1995	1995	6	19	19	42	89	65.5	33.5	602.5
6/20/1995	1995	6	20	20	43	92	67.5	35.5	638
6/21/1995	1995	6	21	21	45	92	68.5	36.5	674.5
6/22/1995	1995	6	22	22	42	91	66.5	34.5	709
6/23/1995	1995	6	23	23	44	88	66	34	743
6/24/1995	1995	6	24	24	44	91	67.5	35.5	778.5
6/25/1995	1995	6	25	25	45	89	67	35	813.5
6/26/1995	1995	6	26	26	46	88	67	35	848.5
6/27/1995	1995	6	27	27	46	84	65	33	881.5
6/28/1995	1995	6	28	28	46	86	66	34	915.5
6/29/1995	1995	6	29	29	47	86	66.5	34.5	950
6/30/1995	1995	6	30	30	50	90	70	38	988
7/1/1995	1995	7	1	31	50	75	62.5	30.5	1018.5
7/2/1995	1995	7	2	32	42	85	63.5	31.5	1050
7/3/1995	1995	7	3	33	59	84	71.5	39.5	1089.5
7/4/1995	1995	7	4	34	49	86	67.5	35.5	1125
7/5/1995	1995	7	5	35	40	83	61.5	29.5	1154.5
7/6/1995	1995	7	6	36	42	87	64.5	32.5	1187
7/7/1995	1995	7	7	37	56	95	75.5	43.5	1230.5
7/8/1995	1995	7	8	38	53	96	74.5	42.5	1273
7/9/1995	1995	7	9	39		99	99	67	1340
7/10/1995	1995	7	10	40	53	95	74	42	1382
7/11/1995	1995	7	11	41	57	98	77.5	45.5	1427.5
7/12/1995	1995	7	12	42	56	95	75.5	43.5	1471
7/13/1995	1995	7	13	43	55	96	75.5	43.5	1514.5

7/14/1995	1995	7	14	44	59	92	75.5	43.5	1558
7/15/1995	1995	7	15	45	48	78	63	31	1589
7/16/1995	1995	7	16	46	48	88	68	36	1625
7/17/1995	1995	7	17	47	59	84	71.5	39.5	1664.5
7/18/1995	1995	7	18	48	57	78	67.5	35.5	1700
7/19/1995	1995	7	19	49	57	80	68.5	36.5	1736.5
7/20/1995	1995	7	20	50	50	87	68.5	36.5	1773
7/21/1995	1995	7	21	51	62	92	77	45	1818
7/22/1995	1995	7	22	52	62	87	74.5	42.5	1860.5
7/23/1995	1995	7	23	53	51	94	72.5	40.5	1901
7/24/1995	1995	7	24	54	46	91	68.5	36.5	1937.5
7/25/1995	1995	7	25	55	46	94	70	38	1975.5
7/26/1995	1995	7	26	56	46	97	71.5	39.5	2015
7/27/1995	1995	7	27	57	47	99	73	41	2056
7/28/1995	1995	7	28	58	52	102	77	45	2101
7/29/1995	1995	7	29	59	54	102	78	46	2147
7/30/1995	1995	7	30	60	54	99	76.5	44.5	2191.5
7/31/1995	1995	7	31	61	55	94	74.5	42.5	2234
8/1/1995	1995	8	1	62	58	98	78	46	2280
8/2/1995	1995	8	2	63	57	94	75.5	43.5	2323.5
8/3/1995	1995	8	3	64	56	92	74	42	2365.5
8/4/1995	1995	8	4	65	68	98	83	51	2416.5
8/5/1995	1995	8	5	66	52	96	74	42	2458.5
8/6/1995	1995	8	6	67	57	95	76	44	2502.5
8/7/1995	1995	8	7	68	62	96	79	47	2549.5
8/8/1995	1995	8	8	69	55	97	76	44	2593.5
8/9/1995	1995	8	9	70	60	94	77	45	2638.5
8/10/1995	1995	8	10	71	60	94	77	45	2683.5
8/11/1995	1995	8	11	72	59	92	75.5	43.5	2727
8/12/1995	1995	8	12	73	58	95	76.5	44.5	2771.5
8/13/1995	1995	8	13	74	56	90	73	41	2812.5
8/14/1995	1995	8	14	75	57	90	73.5	41.5	2854
8/15/1995	1995	8	15	76	54	78	66	34	2888
8/16/1995	1995	8	16	77	63	90	76.5	44.5	2932.5
8/17/1995	1995	8	17	78	58	89	73.5	41.5	2974
8/18/1995	1995	8	18	79	56	87	71.5	39.5	3013.5
8/19/1995	1995	8	19	80	56	87	71.5	39.5	3053
8/20/1995	1995	8	20	81	56	85	70.5	38.5	3091.5
8/21/1995	1995	8	21	82	57	85	71	39	3130.5
8/22/1995	1995	8	22	83	53	85	69	37	3167.5
8/23/1995	1995	8	23	84	53	84	68.5	36.5	3204
8/24/1995	1995	8	24	85	56	88	72	40	3244
8/25/1995	1995	8	25	86	56	82	69	37	3281
8/26/1995	1995	8	26	87	57	89	73	41	3322
8/27/1995	1995	8	27	88	58	87	72.5	40.5	3362.5
8/28/1995	1995	8	28	89	58	87	72.5	40.5	3403
8/29/1995	1995	8	29	90	57	89	73	41	3444
8/30/1995	1995	8	30	91	55	90	72.5	40.5	3484.5
8/31/1995	1995	8	31	92	56	94	75	43	3527.5
9/1/1995	1995	9	1	93	54	94	74	42	3569.5
9/2/1995	1995	9	2	94	49	93	71	39	3608.5
9/3/1995	1995	9	3	95	49	93	71	39	3647.5
9/4/1995	1995	9	4	96	50	92	71	39	3686.5
9/5/1995	1995	9	5	97	52	94	73	41	3727.5
9/6/1995	1995	9	6	98	53	87	70	38	3765.5
9/7/1995	1995	9	7	99	54	82	68	36	3801.5
9/8/1995	1995	9	8	100	54	87	70.5	38.5	3840
9/9/1995	1995	9	9	101	50	80	65	33	3873
9/10/1995	1995	9	10	102	46	82	64	32	3905
9/11/1995	1995	9	11	103	45	85	65	33	3938
9/12/1995	1995	9	12	104	39	85	62	30	3968
9/13/1995	1995	9	13	105	45	86	65.5	33.5	4001.5
9/14/1995	1995	9	14	106	49	83	66	34	4035.5
9/15/1995	1995	9	15	107	41	72	56.5	24.5	4060
9/16/1995	1995	9	16	108	47	82	64.5	32.5	4092.5
9/17/1995	1995	9	17	109	45	82	63.5	31.5	4124
9/18/1995	1995	9	18	110	39	80	59.5	27.5	4151.5
9/19/1995	1995	9	19	111	42	80	61	29	4180.5
9/20/1995	1995	9	20	112	44	84	64	32	4212.5
9/21/1995	1995	9	21	113	36	75	55.5	23.5	4236
9/22/1995	1995	9	22	114	37	70	53.5	21.5	4257.5
9/23/1995	1995	9	23	115	45	81	63	31	4288.5
9/24/1995	1995	9	24	116	36	81	58.5	26.5	4315
9/25/1995	1995	9	25	117	40	79	59.5	27.5	4342.5
9/26/1995	1995	9	26	118	41	79	60	28	4370.5
9/27/1995	1995	9	27	119	51	83	67	35	4405.5
9/28/1995	1995	9	28	120	48	83	65.5	33.5	4439
9/29/1995	1995	9	29	121	35	73	54	22	4461
9/30/1995	1995	9	30	122	33	73	53	21	4482
10/1/1995	1995	10	1	123	34	77	55.5	23.5	4505.5
10/2/1995	1995	10	2	124	32	75	53.5	21.5	4527
10/3/1995	1995	10	3	125	45	81	63	31	4558
10/4/1995	1995	10	4	126	28	75	51.5	19.5	4577.5
10/5/1995	1995	10	5	127	21	75	48	16	4593.5
10/6/1995	1995	10	6	128	30	74	52	20	4613.5
10/7/1995	1995	10	7	129	29	79	54	22	4635.5
10/8/1995	1995	10	8	130	26	79	52.5	20.5	4656
10/9/1995	1995	10	9	131	27	78	52.5	20.5	4676.5
10/10/1995	1995	10	10	132	27	79	53	21	4697.5
10/11/1995	1995	10	11	133	33	83	58	26	4723.5
10/12/1995	1995	10	12	134	34	83	58.5	26.5	4750
10/13/1995	1995	10	13	135	25	77	51	19	4769
10/14/1995	1995	10	14	136	25	79	52	20	4789

10/15/1995	1995	10	15	137	31	83	57	25	4814
10/16/1995	1995	10	16	138	32	81	56.5	24.5	4838.5
10/17/1995	1995	10	17	139	29	78	53.5	21.5	4860
10/18/1995	1995	10	18	140	32	81	56.5	24.5	4884.5
10/19/1995	1995	10	19	141	24	77	50.5	18.5	4903
10/20/1995	1995	10	20	142	24	77	50.5	18.5	4921.5
10/21/1995	1995	10	21	143	35	79	57	25	4946.5
10/22/1995	1995	10	22	144	23	68	45.5	13.5	4960
10/23/1995	1995	10	23	145	23	61	42	10	4970
10/24/1995	1995	10	24	146	21	72	46.5	14.5	4984.5
10/25/1995	1995	10	25	147	22	73	47.5	15.5	5000
10/26/1995	1995	10	26	148	23	75	49	17	5017
10/27/1995	1995	10	27	149	26	78	52	20	5037
10/28/1995	1995	10	28	150	30	76	53	21	5058
10/29/1995	1995	10	29	151	28	72	50	18	5076
10/30/1995	1995	10	30	152	28	77	52.5	20.5	5096.5
10/31/1995	1995	10	31	153	44	69	56.5	24.5	5121
11/1/1995	1995	11	1	154	37	58	47.5	15.5	5136.5
11/2/1995	1995	11	2	155	19	60	39.5	7.5	5144
11/3/1995	1995	11	3	156	20	62	41	9	5153
11/4/1995	1995	11	4	157	21	56	38.5	6.5	5159.5
11/5/1995	1995	11	5	158	22	54	38	6	5165.5
11/6/1995	1995	11	6	159	31	56	43.5	11.5	5177
11/7/1995	1995	11	7	160	25	65	45	13	5190
11/8/1995	1995	11	8	161	24	72	48	16	5206
11/9/1995	1995	11	9	162	45	68	56.5	24.5	5230.5
11/10/1995	1995	11	10	163	18	68	43	11	5241.5
11/11/1995	1995	11	11	164	20	64	42	10	5251.5
11/12/1995	1995	11	12	165	24	74	49	17	5268.5
11/13/1995	1995	11	13	166	25	75	50	18	5286.5
11/14/1995	1995	11	14	167	23	67	45	13	5299.5
11/15/1995	1995	11	15	168	23	65	44	12	5311.5
11/16/1995	1995	11	16	169	24	70	47	15	5326.5
11/17/1995	1995	11	17	170	20	68	44	12	5338.5
11/18/1995	1995	11	18	171	20	68	44	12	5350.5
11/19/1995	1995	11	19	172	20	69	44.5	12.5	5363
11/20/1995	1995	11	20	173	20	72	46	14	5377
11/21/1995	1995	11	21	174	20	67	43.5	11.5	5388.5
11/22/1995	1995	11	22	175	19	70	44.5	12.5	5401
11/23/1995	1995	11	23	176	16	70	43	11	5412
11/24/1995	1995	11	24	177	19	70	44.5	12.5	5424.5
11/25/1995	1995	11	25	178	31	73	52	20	5444.5
11/26/1995	1995	11	26	179	16	67	41.5	9.5	5454
11/27/1995	1995	11	27	180	9	45	27	-5	5449
11/28/1995	1995	11	28	181	19	54	36.5	4.5	5453.5
11/29/1995	1995	11	29	182	18	59	38.5	6.5	5460
11/30/1995	1995	11	30	183	16	69	42.5	10.5	5470.5
12/1/1995	1995	12	1	184	17	70	43.5	11.5	5482
12/2/1995	1995	12	2	185	22	66	44	12	5494
12/3/1995	1995	12	3	186	22	66	44	12	5506
12/4/1995	1995	12	4	187	22	68	45	13	5519
12/5/1995	1995	12	5	188	25	65	45	13	5532
12/6/1995	1995	12	6	189	24	68	46	14	5546
12/7/1995	1995	12	7	190	24	57	40.5	8.5	5554.5
12/8/1995	1995	12	8	191	14	52	33	1	5555.5
12/9/1995	1995	12	9	192	15	50	32.5	0.5	5556
12/10/1995	1995	12	10	193	13	60	36.5	4.5	5560.5
12/11/1995	1995	12	11	194	27	68	47.5	15.5	5576
12/12/1995	1995	12	12	195	34	56	45	13	5589
12/13/1995	1995	12	13	196	26	65	45.5	13.5	5602.5
12/14/1995	1995	12	14	197	16	61	38.5	6.5	5609
12/15/1995	1995	12	15	198	29	49	39	7	5616
12/16/1995	1995	12	16	199	21	44	32.5	0.5	5616.5
12/17/1995	1995	12	17	200	20	45	32.5	0.5	5617
12/18/1995	1995	12	18	201	10	45	27.5	-4.5	5612.5
12/19/1995	1995	12	19	202	10	43	26.5	-5.5	5607
12/20/1995	1995	12	20	203	10	42	26	-6	5601
12/21/1995	1995	12	21	204	11	40	25.5	-6.5	5594.5
12/22/1995	1995	12	22	205	8	36	22	-10	5584.5
12/23/1995	1995	12	23	206	12	41	26.5	-5.5	5579
12/24/1995	1995	12	24	207	3	44	23.5	-8.5	5570.5
12/25/1995	1995	12	25	208	2	46	24	-8	5562.5
12/26/1995	1995	12	26	209	4	52	28	-4	5558.5
12/27/1995	1995	12	27	210	7	52	29.5	-2.5	5556
12/28/1995	1995	12	28	211	17	46	31.5	-0.5	5555.5
12/29/1995	1995	12	29	212	15	43	29	-3	5552.5
12/30/1995	1995	12	30	213	20	51	35.5	3.5	5556
12/31/1995	1995	12	31	214	20	54	37	5	5561
1/1/1996	1996	1	1	215	16	44	30	-2	5559
1/2/1996	1996	1	2	216	12	36	24	-8	5551
1/3/1996	1996	1	3	217	33	57	45	13	5564
1/4/1996	1996	1	4	218	19	57	38	6	5570
1/5/1996	1996	1	5	219	21	55	38	6	5576
1/6/1996	1996	1	6	220	15	48	31.5	-0.5	5575.5
1/7/1996	1996	1	7	221	11	58	34.5	2.5	5578
1/8/1996	1996	1	8	222	12	66	39	7	5585
1/9/1996	1996	1	9	223	17	67	42	10	5595
1/10/1996	1996	1	10	224	14	67	40.5	8.5	5603.5
1/11/1996	1996	1	11	225	16	56	36	4	5607.5
1/12/1996	1996	1	12	226	14	59	36.5	4.5	5612
1/13/1996	1996	1	13	227	19	70	44.5	12.5	5624.5
1/14/1996	1996	1	14	228	13	70	41.5	9.5	5634
1/15/1996	1996	1	15	229	23	70	46.5	14.5	5648.5

1/16/1996	1996	1	16	230	35	61	48	16	5664.5
1/17/1996	1996	1	17	231	18	43	30.5	-1.5	5663
1/18/1996	1996	1	18	232	19	38	28.5	-3.5	5659.5
1/19/1996	1996	1	19	233	20	48	34	2	5661.5
1/20/1996	1996	1	20	234	10	45	27.5	-4.5	5657
1/21/1996	1996	1	21	235	17	51	34	2	5659
1/22/1996	1996	1	22	236	11	44	27.5	-4.5	5654.5
1/23/1996	1996	1	23	237	11	38	24.5	-7.5	5647
1/24/1996	1996	1	24	238	22	48	35	3	5650
1/25/1996	1996	1	25	239	6	49	27.5	-4.5	5645.5
1/26/1996	1996	1	26	240	6	41	23.5	-8.5	5637
1/27/1996	1996	1	27	241	35	55	45	13	5650
1/28/1996	1996	1	28	242	17	55	36	4	5654
1/29/1996	1996	1	29	243	26	55	40.5	8.5	5662.5
1/30/1996	1996	1	30	244	36	58	47	15	5677.5
1/31/1996	1996	1	31	245	34	55	44.5	12.5	5690
2/1/1996	1996	2	1	246	29	49	39	7	5697
2/2/1996	1996	2	2	247	16	47	31.5	-0.5	5696.5
2/3/1996	1996	2	3	248	8	46	27	-5	5691.5
2/4/1996	1996	2	4	249	20	58	39	7	5698.5
2/5/1996	1996	2	5	250	25	67	46	14	5712.5
2/6/1996	1996	2	6	251	22	66	44	12	5724.5
2/7/1996	1996	2	7	252	22	66	44	12	5736.5
2/8/1996	1996	2	8	253	21	67	44	12	5748.5
2/9/1996	1996	2	9	254	19	70	44.5	12.5	5761
2/10/1996	1996	2	10	255	30	67	48.5	16.5	5777.5
2/11/1996	1996	2	11	256	28	51	39.5	7.5	5785
2/12/1996	1996	2	12	257	30	58	44	12	5797
2/13/1996	1996	2	13	258	20	52	36	4	5801
2/14/1996	1996	2	14	259	21	67	44	12	5813
2/15/1996	1996	2	15	260	19	71	45	13	5826
2/16/1996	1996	2	16	261	23	72	47.5	15.5	5841.5
2/17/1996	1996	2	17	262	36	71	53.5	21.5	5863
2/18/1996	1996	2	18	263	19	65	42	10	5873
2/19/1996	1996	2	19	264	46	65	55.5	23.5	5896.5
2/20/1996	1996	2	20	265	40	63	51.5	19.5	5916
2/21/1996	1996	2	21	266	37	70	53.5	21.5	5937.5
2/22/1996	1996	2	22	267	22	61	41.5	9.5	5947
2/23/1996	1996	2	23	268	17	52	34.5	2.5	5949.5
2/24/1996	1996	2	24	269	32	58	45	13	5962.5
2/25/1996	1996	2	25	270	27	62	44.5	12.5	5975
2/26/1996	1996	2	26	271	7	40	23.5	-8.5	5966.5
2/27/1996	1996	2	27	272	23	43	33	1	5967.5
2/28/1996	1996	2	28	273	21	40	30.5	-1.5	5966
2/29/1996	1996	2	29	274	16	44	30	-2	5964
3/1/1996	1996	3	1	275	13	52	32.5	0.5	5964.5
3/2/1996	1996	3	2	276	13	59	36	4	5968.5
3/3/1996	1996	3	3	277	36	64	50	18	5986.5
3/4/1996	1996	3	4	278	36	57	46.5	14.5	6001
3/5/1996	1996	3	5	279	33	60	46.5	14.5	6015.5
3/6/1996	1996	3	6	280	14	46	30	-2	6013.5
3/7/1996	1996	3	7	281	20	56	38	6	6019.5
3/8/1996	1996	3	8	282	18	66	42	10	6029.5
3/9/1996	1996	3	9	283	21	70	45.5	13.5	6043
3/10/1996	1996	3	10	284	25	73	49	17	6060
3/11/1996	1996	3	11	285	38	72	55	23	6083
3/12/1996	1996	3	12	286	28	68	48	16	6099
3/13/1996	1996	3	13	287	27	51	39	7	6106
3/14/1996	1996	3	14	288	16	51	33.5	1.5	6107.5
3/15/1996	1996	3	15	289	25	51	38	6	6113.5
3/16/1996	1996	3	16	290	25	51	38	6	6119.5
3/17/1996	1996	3	17	291	22	63	42.5	10.5	6130
3/18/1996	1996	3	18	292	14	55	34.5	2.5	6132.5
3/19/1996	1996	3	19	293	17	62	39.5	7.5	6140
3/20/1996	1996	3	20	294	20	71	45.5	13.5	6153.5
3/21/1996	1996	3	21	295	30	70	50	18	6171.5
3/22/1996	1996	3	22	296	37	67	52	20	6191.5
3/23/1996	1996	3	23	297	25	68	46.5	14.5	6206
3/24/1996	1996	3	24	298	21	54	37.5	5.5	6211.5
3/25/1996	1996	3	25	299	27	61	44	12	6223.5
3/26/1996	1996	3	26	300	17	56	36.5	4.5	6228
3/27/1996	1996	3	27	301	32	70	51	19	6247
3/28/1996	1996	3	28	302	30	70	50	18	6265
3/29/1996	1996	3	29	303	27		27	-5	6260
3/30/1996	1996	3	30	304	21	64	42.5	10.5	6270.5
3/31/1996	1996	3	31	305	23	70	46.5	14.5	6285
4/1/1996	1996	4	1	306	30	75	52.5	20.5	6305.5
4/2/1996	1996	4	2	307	33	73	53	21	6326.5
4/3/1996	1996	4	3	308	36	66	51	19	6345.5
4/4/1996	1996	4	4	309	35	54	44.5	12.5	6358
4/5/1996	1996	4	5	310	16	48	32	0	6358
4/6/1996	1996	4	6	311	23	69	46	14	6372
4/7/1996	1996	4	7	312	28	75	51.5	19.5	6391.5
4/8/1996	1996	4	8	313	30	79	54.5	22.5	6414
4/9/1996	1996	4	9	314	39	82	60.5	28.5	6442.5
4/10/1996	1996	4	10	315	35	79	57	25	6467.5
4/11/1996	1996	4	11	316	29	67	48	16	6483.5
4/12/1996	1996	4	12	317	30	70	50	18	6501.5
4/13/1996	1996	4	13	318	29	53	41	9	6510.5
4/14/1996	1996	4	14	319	20	60	40	8	6518.5
4/15/1996	1996	4	15	320	20	66	43	11	6529.5
4/16/1996	1996	4	16	321	21	77	49	17	6546.5
4/17/1996	1996	4	17	322	40	77	58.5	26.5	6573

4/18/1996	1996	4	18	323	34	71	52.5	20.5	6593.5
4/19/1996	1996	4	19	324	24	64	44	12	6605.5
4/20/1996	1996	4	20	325	29	68	48.5	16.5	6622
4/21/1996	1996	4	21	326	25	67	46	14	6636
4/22/1996	1996	4	22	327	32	71	51.5	19.5	6655.5
4/23/1996	1996	4	23	328	30	82	56	24	6679.5
4/24/1996	1996	4	24	329	52	83	67.5	35.5	6715
4/25/1996	1996	4	25	330	38	85	61.5	29.5	6744.5
4/26/1996	1996	4	26	331	37	87	62	30	6774.5
4/27/1996	1996	4	27	332	39	85	62	30	6804.5
4/28/1996	1996	4	28	333	22	60	41	9	6813.5
4/29/1996	1996	4	29	334	25	69	47	15	6828.5
4/30/1996	1996	4	30	335	31	81	56	24	6852.5
5/1/1996	1996	5	1	336	32	82	57	25	6877.5
5/2/1996	1996	5	2	337	50	83	66.5	34.5	6912
5/3/1996	1996	5	3	338	43	84	63.5	31.5	6943.5
5/4/1996	1996	5	4	339	40	80	60	28	6971.5
5/5/1996	1996	5	5	340	37	85	61	29	7000.5
5/6/1996	1996	5	6	341	45	86	65.5	33.5	7034
5/7/1996	1996	5	7	342	40	87	63.5	31.5	7065.5
5/8/1996	1996	5	8	343	39	86	62.5	30.5	7096
5/9/1996	1996	5	9	344	41	85	63	31	7127
5/10/1996	1996	5	10	345	37	85	61	29	7156
5/11/1996	1996	5	11	346	41	92	66.5	34.5	7190.5
5/12/1996	1996	5	12	347	41	94	67.5	35.5	7226
5/13/1996	1996	5	13	348	45	91	68	36	7262
5/14/1996	1996	5	14	349	50	87	68.5	36.5	7298.5
5/15/1996	1996	5	15	350	53	88	70.5	38.5	7337
5/16/1996	1996	5	16	351	58	90	74	42	7379
5/17/1996	1996	5	17	352	47	87	67	35	7414
5/18/1996	1996	5	18	353	58	91	74.5	42.5	7456.5
5/19/1996	1996	5	19	354	55	90	72.5	40.5	7497
5/20/1996	1996	5	20	355	45	87	66	34	7531
5/21/1996	1996	5	21	356	48	90	69	37	7568
5/22/1996	1996	5	22	357	50	88	69	37	7605
5/23/1996	1996	5	23	358	42	83	62.5	30.5	7635.5
5/24/1996	1996	5	24	359	50	80	65	33	7668.5
5/25/1996	1996	5	25	360	38	76	57	25	7693.5
5/26/1996	1996	5	26	361	35	66	50.5	18.5	7712
5/27/1996	1996	5	27	362	40	80	60	28	7740
5/28/1996	1996	5	28	363	38	80	59	27	7767
5/29/1996	1996	5	29	364	40	88	64	32	7799
5/30/1996	1996	5	30	365	41	87	64	32	7831
5/31/1996	1996	5	31	366	38	82	60	28	7859
6/1/1996	1996	6	1	1	41	88	64.5	32.5	32.5
6/2/1996	1996	6	2	2	39	89	64	32	64.5
6/3/1996	1996	6	3	3	42	91	66.5	34.5	99
6/4/1996	1996	6	4	4	45	93	69	37	136
6/5/1996	1996	6	5	5	61	96	78.5	46.5	182.5
6/6/1996	1996	6	6	6	57	95	76	44	226.5
6/7/1996	1996	6	7	7	53	95	74	42	268.5
6/8/1996	1996	6	8	8	50	96	73	41	309.5
6/9/1996	1996	6	9	9	50	92	71	39	348.5
6/10/1996	1996	6	10	10	52	97	74.5	42.5	391
6/11/1996	1996	6	11	11	52	92	72	40	431
6/12/1996	1996	6	12	12	53	92	72.5	40.5	471.5
6/13/1996	1996	6	13	13	56	75	65.5	33.5	505
6/14/1996	1996	6	14	14	47	75	61	29	534
6/15/1996	1996	6	15	15	46	84	65	33	567
6/16/1996	1996	6	16	16	54	90	72	40	607
6/17/1996	1996	6	17	17	54	93	73.5	41.5	648.5
6/18/1996	1996	6	18	18	53	93	73	41	689.5
6/19/1996	1996	6	19	19	56	94	75	43	732.5
6/20/1996	1996	6	20	20	56	99	77.5	45.5	778
6/21/1996	1996	6	21	21	59	90	74.5	42.5	820.5
6/22/1996	1996	6	22	22	42	93	67.5	35.5	856
6/23/1996	1996	6	23	23	44	92	68	36	892
6/24/1996	1996	6	24	24	55	90	72.5	40.5	932.5
6/25/1996	1996	6	25	25	52	92	72	40	972.5
6/26/1996	1996	6	26	26	58	85	71.5	39.5	1012
6/27/1996	1996	6	27	27	57	77	67	35	1047
6/28/1996	1996	6	28	28	54	87	70.5	38.5	1085.5
6/29/1996	1996	6	29	29	61	80	70.5	38.5	1124
6/30/1996	1996	6	30	30	55	85	70	38	1162
7/1/1996	1996	7	1	31	55	90	72.5	40.5	1202.5
7/2/1996	1996	7	2	32	62	95	78.5	46.5	1249
7/3/1996	1996	7	3	33	57	92	74.5	42.5	1291.5
7/4/1996	1996	7	4	34	60	96	78	46	1337.5
7/5/1996	1996	7	5	35	62	100	81	49	1386.5
7/6/1996	1996	7	6	36	60	100	80	48	1434.5
7/7/1996	1996	7	7	37	62	93	77.5	45.5	1480
7/8/1996	1996	7	8	38	60	94	77	45	1525
7/9/1996	1996	7	9	39	55	83	69	37	1562
7/10/1996	1996	7	10	40	58	86	72	40	1602
7/11/1996	1996	7	11	41	61	96	78.5	46.5	1648.5
7/12/1996	1996	7	12	42	60	89	74.5	42.5	1691
7/13/1996	1996	7	13	43	54	81	67.5	35.5	1726.5
7/14/1996	1996	7	14	44	57	89	73	41	1767.5
7/15/1996	1996	7	15	45	56	80	68	36	1803.5
7/16/1996	1996	7	16	46	57	86	71.5	39.5	1843
7/17/1996	1996	7	17	47	56	90	73	41	1884
7/18/1996	1996	7	18	48	54	90	72	40	1924
7/19/1996	1996	7	19	49	54	90	72	40	1964

7/20/1996	1996	7	20	50	54	94	74	42	2006
7/21/1996	1996	7	21	51	50	98	74	42	2048
7/22/1996	1996	7	22	52	50	100	75	43	2091
7/23/1996	1996	7	23	53	65	101	83	51	2142
7/24/1996	1996	7	24	54	47	101	74	42	2184
7/25/1996	1996	7	25	55	43	101	72	40	2224
7/26/1996	1996	7	26	56	59	101	80	48	2272
7/27/1996	1996	7	27	57	57	87	72	40	2312
7/28/1996	1996	7	28	58	60	88	74	42	2354
7/29/1996	1996	7	29	59	62	91	76.5	44.5	2398.5
7/30/1996	1996	7	30	60	55	91	73	41	2439.5
7/31/1996	1996	7	31	61	55	91	73	41	2480.5
8/1/1996	1996	8	1	62	51	91	71	39	2519.5
8/2/1996	1996	8	2	63	64	92	78	46	2565.5
8/3/1996	1996	8	3	64	63	91	77	45	2610.5
8/4/1996	1996	8	4	65	64	89	76.5	44.5	2655
8/5/1996	1996	8	5	66	59	88	73.5	41.5	2696.5
8/6/1996	1996	8	6	67	56	93	74.5	42.5	2739
8/7/1996	1996	8	7	68	50	94	72	40	2779
8/8/1996	1996	8	8	69	56	93	74.5	42.5	2821.5
8/9/1996	1996	8	9	70	60	80	70	38	2859.5
8/10/1996	1996	8	10	71	52	76	64	32	2891.5
8/11/1996	1996	8	11	72	55	91	73	41	2932.5
8/12/1996	1996	8	12	73	51	94	72.5	40.5	2973
8/13/1996	1996	8	13	74	56	98	77	45	3018
8/14/1996	1996	8	14	75	58	99	78.5	46.5	3064.5
8/15/1996	1996	8	15	76	58	96	77	45	3109.5
8/16/1996	1996	8	16	77	50	96	73	41	3150.5
8/17/1996	1996	8	17	78	59	95	77	45	3195.5
8/18/1996	1996	8	18	79	54	90	72	40	3235.5
8/19/1996	1996	8	19	80	52	91	71.5	39.5	3275
8/20/1996	1996	8	20	81	60	88	74	42	3317
8/21/1996	1996	8	21	82	58	88	73	41	3358
8/22/1996	1996	8	22	83	55	85	70	38	3396
8/23/1996	1996	8	23	84	56	82	69	37	3433
8/24/1996	1996	8	24	85	57	81	69	37	3470
8/25/1996	1996	8	25	86	58	83	70.5	38.5	3508.5
8/26/1996	1996	8	26	87	53	81	67	35	3543.5
8/27/1996	1996	8	27	88	58	84	71	39	3582.5
8/28/1996	1996	8	28	89	56	84	70	38	3620.5
8/29/1996	1996	8	29	90	56	90	73	41	3661.5
8/30/1996	1996	8	30	91	56	93	74.5	42.5	3704
8/31/1996	1996	8	31	92	44	95	69.5	37.5	3741.5
9/1/1996	1996	9	1	93	59	89	74	42	3783.5
9/2/1996	1996	9	2	94	48	84	66	34	3817.5
9/3/1996	1996	9	3	95	49	91	70	38	3855.5
9/4/1996	1996	9	4	96	50	89	69.5	37.5	3893
9/5/1996	1996	9	5	97	49	82	65.5	33.5	3926.5
9/6/1996	1996	9	6	98	53	84	68.5	36.5	3963
9/7/1996	1996	9	7	99	43	83	63	31	3994
9/8/1996	1996	9	8	100	43	89	66	34	4028
9/9/1996	1996	9	9	101	53	85	69	37	4065
9/10/1996	1996	9	10	102	53	84	68.5	36.5	4101.5
9/11/1996	1996	9	11	103	53	81	67	35	4136.5
9/12/1996	1996	9	12	104	52	63	57.5	25.5	4162
9/13/1996	1996	9	13	105	50	72	61	29	4191
9/14/1996	1996	9	14	106	41	58	49.5	17.5	4208.5
9/15/1996	1996	9	15	107	41	76	58.5	26.5	4235
9/16/1996	1996	9	16	108	47	78	62.5	30.5	4265.5
9/17/1996	1996	9	17	109	43	66	54.5	22.5	4288
9/18/1996	1996	9	18	110	34	53	43.5	11.5	4299.5
9/19/1996	1996	9	19	111	34	71	52.5	20.5	4320
9/20/1996	1996	9	20	112	37	77	57	25	4345
9/21/1996	1996	9	21	113	40	83	61.5	29.5	4374.5
9/22/1996	1996	9	22	114	41	83	62	30	4404.5
9/23/1996	1996	9	23	115	42	83	62.5	30.5	4435
9/24/1996	1996	9	24	116	40	69	54.5	22.5	4457.5
9/25/1996	1996	9	25	117	41	76	58.5	26.5	4484
9/26/1996	1996	9	26	118	35	76	55.5	23.5	4507.5
9/27/1996	1996	9	27	119	31	65	48	16	4523.5
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9/29/1996	1996	9	29	121	38	78	58	26	4571.5
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12/17/1996	1996	12	17	200	3	30	16.5	-15.5	5452.5
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12/28/1996	1996	12	28	211	16	51	33.5	1.5	5458.5
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12/31/1996	1996	12	31	214	23	60	41.5	9.5	5484.5
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1/5/1997	1997	1	5	219	23	35	29	-3	5524
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1/7/1997	1997	1	7	221	7	30	18.5	-13.5	5491.5
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1/10/1997	1997	1	10	224	19	48	33.5	1.5	5471.5
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1/13/1997	1997	1	13	227	13	18	15.5	-16.5	5444.5
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1/15/1997	1997	1	15	229	-7	36	14.5	-17.5	5399.5
1/16/1997	1997	1	16	230	-7	36	14.5	-17.5	5382
1/17/1997	1997	1	17	231	-4	42	19	-13	5369
1/18/1997	1997	1	18	232	5	46	25.5	-6.5	5362.5
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1/28/1997	1997	1	28	242	28	48	38	6	5408
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1/30/1997	1997	1	30	244	21	51	36	4	5414
1/31/1997	1997	1	31	245	28	65	46.5	14.5	5428.5
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3/7/1997	1997	3	7	280	22	67	44.5	12.5	5578.5
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4/12/1997	1997	4	12	316	21	52	36.5	4.5	6115.5
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4/19/1997	1997	4	19	323	39	74	56.5	24.5	6238.5
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4/28/1997	1997	4	28	332	51	77	64	32	6420.5
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5/1/1997	1997	5	1	335	30	70	50	18	6490
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5/8/1997	1997	5	8	342	41	81	61	29	6688.5
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5/21/1997	1997	5	21	355	42	70	56	24	7058
5/22/1997	1997	5	22	356	39	70	54.5	22.5	7080.5
5/23/1997	1997	5	23	357	49	80	64.5	32.5	7113
5/24/1997	1997	5	24	358	40	73	56.5	24.5	7137.5
5/25/1997	1997	5	25	359	46	75	60.5	28.5	7166
5/26/1997	1997	5	26	360	36	77	56.5	24.5	7190.5
5/27/1997	1997	5	27	361	37	76	56.5	24.5	7215
5/28/1997	1997	5	28	362	43	83	63	31	7246
5/29/1997	1997	5	29	363	45	89	67	35	7281
5/30/1997	1997	5	30	364	49	90	69.5	37.5	7318.5
5/31/1997	1997	5	31	365	48	92	70	38	7356.5
6/1/1997	1997	6	1	1	48	95	71.5	39.5	39.5
6/2/1997	1997	6	2	2	44	91	67.5	35.5	75
6/3/1997	1997	6	3	3	44	95	69.5	37.5	112.5
6/4/1997	1997	6	4	4	55	93	74	42	154.5
6/5/1997	1997	6	5	5	58	85	71.5	39.5	194
6/6/1997	1997	6	6	6	51	66	58.5	26.5	220.5
6/7/1997	1997	6	7	7	42	65	53.5	21.5	242
6/8/1997	1997	6	8	8	40	70	55	23	265
6/9/1997	1997	6	9	9	51	80	65.5	33.5	298.5
6/10/1997	1997	6	10	10	45	87	66	34	332.5
6/11/1997	1997	6	11	11	48	84	66	34	366.5
6/12/1997	1997	6	12	12	45	72	58.5	26.5	393
6/13/1997	1997	6	13	13	47	85	66	34	427
6/14/1997	1997	6	14	14	43	85	64	32	459
6/15/1997	1997	6	15	15	42	78	60	28	487
6/16/1997	1997	6	16	16	42	81	61.5	29.5	516.5
6/17/1997	1997	6	17	17	47	88	67.5	35.5	552
6/18/1997	1997	6	18	18	47	87	67	35	587
6/19/1997	1997	6	19	19	50	91	70.5	38.5	625.5
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6/22/1997	1997	6	22	22	47	94	70.5	38.5	738.5
6/23/1997	1997	6	23	23	45	90	67.5	35.5	774
6/24/1997	1997	6	24	24	48	91	69.5	37.5	811.5
6/25/1997	1997	6	25	25	57	93	75	43	854.5
6/26/1997	1997	6	26	26	49	89	69	37	891.5
6/27/1997	1997	6	27	27	49	87	68	36	927.5
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7/1/1997	1997	7	1	31	42	95	68.5	36.5	1083.5
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7/31/1997	1997	7	31	61	55	81	68	36	2293
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10/31/1997	1997	10	31	153	28	75	51.5	19.5	5143.5
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11/9/1997	1997	11	9	162	24	55	39.5	7.5	5254.5
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2/15/1998	1998	2	15	257	32	55	43.5	11.5	5457.5
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3/2/1998	1998	3	2	270	15	57	36	4	5512
3/3/1998	1998	3	3	271	33	63	48	16	5528
3/4/1998	1998	3	4	272	38	62	50	18	5546
3/5/1998	1998	3	5	273	28	62	45	13	5559
3/7/1998	1998	3	7	274	13	50	31.5	-0.5	5558.5
3/8/1998	1998	3	8	275	14	57	35.5	3.5	5562
3/9/1998	1998	3	9	276	13	51	32	0	5562
3/10/1998	1998	3	10	277	17	59	38	6	5568
3/11/1998	1998	3	11	278	23	61	42	10	5578
3/12/1998	1998	3	12	279	20	65	42.5	10.5	5588.5
3/13/1998	1998	3	13	280	27	64	45.5	13.5	5602
3/14/1998	1998	3	14	281	32	56	44	12	5614
3/15/1998	1998	3	15	282	34	40	37	5	5619
3/16/1998	1998	3	16	283	30	52	41	9	5628
3/17/1998	1998	3	17	284	32	59	45.5	13.5	5641.5
3/18/1998	1998	3	18	285	20	47	33.5	1.5	5643
3/19/1998	1998	3	19	286	22	59	40.5	8.5	5651.5
3/20/1998	1998	3	20	287	29	64	46.5	14.5	5666
3/21/1998	1998	3	21	288	25	67	46	14	5680
3/22/1998	1998	3	22	289	30	74	52	20	5700
3/23/1998	1998	3	23	290	30	76	53	21	5721
3/24/1998	1998	3	24	291	35	78	56.5	24.5	5745.5
3/25/1998	1998	3	25	292	37	76	56.5	24.5	5770
3/26/1998	1998	3	26	293	35	55	45	13	5783
3/27/1998	1998	3	27	294	30	62	46	14	5797
3/28/1998	1998	3	28	295	27	63	45	13	5810
3/29/1998	1998	3	29	296	27	63	45	13	5823
3/30/1998	1998	3	30	297	22	43	32.5	0.5	5823.5
3/31/1998	1998	3	31	298	19	56	37.5	5.5	5829
4/1/1998	1998	4	1	299	27	67	47	15	5844
4/2/1998	1998	4	2	300	23	50	36.5	4.5	5848.5
4/3/1998	1998	4	3	301	27	66	46.5	14.5	5863
4/4/1998	1998	4	4	302	27	69	48	16	5879
4/5/1998	1998	4	5	303	30	66	48	16	5895
4/6/1998	1998	4	6	304	31	54	42.5	10.5	5905.5
4/7/1998	1998	4	7	305	27	55	41	9	5914.5
4/8/1998	1998	4	8	306	19	59	39	7	5921.5
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4/10/1998	1998	4	10	308	22	73	47.5	15.5	5950.5
4/11/1998	1998	4	11	309	38	78	58	26	5976.5
4/12/1998	1998	4	12	310	32	51	41.5	9.5	5986
4/13/1998	1998	4	13	311	25	66	45.5	13.5	5999.5
4/14/1998	1998	4	14	312	25	62	43.5	11.5	6011
4/15/1998	1998	4	15	313	22	51	36.5	4.5	6015.5
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4/24/1998	1998	4	24	322	43	78	60.5	28.5	6150.5
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4/26/1998	1998	4	26	324	28	70	49	17	6192
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4/28/1998	1998	4	28	326	30	63	46.5	14.5	6219.5
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5/2/1998	1998	5	2	330	33	79	56	24	6305.5
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5/5/1998	1998	5	5	333	37	75	56	24	6379.5
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5/10/1998	1998	5	10	338	32	77	54.5	22.5	6484.5
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5/12/1998	1998	5	12	340	41	80	60.5	28.5	6536.5
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5/17/1998	1998	5	17	345	35	84	59.5	27.5	6657.5
5/18/1998	1998	5	18	346	41	88	64.5	32.5	6690
5/19/1998	1998	5	19	347	38	85	61.5	29.5	6719.5
5/20/1998	1998	5	20	348	47	77	62	30	6749.5
5/21/1998	1998	5	21	349	34	83	58.5	26.5	6776
5/22/1998	1998	5	22	350	33	78	55.5	23.5	6799.5
5/23/1998	1998	5	23	351	37	78	57.5	25.5	6825
5/24/1998	1998	5	24	352	37	80	58.5	26.5	6851.5
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5/26/1998	1998	5	26	354	42	82	62	30	6908
5/27/1998	1998	5	27	355	39	88	63.5	31.5	6939.5
5/28/1998	1998	5	28	356	40	92	66	34	6973.5
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5/30/1998	1998	5	30	358	42	87	64.5	32.5	7041
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6/3/1998	1998	6	3	3	42	90	66	34	105
6/4/1998	1998	6	4	4	40	76	58	26	131
6/5/1998	1998	6	5	5	40	76	58	26	157
6/6/1998	1998	6	6	6	40	76	58	26	183
6/7/1998	1998	6	7	7	39	86	62.5	30.5	213.5
6/8/1998	1998	6	8	8	36	78	57	25	238.5
6/9/1998	1998	6	9	9	37	82	59.5	27.5	266
6/10/1998	1998	6	10	10	38	77	57.5	25.5	291.5
6/11/1998	1998	6	11	11	38	78	58	26	317.5
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6/13/1998	1998	6	13	13	44	77	60.5	28.5	380.5
6/14/1998	1998	6	14	14	47	83	65	33	413.5
6/15/1998	1998	6	15	15	54	84	69	37	450.5
6/16/1998	1998	6	16	16	47	90	68.5	36.5	487
6/17/1998	1998	6	17	17	35	79	57	25	512
6/18/1998	1998	6	18	18	37	85	61	29	541
6/19/1998	1998	6	19	19	44	90	67	35	576
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6/21/1998	1998	6	21	21	41	91	66	34	645
6/22/1998	1998	6	22	22	48	90	69	37	682
6/23/1998	1998	6	23	23	53	92	72.5	40.5	722.5
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6/25/1998	1998	6	25	25	47	95	71	39	796
6/26/1998	1998	6	26	26	51	94	72.5	40.5	836.5
6/27/1998	1998	6	27	27	48	98	73	41	877.5
6/28/1998	1998	6	28	28	49	103	76	44	921.5
6/29/1998	1998	6	29	29	50	102	76	44	965.5
6/30/1998	1998	6	30	30	65	101	83	51	1016.5
7/1/1998	1998	7	1	31	57	92	74.5	42.5	1059
7/2/1998	1998	7	2	32	59	93	76	44	1103
7/3/1998	1998	7	3	33	61	91	76	44	1147
7/4/1998	1998	7	4	34	61	90	75.5	43.5	1190.5
7/5/1998	1998	7	5	35	58	95	76.5	44.5	1235
7/6/1998	1998	7	6	36	59	87	73	41	1276
7/7/1998	1998	7	7	37	59	81	70	38	1314
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7/10/1998	1998	7	10	40	54	90	72	40	1417
7/11/1998	1998	7	11	41	54	90	72	40	1457
7/12/1998	1998	7	12	42	56	96	76	44	1501
7/13/1998	1998	7	13	43	57	95	76	44	1545
7/14/1998	1998	7	14	44	50	97	73.5	41.5	1586.5
7/15/1998	1998	7	15	45	62	100	81	49	1635.5
7/16/1998	1998	7	16	46	55	92	73.5	41.5	1677
7/17/1998	1998	7	17	47	52	91	71.5	39.5	1716.5
7/18/1998	1998	7	18	48	55	95	75	43	1759.5
7/19/1998	1998	7	19	49	54	99	76.5	44.5	1804
7/20/1998	1998	7	20	50	61	99	80	48	1852
7/21/1998	1998	7	21	51	55	96	75.5	43.5	1895.5
7/22/1998	1998	7	22	52	56	93	74.5	42.5	1938
7/23/1998	1998	7	23	53	56	86	71	39	1977
7/24/1998	1998	7	24	54	57	82	69.5	37.5	2014.5
7/25/1998	1998	7	25	55	60	82	71	39	2053.5
7/26/1998	1998	7	26	56	55	86	70.5	38.5	2092
7/27/1998	1998	7	27	57	58	85	71.5	39.5	2131.5
7/28/1998	1998	7	28	58	56	85	70.5	38.5	2170
7/29/1998	1998	7	29	59	57	84	70.5	38.5	2208.5
7/30/1998	1998	7	30	60	50	90	70	38	2246.5
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8/1/1998	1998	8	1	62	48	79	63.5	31.5	2317
8/2/1998	1998	8	2	63	51	90	70.5	38.5	2355.5
8/3/1998	1998	8	3	64	54	93	73.5	41.5	2397
8/4/1998	1998	8	4	65	56	89	72.5	40.5	2437.5
8/5/1998	1998	8	5	66	53	89	71	39	2476.5
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8/7/1998	1998	8	7	68	55	96	75.5	43.5	2558.5
8/8/1998	1998	8	8	69	56	94	75	43	2601.5

8/9/1998	1998	8	9	70	53	94	73.5	41.5	2643
8/10/1998	1998	8	10	71	54	87	70.5	38.5	2681.5
8/11/1998	1998	8	11	72	54	87	70.5	38.5	2720
8/12/1998	1998	8	12	73	48	86	67	35	2755
8/13/1998	1998	8	13	74	48	89	68.5	36.5	2791.5
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8/21/1998	1998	8	21	82	55	83	69	37	3107
8/22/1998	1998	8	22	83	54	93	73.5	41.5	3148.5
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8/24/1998	1998	8	24	85	60	94	77	45	3235
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9/24/1998	1998	9	24	116	48	90	69	37	4356
9/25/1998	1998	9	25	117	35	89	62	30	4386
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11/14/1998	1998	11	14	166	25	60	42.5	10.5	5256.5
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11/18/1998	1998	11	18	170	21	64	42.5	10.5	5313.5
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11/22/1998	1998	11	22	174	18	72	45	13	5344.5
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11/24/1998	1998	11	24	176	21	69	45	13	5379
11/25/1998	1998	11	25	177	21	68	44.5	12.5	5391.5
11/26/1998	1998	11	26	178	21	69	45	13	5404.5
11/27/1998	1998	11	27	179	18	68	43	11	5415.5
11/28/1998	1998	11	28	180	21	69	45	13	5428.5
11/29/1998	1998	11	29	181	29	61	45	13	5441.5
11/30/1998	1998	11	30	182	30	60	45	13	5454.5
12/1/1998	1998	12	1	183	33	62	47.5	15.5	5470
12/2/1998	1998	12	2	184	31	59	45	13	5483
12/3/1998	1998	12	3	185	22	65	43.5	11.5	5494.5
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12/6/1998	1998	12	6	188	17	32	24.5	-7.5	5506.5
12/7/1998	1998	12	7	189	2	32	17	-15	5491.5
12/8/1998	1998	12	8	190	17	41	29	-3	5488.5
12/9/1998	1998	12	9	191	18	36	27	-5	5483.5
12/10/1998	1998	12	10	192	14	35	24.5	-7.5	5476
12/11/1998	1998	12	11	193	12	42	27	-5	5471
12/12/1998	1998	12	12	194	15	48	31.5	-0.5	5470.5
12/13/1998	1998	12	13	195	11	56	33.5	1.5	5472
12/14/1998	1998	12	14	196	14	53	33.5	1.5	5473.5
12/15/1998	1998	12	15	197	13	58	35.5	3.5	5477
12/16/1998	1998	12	16	198	14	61	37.5	5.5	5482.5
12/17/1998	1998	12	17	199	13	61	37	5	5487.5
12/18/1998	1998	12	18	200	29	60	44.5	12.5	5500
12/19/1998	1998	12	19	201	36	57	46.5	14.5	5514.5
12/20/1998	1998	12	20	202	11	56	33.5	1.5	5516
12/21/1998	1998	12	21	203	10	35	22.5	-9.5	5506.5
12/22/1998	1998	12	22	204	8	40	24	-8	5498.5
12/23/1998	1998	12	23	205	6	47	26.5	-5.5	5493
12/24/1998	1998	12	24	206	10	45	27.5	-4.5	5488.5
12/25/1998	1998	12	25	207	11	49	30	-2	5486.5
12/26/1998	1998	12	26	208	12	55	33.5	1.5	5488
12/27/1998	1998	12	27	209	17	56	36.5	4.5	5492.5
12/28/1998	1998	12	28	210	17	65	41	9	5501.5
12/29/1998	1998	12	29	211	17	64	40.5	8.5	5510
12/30/1998	1998	12	30	212	17	64	40.5	8.5	5518.5
12/31/1998	1998	12	31	213	17	64	40.5	8.5	5527
1/1/1999	1999	1	1	214	11	59	35	3	5530
1/2/1999	1999	1	2	215	14	53	33.5	1.5	5531.5
1/3/1999	1999	1	3	216	8	46	27	-5	5526.5
1/4/1999	1999	1	4	217	8	46	27	-5	5521.5
1/5/1999	1999	1	5	218	12	62	37	5	5526.5
1/6/1999	1999	1	6	219	14	56	35	3	5529.5
1/7/1999	1999	1	7	220	17	60	38.5	6.5	5536
1/8/1999	1999	1	8	221	10	54	32	0	5536
1/9/1999	1999	1	9	222	16	55	35.5	3.5	5539.5
1/10/1999	1999	1	10	223	14	62	38	6	5545.5
1/11/1999	1999	1	11	224	25	67	46	14	5559.5
1/12/1999	1999	1	12	225	13	57	35	3	5562.5
1/13/1999	1999	1	13	226	11	54	32.5	0.5	5563
1/14/1999	1999	1	14	227	8	55	31.5	-0.5	5562.5
1/15/1999	1999	1	15	228	16	67	41.5	9.5	5572
1/16/1999	1999	1	16	229	27	64	45.5	13.5	5585.5
1/17/1999	1999	1	17	230	21	63	42	10	5595.5
1/18/1999	1999	1	18	231	27	64	45.5	13.5	5609
1/19/1999	1999	1	19	232	29	63	46	14	5623
1/20/1999	1999	1	20	233	34	59	46.5	14.5	5637.5
1/21/1999	1999	1	21	234	22	45	33.5	1.5	5639
1/22/1999	1999	1	22	235	14	45	29.5	-2.5	5636.5
1/23/1999	1999	1	23	236	30	65	47.5	15.5	5652
1/24/1999	1999	1	24	237	29	65	47	15	5667
1/25/1999	1999	1	25	238	30	66	48	16	5683
1/26/1999	1999	1	26	239	11	52	31.5	-0.5	5682.5
1/27/1999	1999	1	27	240	16	49	32.5	0.5	5683
1/28/1999	1999	1	28	241	13	43	28	-4	5679
1/29/1999	1999	1	29	242	12	53	32.5	0.5	5679.5
1/30/1999	1999	1	30	243	11	57	34	2	5681.5
1/31/1999	1999	1	31	244	21	63	42	10	5691.5
2/1/1999	1999	2	1	245	8	53	30.5	-1.5	5690
2/2/1999	1999	2	2	246	15	53	34	2	5692
2/3/1999	1999	2	3	247	15	60	37.5	5.5	5697.5
2/4/1999	1999	2	4	248	33	64	48.5	16.5	5714
2/5/1999	1999	2	5	249	28	57	42.5	10.5	5724.5
2/6/1999	1999	2	6	250	17	46	31.5	-0.5	5724
2/7/1999	1999	2	7	251	17	65	41	9	5733
2/8/1999	1999	2	8	252	16	63	39.5	7.5	5740.5
2/9/1999	1999	2	9	253	30	66	48	16	5756.5
2/10/1999	1999	2	10	254	11	65	38	6	5762.5
2/11/1999	1999	2	11	255	7	33	20	-12	5750.5

2/12/1999	1999	2	12	256	9	61	35	3	5753.5
2/13/1999	1999	2	13	257	14	62	38	6	5759.5
2/14/1999	1999	2	14	258	21	65	43	11	5770.5
2/15/1999	1999	2	15	259	9	55	32	0	5770.5
2/16/1999	1999	2	16	260	12	53	32.5	0.5	5771
2/17/1999	1999	2	17	261	18	61	39.5	7.5	5778.5
2/18/1999	1999	2	18	262	18	66	42	10	5788.5
2/19/1999	1999	2	19	263	20	64	42	10	5798.5
2/20/1999	1999	2	20	264	21	56	38.5	6.5	5805
2/21/1999	1999	2	21	265	21	56	38.5	6.5	5811.5
2/22/1999	1999	2	22	266	12	61	36.5	4.5	5816
2/23/1999	1999	2	23	267	15	63	39	7	5823
2/24/1999	1999	2	24	268	19	67	43	11	5834
2/25/1999	1999	2	25	269	17	67	42	10	5844
2/26/1999	1999	2	26	270	15	62	38.5	6.5	5850.5
2/27/1999	1999	2	27	271	17	67	42	10	5860.5
2/28/1999	1999	2	28	272	19	68	43.5	11.5	5872
3/1/1999	1999	3	1	273	21	71	46	14	5886
3/2/1999	1999	3	2	274	16	69	42.5	10.5	5896.5
3/3/1999	1999	3	3	275	34	70	52	20	5916.5
3/4/1999	1999	3	4	276	30	67	48.5	16.5	5933
3/5/1999	1999	3	5	277	30	66	48	16	5949
3/6/1999	1999	3	6	278	32	63	47.5	15.5	5964.5
3/7/1999	1999	3	7	279	29	63	46	14	5978.5
3/8/1999	1999	3	8	280	17	58	37.5	5.5	5984
3/9/1999	1999	3	9	281	5	53	29	-3	5981
3/10/1999	1999	3	10	282	17	66	41.5	9.5	5990.5
3/11/1999	1999	3	11	283	20	65	42.5	10.5	6001
3/12/1999	1999	3	12	284	20	65	42.5	10.5	6011.5
3/13/1999	1999	3	13	285	14	61	37.5	5.5	6017
3/14/1999	1999	3	14	286	22	72	47	15	6032
3/15/1999	1999	3	15	287	20	70	45	13	6045
3/16/1999	1999	3	16	288	32	71	51.5	19.5	6064.5
3/17/1999	1999	3	17	289	30	53	41.5	9.5	6074
3/18/1999	1999	3	18	290	27	40	33.5	1.5	6075.5
3/19/1999	1999	3	19	291	28	67	47.5	15.5	6091
3/20/1999	1999	3	20	292	36	67	51.5	19.5	6110.5
3/21/1999	1999	3	21	293	32	77	54.5	22.5	6133
3/22/1999	1999	3	22	294	22	73	47.5	15.5	6148.5
3/23/1999	1999	3	23	295	23	76	49.5	17.5	6166
3/24/1999	1999	3	24	296	38	70	54	22	6188
3/25/1999	1999	3	25	297	32	66	49	17	6205
3/26/1999	1999	3	26	298	34	56	45	13	6218
3/27/1999	1999	3	27	299	28	71	49.5	17.5	6235.5
3/28/1999	1999	3	28	300	26	70	48	16	6251.5
3/29/1999	1999	3	29	301	38	72	55	23	6274.5
3/30/1999	1999	3	30	302	42	74	58	26	6300.5
3/31/1999	1999	3	31	303	35	72	53.5	21.5	6322
4/1/1999	1999	4	1	304	29	55	42	10	6332
4/2/1999	1999	4	2	305	23	47	35	3	6335
4/3/1999	1999	4	3	306	29	46	37.5	5.5	6340.5
4/4/1999	1999	4	4	307	24	51	37.5	5.5	6346
4/5/1999	1999	4	5	308	19	58	38.5	6.5	6352.5
4/6/1999	1999	4	6	309	30	70	50	18	6370.5
4/7/1999	1999	4	7	310	27	73	50	18	6388.5
4/8/1999	1999	4	8	311	28	63	45.5	13.5	6402
4/9/1999	1999	4	9	312	19	60	39.5	7.5	6409.5
4/10/1999	1999	4	10	313	16	63	39.5	7.5	6417
4/11/1999	1999	4	11	314	18	73	45.5	13.5	6430.5
4/12/1999	1999	4	12	315	35	76	55.5	23.5	6454
4/13/1999	1999	4	13	316	37	54	45.5	13.5	6467.5
4/14/1999	1999	4	14	317	22	66	44	12	6479.5
4/15/1999	1999	4	15	318	16	60	38	6	6485.5
4/16/1999	1999	4	16	319	23	59	41	9	6494.5
4/17/1999	1999	4	17	320	25	68	46.5	14.5	6509
4/18/1999	1999	4	18	321	25	75	50	18	6527
4/19/1999	1999	4	19	322	30	80	55	23	6550
4/20/1999	1999	4	20	323	43	80	61.5	29.5	6579.5
4/21/1999	1999	4	21	324	43	80	61.5	29.5	6609
4/22/1999	1999	4	22	325	31	78	54.5	22.5	6631.5
4/23/1999	1999	4	23	326	40	79	59.5	27.5	6659
4/24/1999	1999	4	24	327	29	60	44.5	12.5	6671.5
4/25/1999	1999	4	25	328	36		36	4	6675.5
4/26/1999	1999	4	26	329	32	72	52	20	6695.5
4/27/1999	1999	4	27	330	39	77	58	26	6721.5
4/28/1999	1999	4	28	331	42	74	58	26	6747.5
4/29/1999	1999	4	29	332	34	75	54.5	22.5	6770
4/30/1999	1999	4	30	333	35	69	52	20	6790
5/1/1999	1999	5	1	334	33	54	43.5	11.5	6801.5
5/2/1999	1999	5	2	335	32	70	51	19	6820.5
5/3/1999	1999	5	3	336	37	68	52.5	20.5	6841
5/4/1999	1999	5	4	337	33	57	45	13	6854
5/5/1999	1999	5	5	338	33	60	46.5	14.5	6868.5
5/6/1999	1999	5	6	339	33	60	46.5	14.5	6883
5/7/1999	1999	5	7	340	31	79	55	23	6906
5/8/1999	1999	5	8	341	40	83	61.5	29.5	6935.5
5/9/1999	1999	5	9	342	53	80	66.5	34.5	6970
5/10/1999	1999	5	10	343	36	73	54.5	22.5	6992.5
5/11/1999	1999	5	11	344	30	73	51.5	19.5	7012
5/12/1999	1999	5	12	345	44	81	62.5	30.5	7042.5
5/13/1999	1999	5	13	346	45	83	64	32	7074.5
5/14/1999	1999	5	14	347	42	80	61	29	7103.5
5/15/1999	1999	5	15	348	38	82	60	28	7131.5

5/16/1999	1999	5	16	349	32	76	54	22	7153.5
5/17/1999	1999	5	17	350	33	82	57.5	25.5	7179
5/18/1999	1999	5	18	351	42	83	62.5	30.5	7209.5
5/19/1999	1999	5	19	352	40	87	63.5	31.5	7241
5/20/1999	1999	5	20	353	33	86	59.5	27.5	7268.5
5/21/1999	1999	5	21	354	34	87	60.5	28.5	7297
5/22/1999	1999	5	22	355	43	83	63	31	7328
5/23/1999	1999	5	23	356	50	76	63	31	7359
5/24/1999	1999	5	24	357	37	74	55.5	23.5	7382.5
5/25/1999	1999	5	25	358	38	76	57	25	7407.5
5/26/1999	1999	5	26	359	35	79	57	25	7432.5
5/27/1999	1999	5	27	360	42	75	58.5	26.5	7459
5/28/1999	1999	5	28	361	42	77	59.5	27.5	7486.5
5/29/1999	1999	5	29	362	37	83	60	28	7514.5
5/30/1999	1999	5	30	363	52	82	67	35	7549.5
5/31/1999	1999	5	31	364	42	82	62	30	7579.5
6/1/1999	1999	6	1	1	42	83	62.5	30.5	30.5
6/2/1999	1999	6	2	2	40	85	62.5	30.5	61
6/3/1999	1999	6	3	3	41	87	64	32	93
6/4/1999	1999	6	4	4	32	81	56.5	24.5	117.5
6/5/1999	1999	6	5	5	36	71	53.5	21.5	139
6/6/1999	1999	6	6	6	35	83	59	27	166
6/7/1999	1999	6	7	7	39	91	65	33	199
6/8/1999	1999	6	8	8	40	91	65.5	33.5	232.5
6/9/1999	1999	6	9	9	42	86	64	32	264.5
6/10/1999	1999	6	10	10	40	87	63.5	31.5	296
6/11/1999	1999	6	11	11	45	88	66.5	34.5	330.5
6/12/1999	1999	6	12	12	41	84	62.5	30.5	361
6/13/1999	1999	6	13	13	50	85	67.5	35.5	396.5
6/14/1999	1999	6	14	14	46	84	65	33	429.5
6/15/1999	1999	6	15	15	54	87	70.5	38.5	468
6/16/1999	1999	6	16	16	52	86	69	37	505
6/17/1999	1999	6	17	17	47	78	62.5	30.5	535.5
6/18/1999	1999	6	18	18	50	84	67	35	570.5
6/19/1999	1999	6	19	19	52	88	70	38	608.5
6/20/1999	1999	6	20	20	57	85	71	39	647.5
6/21/1999	1999	6	21	21	59	85	72	40	687.5
6/22/1999	1999	6	22	22	52	89	70.5	38.5	726
6/23/1999	1999	6	23	23	47	91	69	37	763
6/24/1999	1999	6	24	24	60	95	77.5	45.5	808.5
6/25/1999	1999	6	25	25	57	93	75	43	851.5
6/26/1999	1999	6	26	26	58	94	76	44	895.5
6/27/1999	1999	6	27	27	59	94	76.5	44.5	940
6/28/1999	1999	6	28	28	57	97	77	45	985
6/29/1999	1999	6	29	29	49	97	73	41	1026
6/30/1999	1999	6	30	30	60	100	80	48	1074
7/1/1999	1999	7	1	31	72	101	86.5	54.5	1128.5
7/2/1999	1999	7	2	32	56	93	74.5	42.5	1171
7/3/1999	1999	7	3	33	59	88	73.5	41.5	1212.5
7/4/1999	1999	7	4	34	59	86	72.5	40.5	1253
7/5/1999	1999	7	5	35	55	90	72.5	40.5	1293.5
7/6/1999	1999	7	6	36	56	88	72	40	1333.5
7/7/1999	1999	7	7	37	59	89	74	42	1375.5
7/8/1999	1999	7	8	38	57	90	73.5	41.5	1417
7/9/1999	1999	7	9	39	58	84	71	39	1456
7/10/1999	1999	7	10	40	51	79	65	33	1489
7/11/1999	1999	7	11	41	55	85	70	38	1527
7/12/1999	1999	7	12	42	55	88	71.5	39.5	1566.5
7/13/1999	1999	7	13	43	61	93	77	45	1611.5
7/14/1999	1999	7	14	44	54	73	63.5	31.5	1643
7/15/1999	1999	7	15	45	50	85	67.5	35.5	1678.5
7/16/1999	1999	7	16	46	60	86	73	41	1719.5
7/17/1999	1999	7	17	47	56	81	68.5	36.5	1756
7/18/1999	1999	7	18	48	56	78	67	35	1791
7/19/1999	1999	7	19	49	56	78	67	35	1826
7/20/1999	1999	7	20	50	57	88	72.5	40.5	1866.5
7/21/1999	1999	7	21	51	52	80	66	34	1900.5
7/22/1999	1999	7	22	52	53	87	70	38	1938.5
7/23/1999	1999	7	23	53	52	87	69.5	37.5	1976
7/24/1999	1999	7	24	54	69	89	79	47	2023
7/25/1999	1999	7	25	55	52	96	74	42	2065
7/26/1999	1999	7	26	56	56	93	74.5	42.5	2107.5
7/27/1999	1999	7	27	57	55	90	72.5	40.5	2148
7/28/1999	1999	7	28	58	54	89	71.5	39.5	2187.5
7/29/1999	1999	7	29	59	51	91	71	39	2226.5
7/30/1999	1999	7	30	60	54	87	70.5	38.5	2265
7/31/1999	1999	7	31	61	57	87	72	40	2305
8/1/1999	1999	8	1	62	57	80	68.5	36.5	2341.5
8/2/1999	1999	8	2	63	56	76	66	34	2375.5
8/3/1999	1999	8	3	64	54	74	64	32	2407.5
8/4/1999	1999	8	4	65	56	73	64.5	32.5	2440
8/5/1999	1999	8	5	66	56	75	65.5	33.5	2473.5
8/6/1999	1999	8	6	67	49	83	66	34	2507.5
8/7/1999	1999	8	7	68	50	88	69	37	2544.5
8/8/1999	1999	8	8	69	58	85	71.5	39.5	2584
8/9/1999	1999	8	9	70	55	83	69	37	2621
8/10/1999	1999	8	10	71	53	75	64	32	2653
8/11/1999	1999	8	11	72	43	84	63.5	31.5	2684.5
8/12/1999	1999	8	12	73	43	87	65	33	2717.5
8/13/1999	1999	8	13	74	56	90	73	41	2758.5
8/14/1999	1999	8	14	75	56	80	68	36	2794.5
8/15/1999	1999	8	15	76	53	78	65.5	33.5	2828
8/16/1999	1999	8	16	77	53	88	70.5	38.5	2866.5

8/17/1999	1999	8	17	78	52	90	71	39	2905.5
8/18/1999	1999	8	18	79	52	90	71	39	2944.5
8/19/1999	1999	8	19	80	56	88	72	40	2984.5
8/20/1999	1999	8	20	81	50	82	66	34	3018.5
8/21/1999	1999	8	21	82	51	87	69	37	3055.5
8/22/1999	1999	8	22	83	51	87	69	37	3092.5
8/23/1999	1999	8	23	84	52	89	70.5	38.5	3131
8/24/1999	1999	8	24	85	53	90	71.5	39.5	3170.5
8/25/1999	1999	8	25	86	52	90	71	39	3209.5
8/26/1999	1999	8	26	87	54	89	71.5	39.5	3249
8/27/1999	1999	8	27	88	57	89	73	41	3290
8/28/1999	1999	8	28	89	57	86	71.5	39.5	3329.5
8/29/1999	1999	8	29	90	55	88	71.5	39.5	3369
8/30/1999	1999	8	30	91	50	90	70	38	3407
8/31/1999	1999	8	31	92	50	87	68.5	36.5	3443.5
9/1/1999	1999	9	1	93	60	74	67	35	3478.5
9/2/1999	1999	9	2	94	48	72	60	28	3506.5
9/3/1999	1999	9	3	95	47	73	60	28	3534.5
9/4/1999	1999	9	4	96	41	81	61	29	3563.5
9/5/1999	1999	9	5	97	42	82	62	30	3593.5
9/6/1999	1999	9	6	98	44	84	64	32	3625.5
9/7/1999	1999	9	7	99	42	76	59	27	3652.5
9/8/1999	1999	9	8	100	58	88	73	41	3693.5
9/9/1999	1999	9	9	101	43	64	53.5	21.5	3715
9/10/1999	1999	9	10	102	42	83	62.5	30.5	3745.5
9/11/1999	1999	9	11	103	45	76	60.5	28.5	3774
9/12/1999	1999	9	12	104	43	85	64	32	3806
9/13/1999	1999	9	13	105	42	85	63.5	31.5	3837.5
9/14/1999	1999	9	14	106	46	69	57.5	25.5	3863
9/15/1999	1999	9	15	107	40	77	58.5	26.5	3889.5
9/16/1999	1999	9	16	108	48	83	65.5	33.5	3923
9/17/1999	1999	9	17	109	40	77	52.25	20.25	3943.25
9/18/1999	1999	9	18	110	40	79	59.5	27.5	3970.75
9/19/1999	1999	9	19	111	44	78	61	29	3999.75
9/20/1999	1999	9	20	112	38	79	58.5	26.5	4026.25
9/21/1999	1999	9	21	113	40	80	60	28	4054.25
9/22/1999	1999	9	22	114	45	75	60	28	4082.25
9/23/1999	1999	9	23	115	45	70	57.5	25.5	4107.75
9/24/1999	1999	9	24	116	41	79	60	28	4135.75
9/25/1999	1999	9	25	117	40	83	61.5	29.5	4165.25
9/26/1999	1999	9	26	118	38	89	63.5	31.5	4196.75
9/27/1999	1999	9	27	119	38	86	62	30	4226.75
9/28/1999	1999	9	28	120	30	68	49	17	4243.75
9/29/1999	1999	9	29	121	30	76	53	21	4264.75
9/30/1999	1999	9	30	122	31	84	57.5	25.5	4290.25
10/1/1999	1999	10	1	123	35	89	62	30	4320.25
10/2/1999	1999	10	2	124	32	83	57.5	25.5	4345.75
10/3/1999	1999	10	3	125	31	81	56	24	4369.75
10/4/1999	1999	10	4	126	33	82	57.5	25.5	4395.25
10/5/1999	1999	10	5	127		85	85	53	4448.25
10/6/1999	1999	10	6	128	38	81	59.5	27.5	4475.75
10/7/1999	1999	10	7	129	35	68	51.5	19.5	4495.25
10/8/1999	1999	10	8	130	32	80	56	24	4519.25
10/9/1999	1999	10	9	131	28	80	54	22	4541.25
10/10/1999	1999	10	10	132	32	85	58.5	26.5	4567.75
10/11/1999	1999	10	11	133	30	84	57	25	4592.75
10/12/1999	1999	10	12	134	30	83	56.5	24.5	4617.25
10/13/1999	1999	10	13	135	39	83	61	29	4646.25
10/14/1999	1999	10	14	136	30	82	56	24	4670.25
10/15/1999	1999	10	15	137	36	76	56	24	4694.25
10/16/1999	1999	10	16	138	28	73	50.5	18.5	4712.75
10/17/1999	1999	10	17	139	16	43	29.5	-2.5	4710.25
10/18/1999	1999	10	18	140	22	66	44	12	4722.25
10/19/1999	1999	10	19	141	20	66	43	11	4733.25
10/20/1999	1999	10	20	142	21	72	46.5	14.5	4747.75
10/21/1999	1999	10	21	143	21	73	47	15	4762.75
10/22/1999	1999	10	22	144	25	77	51	19	4781.75
10/23/1999	1999	10	23	145	24	78	51	19	4800.75
10/24/1999	1999	10	24	146	24	78	51	19	4819.75
10/25/1999	1999	10	25	147	21	74	47.5	15.5	4835.25
10/26/1999	1999	10	26	148	30	77	53.5	21.5	4856.75
10/27/1999	1999	10	27	149	25	71	48	16	4872.75
10/28/1999	1999	10	28	150	27	76	51.5	19.5	4892.25
10/29/1999	1999	10	29	151	18	59	38.5	6.5	4898.75
10/30/1999	1999	10	30	152	19	62	40.5	8.5	4907.25
10/31/1999	1999	10	31	153	21	77	49	17	4924.25
11/1/1999	1999	11	1	154	30	78	54	22	4946.25
11/2/1999	1999	11	2	155	18	61	39.5	7.5	4953.75
11/3/1999	1999	11	3	156	19	72	45.5	13.5	4967.25
11/4/1999	1999	11	4	157	20	75	47.5	15.5	4982.75
11/5/1999	1999	11	5	158	21	77	49	17	4999.75
11/6/1999	1999	11	6	159	26	77	51.5	19.5	5019.25
11/7/1999	1999	11	7	160	26	71	48.5	16.5	5035.75
11/8/1999	1999	11	8	161	26	74	50	18	5053.75
11/9/1999	1999	11	9	162	18	70	44	12	5065.75
11/10/1999	1999	11	10	163	22	72	47	15	5080.75
11/11/1999	1999	11	11	164	22	78	50	18	5098.75
11/12/1999	1999	11	12	165	20	77	48.5	16.5	5115.25
11/13/1999	1999	11	13	166	19	76	47.5	15.5	5130.75
11/14/1999	1999	11	14	167	18	73	45.5	13.5	5144.25
11/15/1999	1999	11	15	168	18	75	46.5	14.5	5158.75
11/16/1999	1999	11	16	169	20	75	47.5	15.5	5174.25
11/17/1999	1999	11	17	170	40	75	57.5	25.5	5199.75

11/18/1999	1999	11	18	171	17	70	43.5	11.5	5211.25
11/19/1999	1999	11	19	172	19	67	43	11	5222.25
11/21/1999	1999	11	21	173	18	68	43	11	5233.25
11/22/1999	1999	11	22	174	6	45	25.5	-6.5	5226.75
11/23/1999	1999	11	23	175	11	49	30	-2	5224.75
11/24/1999	1999	11	24	176	4	49	26.5	-5.5	5219.25
11/25/1999	1999	11	25	177	15	52	33.5	1.5	5220.75
11/26/1999	1999	11	26	178	15	69	42	10	5230.75
11/27/1999	1999	11	27	179	17	70	43.5	11.5	5242.25
11/28/1999	1999	11	28	180	18	68	43	11	5253.25
11/29/1999	1999	11	29	181	15	61	38	6	5259.25
11/30/1999	1999	11	30	182	23	66	44.5	12.5	5271.75
12/1/1999	1999	12	1	183	19	64	41.5	9.5	5281.25
12/2/1999	1999	12	2	184	23	53	38	6	5287.25
12/3/1999	1999	12	3	185	14	47	30.5	-1.5	5285.75
12/4/1999	1999	12	4	186	4	46	25	-7	5278.75
12/5/1999	1999	12	5	187	12	51	31.5	-0.5	5278.25
12/6/1999	1999	12	6	188	8	53	30.5	-1.5	5276.75
12/7/1999	1999	12	7	189	4	56	30	-2	5274.75
12/8/1999	1999	12	8	190	5	31	18	-14	5260.75
12/9/1999	1999	12	9	191	23	41	32	0	5260.75
12/10/1999	1999	12	10	192	22	40	31	-1	5259.75
12/11/1999	1999	12	11	193	5	38	21.5	-10.5	5249.25
12/12/1999	1999	12	12	194	3	49	26	-6	5243.25
12/13/1999	1999	12	13	195	13	54	33.5	1.5	5244.75
12/14/1999	1999	12	14	196	-1	33	16	-16	5228.75
12/15/1999	1999	12	15	197	7	41	24	-8	5220.75
12/16/1999	1999	12	16	198	11	48	29.5	-2.5	5218.25
12/17/1999	1999	12	17	199	7	50	28.5	-3.5	5214.75
12/18/1999	1999	12	18	200	17	61	39	7	5221.75
12/19/1999	1999	12	19	201	5	42	23.5	-8.5	5213.25
12/20/1999	1999	12	20	202	3	42	22.5	-9.5	5203.75
12/21/1999	1999	12	21	203	-2	29	13.5	-18.5	5185.25
12/22/1999	1999	12	22	204	-6	36	15	-17	5168.25
12/23/1999	1999	12	23	205	-1	44	21.5	-10.5	5157.75
12/24/1999	1999	12	24	206	8	50	29	-3	5154.75
12/25/1999	1999	12	25	207	18	35	26.5	-5.5	5149.25
12/26/1999	1999	12	26	208	10	43	26.5	-5.5	5143.75
12/27/1999	1999	12	27	209	11	54	32.5	0.5	5144.25
12/28/1999	1999	12	28	210	11	59	35	3	5147.25
12/29/1999	1999	12	29	211	11	59	35	3	5150.25
12/30/1999	1999	12	30	212	8	57	32.5	0.5	5150.75
12/31/1999	1999	12	31	213	22	55	38.5	6.5	5157.25
1/1/2000	2000	1	1	214	15	53	34	2	5159.25
1/2/2000	2000	1	2	215	16	39	27.5	-4.5	5154.75
1/3/2000	2000	1	3	216	2	33	17.5	-14.5	5140.25
1/4/2000	2000	1	4	217	10	43	26.5	-5.5	5134.75
1/5/2000	2000	1	5	218	6	46	26	-6	5128.75
1/6/2000	2000	1	6	219	0	36	18	-14	5114.75
1/7/2000	2000	1	7	220	4	45	24.5	-7.5	5107.25
1/8/2000	2000	1	8	221	16	50	33	1	5108.25
1/9/2000	2000	1	9	222	16	53	34.5	2.5	5110.75
1/10/2000	2000	1	10	223	15	57	36	4	5114.75
1/11/2000	2000	1	11	224	15	65	40	8	5122.75
1/12/2000	2000	1	12	225	17	64	40.5	8.5	5131.25
1/13/2000	2000	1	13	226	14	65	39.5	7.5	5138.75
1/14/2000	2000	1	14	227	15	59	37	5	5143.75
1/15/2000	2000	1	15	228	17	71	44	12	5155.75
1/16/2000	2000	1	16	229	24	70	47	15	5170.75
1/17/2000	2000	1	17	230	23	69	46	14	5184.75
1/18/2000	2000	1	18	231	21	68	44.5	12.5	5197.25
1/19/2000	2000	1	19	232	21	67	44	12	5209.25
1/20/2000	2000	1	20	233	26	65	45.5	13.5	5222.75
1/21/2000	2000	1	21	234	24	60	42	10	5232.75
1/22/2000	2000	1	22	235	13	57	35	3	5235.75
1/23/2000	2000	1	23	236	19	52	35.5	3.5	5239.25
1/24/2000	2000	1	24	237	30	62	46	14	5253.25
1/25/2000	2000	1	25	238	40	60	50	18	5271.25
1/26/2000	2000	1	26	239	35	56	45.5	13.5	5284.75
1/27/2000	2000	1	27	240	13	60	36.5	4.5	5289.25
1/28/2000	2000	1	28	241	5	48	26.5	-5.5	5283.75
1/29/2000	2000	1	29	242	5	45	25	-7	5276.75
1/30/2000	2000	1	30	243	15	52	33.5	1.5	5278.25
1/31/2000	2000	1	31	244	25	43	34	2	5280.25
2/1/2000	2000	2	1	245	7	46	26.5	-5.5	5274.75
2/2/2000	2000	2	2	246	11	54	32.5	0.5	5275.25
2/3/2000	2000	2	3	247	16	71	43.5	11.5	5286.75
2/4/2000	2000	2	4	248	7	51	29	-3	5283.75
2/5/2000	2000	2	5	249	13	63	38	6	5289.75
2/6/2000	2000	2	6	250	14	60	37	5	5294.75
2/7/2000	2000	2	7	251	16	62	39	7	5301.75
2/8/2000	2000	2	8	252	20	65	42.5	10.5	5312.25
2/9/2000	2000	2	9	253	32	64	48	16	5328.25
2/10/2000	2000	2	10	254	24	60	42	10	5338.25
2/11/2000	2000	2	11	255	16	61	38.5	6.5	5344.75
2/12/2000	2000	2	12	256	30	54	42	10	5354.75
2/13/2000	2000	2	13	257	23	54	38.5	6.5	5361.25
2/14/2000	2000	2	14	258	19	67	43	11	5372.25
2/15/2000	2000	2	15	259	19	68	43.5	11.5	5383.75
2/16/2000	2000	2	16	260	34	64	49	17	5400.75
2/17/2000	2000	2	17	261	21	51	36	4	5404.75
2/18/2000	2000	2	18	262	19	61	40	8	5412.75
2/19/2000	2000	2	19	263	20	62	41	9	5421.75

2/20/2000	2000	2	20	264	21	61	41	9	5430.75
2/21/2000	2000	2	21	265	33	62	47.5	15.5	5446.25
2/22/2000	2000	2	22	266	15	50	32.5	0.5	5446.75
2/23/2000	2000	2	23	267	33	62	47.5	15.5	5462.25
2/24/2000	2000	2	24	268	21	52	36.5	4.5	5466.75
2/25/2000	2000	2	25	269	9	41	25	-7	5459.75
2/26/2000	2000	2	26	270	13	55	34	2	5461.75
2/27/2000	2000	2	27	271	30	64	47	15	5476.75
2/28/2000	2000	2	28	272	16	62	39	7	5483.75
2/29/2000	2000	2	29	273	24	60	42	10	5493.75
3/1/2000	2000	3	1	274	16	54	35	3	5496.75
3/2/2000	2000	3	2	275	14	59	36.5	4.5	5501.25
3/3/2000	2000	3	3	276	17	67	42	10	5511.25
3/4/2000	2000	3	4	277	32	70	51	19	5530.25
3/5/2000	2000	3	5	278	31	49	40	8	5538.25
3/6/2000	2000	3	6	279	32	58	45	13	5551.25
3/7/2000	2000	3	7	280	25	43	34	2	5553.25
3/8/2000	2000	3	8	281	25	55	40	8	5561.25
3/9/2000	2000	3	9	282	19	56	37.5	5.5	5566.75
3/10/2000	2000	3	10	283	11	48	29.5	-2.5	5564.25
3/11/2000	2000	3	11	284	15	58	36.5	4.5	5568.75
3/12/2000	2000	3	12	285	21	66	43.5	11.5	5580.25
3/13/2000	2000	3	13	286	23	67	45	13	5593.25
3/14/2000	2000	3	14	287	20	66	43	11	5604.25
3/15/2000	2000	3	15	288	16	68	42	10	5614.25
3/16/2000	2000	3	16	289	17	63	40	8	5622.25
3/17/2000	2000	3	17	290	18	66	42	10	5632.25
3/18/2000	2000	3	18	291	9	52	30.5	-1.5	5630.75
3/19/2000	2000	3	19	292	33	67	50	18	5648.75
3/20/2000	2000	3	20	293	27	62	44.5	12.5	5661.25
3/21/2000	2000	3	21	294	28	61	44.5	12.5	5673.75
3/22/2000	2000	3	22	295	19	36	27.5	-4.5	5669.25
3/23/2000	2000	3	23	296	22	54	38	6	5675.25
3/24/2000	2000	3	24	297	25	68	46.5	14.5	5689.75
3/25/2000	2000	3	25	298	24	70	47	15	5704.75
3/27/2000	2000	3	27	299	32	72	52	20	5724.75
3/28/2000	2000	3	28	300	35	56	45.5	13.5	5738.25
3/29/2000	2000	3	29	301	35	62	48.5	16.5	5754.75
3/30/2000	2000	3	30	302	32	58	45	13	5767.75
3/31/2000	2000	3	31	303	30	42	36	4	5771.75
4/1/2000	2000	4	1	304	20	55	37.5	5.5	5777.25
4/2/2000	2000	4	2	305	25	57	41	9	5786.25
4/3/2000	2000	4	3	306	25	65	45	13	5799.25
4/4/2000	2000	4	4	307	30	76	53	21	5820.25
4/5/2000	2000	4	5	308	38	77	57.5	25.5	5845.75
4/6/2000	2000	4	6	309	34	77	55.5	23.5	5869.25
4/7/2000	2000	4	7	310	36	76	56	24	5893.25
4/8/2000	2000	4	8	311	37	64	50.5	18.5	5911.75
4/9/2000	2000	4	9	312	37	80	58.5	26.5	5938.25
4/10/2000	2000	4	10	313	37	73	55	23	5961.25
4/11/2000	2000	4	11	314	28	65	46.5	14.5	5975.75
4/12/2000	2000	4	12	315	28	70	49	17	5992.75
4/13/2000	2000	4	13	316	33	77	55	23	6015.75
4/14/2000	2000	4	14	317	35	76	55.5	23.5	6039.25
4/15/2000	2000	4	15	318	25	65	45	13	6052.25
4/16/2000	2000	4	16	319	32	76	54	22	6074.25
4/17/2000	2000	4	17	320	38	82	60	28	6102.25
4/18/2000	2000	4	18	321	30	75	52.5	20.5	6122.75
4/19/2000	2000	4	19	322	24	65	44.5	12.5	6135.25
4/20/2000	2000	4	20	323	35	76	55.5	23.5	6158.75
4/21/2000	2000	4	21	324	37	73	55	23	6181.75
4/22/2000	2000	4	22	325	41	63	52	20	6201.75
4/23/2000	2000	4	23	326	30	78	54	22	6223.75
4/24/2000	2000	4	24	327	31	87	59	27	6250.75
4/25/2000	2000	4	25	328	32	87	59.5	27.5	6278.25
4/26/2000	2000	4	26	329	32	87	59.5	27.5	6305.75
4/27/2000	2000	4	27	330	51	90	70.5	38.5	6344.25
4/28/2000	2000	4	28	331	40	84	62	30	6374.25
4/29/2000	2000	4	29	332	38	73	55.5	23.5	6397.75
4/30/2000	2000	4	30	333	33	68	50.5	18.5	6416.25
5/1/2000	2000	5	1	334	31	81	56	24	6440.25
5/2/2000	2000	5	2	335	34	84	59	27	6467.25
5/3/2000	2000	5	3	336	36	88	62	30	6497.25
5/4/2000	2000	5	4	337	36	89	62.5	30.5	6527.75
5/5/2000	2000	5	5	338	37	90	63.5	31.5	6559.25
5/6/2000	2000	5	6	339	38	84	61	29	6588.25
5/7/2000	2000	5	7	340	44	80	62	30	6618.25
5/8/2000	2000	5	8	341	46	80	63	31	6649.25
5/9/2000	2000	5	9	342	50	85	67.5	35.5	6684.75
5/10/2000	2000	5	10	343	52	88	70	38	6722.75
5/11/2000	2000	5	11	344	32	81	56.5	24.5	6747.25
5/12/2000	2000	5	12	345	24	63	43.5	11.5	6758.75
5/13/2000	2000	5	13	346	29	63	46	14	6772.75
5/14/2000	2000	5	14	347	29	63	46	14	6786.75
5/15/2000	2000	5	15	348	53	88	70.5	38.5	6825.25
5/16/2000	2000	5	16	349	40	80	60	28	6853.25
5/17/2000	2000	5	17	350	32	70	51	19	6872.25
5/18/2000	2000	5	18	351	38	72	55	23	6895.25
5/19/2000	2000	5	19	352	35	75	55	23	6918.25
5/20/2000	2000	5	20	353	37	81	59	27	6945.25
5/21/2000	2000	5	21	354	38	87	62.5	30.5	6975.75
5/22/2000	2000	5	22	355	40	91	65.5	33.5	7009.25
5/23/2000	2000	5	23	356	54	96	75	43	7052.25

5/24/2000	2000	5	24	357	59	92	75.5	43.5	7095.75
5/25/2000	2000	5	25	358	45	88	66.5	34.5	7130.25
5/26/2000	2000	5	26	359	41	84	62.5	30.5	7160.75
5/27/2000	2000	5	27	360	40	86	63	31	7191.75
5/28/2000	2000	5	28	361	45	97	71	39	7230.75
5/29/2000	2000	5	29	362	54	97	75.5	43.5	7274.25
5/30/2000	2000	5	30	363	46	95	70.5	38.5	7312.75
5/31/2000	2000	5	31	364	49	94	71.5	39.5	7352.25
6/1/2000	2000	6	1	1	56	90	73	41	41
6/2/2000	2000	6	2	2	44	90	67	35	76
6/3/2000	2000	6	3	3	45	90	67.5	35.5	111.5
6/4/2000	2000	6	4	4	54	94	74	42	153.5
6/5/2000	2000	6	5	5	52	93	72.5	40.5	194
6/6/2000	2000	6	6	6	54	93	73.5	41.5	235.5
6/7/2000	2000	6	7	7	58	94	76	44	279.5
6/8/2000	2000	6	8	8	51	86	68.5	36.5	316
6/9/2000	2000	6	9	9	44	86	65	33	349
6/10/2000	2000	6	10	10	42	86	64	32	381
6/11/2000	2000	6	11	11	43	89	66	34	415
6/12/2000	2000	6	12	12	43	91	67	35	450
6/13/2000	2000	6	13	13	52	93	72.5	40.5	490.5
6/14/2000	2000	6	14	14	45	92	68.5	36.5	527
6/15/2000	2000	6	15	15	50	97	73.5	41.5	568.5
6/16/2000	2000	6	16	16	59	93	76	44	612.5
6/17/2000	2000	6	17	17	53	88	70.5	38.5	651
6/18/2000	2000	6	18	18	52	84	68	36	687
6/19/2000	2000	6	19	19	56	84	70	38	725
6/20/2000	2000	6	20	20	46	86	66	34	759
6/21/2000	2000	6	21	21	48	90	69	37	796
6/22/2000	2000	6	22	22	48	90	69	37	833
6/23/2000	2000	6	23	23	51	87	69	37	870
6/24/2000	2000	6	24	24	51	89	70	38	908
6/25/2000	2000	6	25	25	52	95	73.5	41.5	949.5
6/26/2000	2000	6	26	26	60	87	73.5	41.5	991
6/27/2000	2000	6	27	27	50	82	66	34	1025
6/28/2000	2000	6	28	28	56	90	73	41	1066
6/29/2000	2000	6	29	29	49	82	65.5	33.5	1099.5
6/30/2000	2000	6	30	30	59	87	73	41	1140.5
7/1/2000	2000	7	1	31	55	92	73.5	41.5	1182
7/2/2000	2000	7	2	32	54	90	72	40	1222
7/3/2000	2000	7	3	33	52	92	72	40	1262
7/4/2000	2000	7	4	34	55	92	73.5	41.5	1303.5
7/5/2000	2000	7	5	35	52	95	73.5	41.5	1345
7/6/2000	2000	7	6	36	47	95	71	39	1384
7/7/2000	2000	7	7	37	49	95	72	40	1424
7/8/2000	2000	7	8	38	56	84	70	38	1462
7/9/2000	2000	7	9	39	52	84	68	36	1498
7/10/2000	2000	7	10	40	54	88	71	39	1537
7/11/2000	2000	7	11	41	50	90	70	38	1575
7/12/2000	2000	7	12	42	58	90	74	42	1617
7/13/2000	2000	7	13	43	57	92	74.5	42.5	1659.5
7/14/2000	2000	7	14	44	58	91	74.5	42.5	1702
7/15/2000	2000	7	15	45	60	92	76	44	1746
7/16/2000	2000	7	16	46	50	93	71.5	39.5	1785.5
7/17/2000	2000	7	17	47	50	93	71.5	39.5	1825
7/18/2000	2000	7	18	48	51	93	72	40	1865
7/19/2000	2000	7	19	49	56	97	76.5	44.5	1909.5
7/20/2000	2000	7	20	50	54	95	74.5	42.5	1952
7/21/2000	2000	7	21	51	55	96	75.5	43.5	1995.5
7/22/2000	2000	7	22	52	54	99	76.5	44.5	2040
7/23/2000	2000	7	23	53	51	99	75	43	2083
7/24/2000	2000	7	24	54	55	96	75.5	43.5	2126.5
7/25/2000	2000	7	25	55	55	98	76.5	44.5	2171
7/26/2000	2000	7	26	56	55	91	73	41	2212
7/27/2000	2000	7	27	57	54	97	75.5	43.5	2255.5
7/28/2000	2000	7	28	58	62	98	80	48	2303.5
7/29/2000	2000	7	29	59	50	96	73	41	2344.5
7/30/2000	2000	7	30	60	56	92	74	42	2386.5
7/31/2000	2000	7	31	61	50	91	70.5	38.5	2425
8/1/2000	2000	8	1	62	52	95	73.5	41.5	2466.5
8/2/2000	2000	8	2	63	59	97	78	46	2512.5
8/3/2000	2000	8	3	64	55	100	77.5	45.5	2558
8/4/2000	2000	8	4	65	58	95	76.5	44.5	2602.5
8/5/2000	2000	8	5	66	55	96	75.5	43.5	2646
8/6/2000	2000	8	6	67	56	94	75	43	2689
8/7/2000	2000	8	7	68	52	95	73.5	41.5	2730.5
8/8/2000	2000	8	8	69	55	95	75	43	2773.5
8/9/2000	2000	8	9	70	53	95	74	42	2815.5
8/10/2000	2000	8	10	71	60	88	74	42	2857.5
8/11/2000	2000	8	11	72	54	94	74	42	2899.5
8/12/2000	2000	8	12	73	58	89	73.5	41.5	2941
8/13/2000	2000	8	13	74	52	91	71.5	39.5	2980.5
8/14/2000	2000	8	14	75	55	97	76	44	3024.5
8/15/2000	2000	8	15	76	55	97	76	44	3068.5
8/16/2000	2000	8	16	77	54	96	75	43	3111.5
8/17/2000	2000	8	17	78	57	86	71.5	39.5	3151
8/18/2000	2000	8	18	79	52	80	66	34	3185
8/19/2000	2000	8	19	80	47	86	66.5	34.5	3219.5
8/20/2000	2000	8	20	81	50	90	70	38	3257.5
8/21/2000	2000	8	21	82	49	93	71	39	3296.5
8/22/2000	2000	8	22	83	50	93	71.5	39.5	3336
8/23/2000	2000	8	23	84	49	90	69.5	37.5	3373.5
8/24/2000	2000	8	24	85	53	92	72.5	40.5	3414

8/25/2000	2000	8	25	86	50	88	69	37	3451
8/26/2000	2000	8	26	87	49	90	69.5	37.5	3488.5
8/27/2000	2000	8	27	88	54	93	73.5	41.5	3530
8/28/2000	2000	8	28	89	52	88	70	38	3568
8/29/2000	2000	8	29	90	49	84	66.5	34.5	3602.5
8/30/2000	2000	8	30	91	48	85	66.5	34.5	3637
8/31/2000	2000	8	31	92	44	86	65	33	3670
9/1/2000	2000	9	1	93	47	83	65	33	3703
9/2/2000	2000	9	2	94	52	90	71	39	3742
9/3/2000	2000	9	3	95	51	94	72.5	40.5	3782.5
9/4/2000	2000	9	4	96	50	93	71.5	39.5	3822
9/5/2000	2000	9	5	97	48	94	71	39	3861
9/6/2000	2000	9	6	98	47	90	68.5	36.5	3897.5
9/7/2000	2000	9	7	99	57	88	72.5	40.5	3938
9/8/2000	2000	9	8	100	47	84	65.5	33.5	3971.5
9/9/2000	2000	9	9	101	42	87	64.5	32.5	4004
9/10/2000	2000	9	10	102	51	87	69	37	4041
9/11/2000	2000	9	11	103	42	88	65	33	4074
9/12/2000	2000	9	12	104	42	91	66.5	34.5	4108.5
9/13/2000	2000	9	13	105	44	92	68	36	4144.5
9/14/2000	2000	9	14	106	47	92	69.5	37.5	4182
9/15/2000	2000	9	15	107	46	93	69.5	37.5	4219.5
9/16/2000	2000	9	16	108	46	86	66	34	4253.5
9/17/2000	2000	9	17	109	46	84	65	33	4286.5
9/18/2000	2000	9	18	110	40	78	59	27	4313.5
9/19/2000	2000	9	19	111	46	84	65	33	4346.5
9/20/2000	2000	9	20	112	50	90	70	38	4384.5
9/21/2000	2000	9	21	113	50	85	67.5	35.5	4420
9/22/2000	2000	9	22	114	50	85	67.5	35.5	4455.5
9/23/2000	2000	9	23	115	37	78	57.5	25.5	4481
9/24/2000	2000	9	24	116	26	65	45.5	13.5	4494.5
9/25/2000	2000	9	25	117	32	77	54.5	22.5	4517
9/26/2000	2000	9	26	118	48	85	66.5	34.5	4551.5
9/27/2000	2000	9	27	119	45	82	63.5	31.5	4583
9/28/2000	2000	9	28	120	45	89	67	35	4618
9/29/2000	2000	9	29	121	48	76	62	30	4648
9/30/2000	2000	9	30	122	40	84	62	30	4678
10/1/2000	2000	10	1	123	42	87	64.5	32.5	4710.5
10/2/2000	2000	10	2	124	45	86	65.5	33.5	4744
10/3/2000	2000	10	3	125	49	86	67.5	35.5	4779.5
10/4/2000	2000	10	4	126	34	66	50	18	4797.5
10/5/2000	2000	10	5	127	37	79	58	26	4823.5
10/6/2000	2000	10	6	128	37	79	58	26	4849.5
10/7/2000	2000	10	7	129	37	65	51	19	4868.5
10/8/2000	2000	10	8	130	36	64	50	18	4886.5
10/9/2000	2000	10	9	131	32	61	46.5	14.5	4901
10/10/2000	2000	10	10	132	34	63	48.5	16.5	4917.5
10/11/2000	2000	10	11	133	32	65	48.5	16.5	4934
10/12/2000	2000	10	12	134	37	70	53.5	21.5	4955.5
10/13/2000	2000	10	13	135	30	67	48.5	16.5	4972
10/14/2000	2000	10	14	136	30	72	51	19	4991
10/15/2000	2000	10	15	137	35	74	54.5	22.5	5013.5
10/16/2000	2000	10	16	138	28	72	50	18	5031.5
10/17/2000	2000	10	17	139	31	73	52	20	5051.5
10/18/2000	2000	10	18	140	36	70	53	21	5072.5
10/19/2000	2000	10	19	141	31	69	50	18	5090.5
10/20/2000	2000	10	20	142	35	75	55	23	5113.5
10/21/2000	2000	10	21	143	40	58	49	17	5130.5
10/22/2000	2000	10	22	144	40	59	49.5	17.5	5148
10/23/2000	2000	10	23	145	35	60	47.5	15.5	5163.5
10/24/2000	2000	10	24	146	36	58	47	15	5178.5
10/25/2000	2000	10	25	147	30	62	46	14	5192.5
10/26/2000	2000	10	26	148	32	66	49	17	5209.5
10/27/2000	2000	10	27	149	38	61	49.5	17.5	5227
10/28/2000	2000	10	28	150	37	50	43.5	11.5	5238.5
10/29/2000	2000	10	29	151	29	59	44	12	5250.5
10/30/2000	2000	10	30	152	34	66	50	18	5268.5
10/31/2000	2000	10	31	153	58	59	58.5	26.5	5295
11/1/2000	2000	11	1	154	21	50	35.5	3.5	5298.5
11/2/2000	2000	11	2	155	33	57	45	13	5311.5
11/3/2000	2000	11	3	156	34	45	39.5	7.5	5319
11/4/2000	2000	11	4	157	35	47	41	9	5328
11/5/2000	2000	11	5	158	28	47	37.5	5.5	5333.5
11/6/2000	2000	11	6	159	24	43	33.5	1.5	5335
11/7/2000	2000	11	7	160	7	35	21	-11	5324
11/8/2000	2000	11	8	161	18	47	32.5	0.5	5324.5
11/9/2000	2000	11	9	162	23	58	40.5	8.5	5333
11/10/2000	2000	11	10	163	33	43	38	6	5339
11/11/2000	2000	11	11	164	34	43	38.5	6.5	5345.5
11/12/2000	2000	11	12	165	10	41	25.5	-6.5	5339
11/13/2000	2000	11	13	166	13	46	29.5	-2.5	5336.5
11/14/2000	2000	11	14	167	23	51	37	5	5341.5
11/15/2000	2000	11	15	168	10	48	29	-3	5338.5
11/16/2000	2000	11	16	169	10	47	28.5	-3.5	5335
11/17/2000	2000	11	17	170	11	45	28	-4	5331
11/18/2000	2000	11	18	171	10	39	24.5	-7.5	5323.5
11/19/2000	2000	11	19	172	12	50	31	-1	5322.5
11/20/2000	2000	11	20	173	14	61	37.5	5.5	5328
11/21/2000	2000	11	21	174	27	56	41.5	9.5	5337.5
11/22/2000	2000	11	22	175	30	60	45	13	5350.5
11/23/2000	2000	11	23	176	18	39	28.5	-3.5	5347
11/24/2000	2000	11	24	177	18	39	28.5	-3.5	5343.5
11/25/2000	2000	11	25	178	14	44	29	-3	5340.5

11/26/2000	2000	11	26	179	16	55	35.5	3.5	5344
11/27/2000	2000	11	27	180	23	53	38	6	5350
11/28/2000	2000	11	28	181	20	58	39	7	5357
11/29/2000	2000	11	29	182	23	61	42	10	5367
11/30/2000	2000	11	30	183	19	61	40	8	5375
12/1/2000	2000	12	1	184	31	53	42	10	5385
12/2/2000	2000	12	2	185	20	42	31	-1	5384
12/3/2000	2000	12	3	186	17	55	36	4	5388
12/4/2000	2000	12	4	187	17	61	39	7	5395
12/5/2000	2000	12	5	188	17	57	37	5	5400
12/6/2000	2000	12	6	189	19	56	37.5	5.5	5405.5
12/7/2000	2000	12	7	190	22	63	42.5	10.5	5416
12/8/2000	2000	12	8	191	27	56	41.5	9.5	5425.5
12/9/2000	2000	12	9	192	24	54	39	7	5432.5
12/10/2000	2000	12	10	193	27	42	34.5	2.5	5435
12/11/2000	2000	12	11	194	15	55	35	3	5438
12/12/2000	2000	12	12	195	31	51	41	9	5447
12/13/2000	2000	12	13	196	15	52	33.5	1.5	5448.5
12/14/2000	2000	12	14	197	20	56	38	6	5454.5
12/15/2000	2000	12	15	198	20	53	36.5	4.5	5459
12/16/2000	2000	12	16	199	12	65	38.5	6.5	5465.5
12/17/2000	2000	12	17	200	9	58	33.5	1.5	5467
12/18/2000	2000	12	18	201	5	39	22	-10	5457
12/19/2000	2000	12	19	202	23	55	39	7	5464
12/20/2000	2000	12	20	203	10	51	30.5	-1.5	5462.5
12/21/2000	2000	12	21	204	11	57	34	2	5464.5
12/22/2000	2000	12	22	205	10	63	36.5	4.5	5469
12/23/2000	2000	12	23	206	10	58	34	2	5471
12/24/2000	2000	12	24	207	25	61	43	11	5482
12/25/2000	2000	12	25	208	21	42	31.5	-0.5	5481.5
12/26/2000	2000	12	26	209	0	32	16	-16	5465.5
12/27/2000	2000	12	27	210	-1	36	17.5	-14.5	5451
12/28/2000	2000	12	28	211	-1	48	23.5	-8.5	5442.5
12/29/2000	2000	12	29	212	5	46	25.5	-6.5	5436
12/30/2000	2000	12	30	213	13	50	31.5	-0.5	5435.5
12/31/2000	2000	12	31	214	10	50	30	-2	5433.5
1/1/2001	2001	1	1	215	10	37	23.5	-8.5	5425
1/2/2001	2001	1	2	216	11	38	24.5	-7.5	5417.5
1/3/2001	2001	1	3	217	12	39	25.5	-6.5	5411
1/4/2001	2001	1	4	218	9	36	22.5	-9.5	5401.5
1/5/2001	2001	1	5	219	15	56	35.5	3.5	5405
1/6/2001	2001	1	6	220	13	62	37.5	5.5	5410.5
1/7/2001	2001	1	7	221	6	53	29.5	-2.5	5408
1/8/2001	2001	1	8	222	24	48	36	4	5412
1/9/2001	2001	1	9	223	28	36	32	0	5412
1/10/2001	2001	1	10	224	16	46	31	-1	5411
1/11/2001	2001	1	11	225	21	47	34	2	5413
1/12/2001	2001	1	12	226	54	55	54.5	22.5	5435.5
1/13/2001	2001	1	13	227	10	48	29	-3	5432.5
1/14/2001	2001	1	14	228	15	41	28	-4	5428.5
1/15/2001	2001	1	15	229	15	36	25.5	-6.5	5422
1/16/2001	2001	1	16	230	-2	33	15.5	-16.5	5405.5
1/17/2001	2001	1	17	231	-8	36	14	-18	5387.5
1/18/2001	2001	1	18	232	5	38	21.5	-10.5	5377
1/19/2001	2001	1	19	233	2	38	20	-12	5365
1/20/2001	2001	1	20	234	8	45	26.5	-5.5	5359.5
1/21/2001	2001	1	21	235	23	36	29.5	-2.5	5357
1/22/2001	2001	1	22	236	17	44	30.5	-1.5	5355.5
1/23/2001	2001	1	23	237	23	43	33	1	5356.5
1/24/2001	2001	1	24	238	8	44	26	-6	5350.5
1/25/2001	2001	1	25	239	8	44	26	-6	5344.5
1/26/2001	2001	1	26	240	27	44	35.5	3.5	5348
1/27/2001	2001	1	27	241	14	32	23	-9	5339
1/28/2001	2001	1	28	242	16	30	23	-9	5330
1/29/2001	2001	1	29	243	21	45	33	1	5331
1/30/2001	2001	1	30	244	-5	30	12.5	-19.5	5311.5
1/31/2001	2001	1	31	245	-5	32	13.5	-18.5	5293
2/1/2001	2001	2	1	246	0	28	14	-18	5275
2/2/2001	2001	2	2	247	10	50	30	-2	5273
2/3/2001	2001	2	3	248	20	51	35.5	3.5	5276.5
2/4/2001	2001	2	4	249	21	53	37	5	5281.5
2/5/2001	2001	2	5	250	25	63	44	12	5293.5
2/6/2001	2001	2	6	251	33	64	48.5	16.5	5310
2/7/2001	2001	2	7	252	31	57	44	12	5322
2/8/2001	2001	2	8	253	12	39	25.5	-6.5	5315.5
2/9/2001	2001	2	9	254	16	50	33	1	5316.5
2/10/2001	2001	2	10	255	25	52	38.5	6.5	5323
2/11/2001	2001	2	11	256	23	54	38.5	6.5	5329.5
2/12/2001	2001	2	12	257	32	60	46	14	5343.5
2/13/2001	2001	2	13	258	29	59	44	12	5355.5
2/14/2001	2001	2	14	259	18	37	27.5	-4.5	5351
2/15/2001	2001	2	15	260	17	45	31	-1	5350
2/16/2001	2001	2	16	261	16	47	31.5	-0.5	5349.5
2/17/2001	2001	2	17	262	30	55	42.5	10.5	5360
2/18/2001	2001	2	18	263	22	63	42.5	10.5	5370.5
2/19/2001	2001	2	19	264	20	60	40	8	5378.5
2/20/2001	2001	2	20	265	24	63	43.5	11.5	5390
2/21/2001	2001	2	21	266	20	62	41	9	5399
2/22/2001	2001	2	22	267	21	65	43	11	5410
2/23/2001	2001	2	23	268	22	54	38	6	5416
2/24/2001	2001	2	24	269	30	49	39.5	7.5	5423.5
2/25/2001	2001	2	25	270	29	53	41	9	5432.5
2/26/2001	2001	2	26	271	27	47	37	5	5437.5

2/27/2001	2001	2	27	272	33	50	41.5	9.5	5447
2/28/2001	2001	2	28	273	23	48	35.5	3.5	5450.5
3/1/2001	2001	3	1	274	20	52	36	4	5454.5
3/2/2001	2001	3	2	275	22	55	38.5	6.5	5461
3/3/2001	2001	3	3	276	18	48	33	1	5462
3/4/2001	2001	3	4	277	31	58	44.5	12.5	5474.5
3/5/2001	2001	3	5	278	34	62	48	16	5490.5
3/6/2001	2001	3	6	279	27	64	45.5	13.5	5504
3/7/2001	2001	3	7	280	35	57	46	14	5518
3/8/2001	2001	3	8	281	24	55	39.5	7.5	5525.5
3/9/2001	2001	3	9	282	27	51	39	7	5532.5
3/10/2001	2001	3	10	283	32	44	38	6	5538.5
3/12/2001	2001	3	12	284	19	57	38	6	5544.5
3/13/2001	2001	3	13	285	23	63	43	11	5555.5
3/14/2001	2001	3	14	286	20	64	42	10	5565.5
3/15/2001	2001	3	15	287	17	53	35	3	5568.5
3/16/2001	2001	3	16	288	18	63	40.5	8.5	5577
3/17/2001	2001	3	17	289	19	51	35	3	5580
3/18/2001	2001	3	18	290	21	58	39.5	7.5	5587.5
3/19/2001	2001	3	19	291	23	66	44.5	12.5	5600
3/20/2001	2001	3	20	292	26	75	50.5	18.5	5618.5
3/21/2001	2001	3	21	293	31	75	53	21	5639.5
3/22/2001	2001	3	22	294	31	74	52.5	20.5	5660
3/23/2001	2001	3	23	295	27	70	48.5	16.5	5676.5
3/24/2001	2001	3	24	296	30	65	47.5	15.5	5692
3/25/2001	2001	3	25	297	36	76	56	24	5716
3/26/2001	2001	3	26	298	30	67	48.5	16.5	5732.5
3/27/2001	2001	3	27	299	22	65	43.5	11.5	5744
3/28/2001	2001	3	28	300	24	64	44	12	5756
3/29/2001	2001	3	29	301	53	59	56	24	5780
3/30/2001	2001	3	30	302	23	67	45	13	5793
3/31/2001	2001	3	31	303	27	76	51.5	19.5	5812.5
4/1/2001	2001	4	1	304	30	77	53.5	21.5	5834
4/2/2001	2001	4	2	305	32	72	52	20	5854
4/3/2001	2001	4	3	306	34	75	54.5	22.5	5876.5
4/4/2001	2001	4	4	307	39	74	56.5	24.5	5901
4/5/2001	2001	4	5	308	38	64	51	19	5920
4/6/2001	2001	4	6	309	32	67	49.5	17.5	5937.5
4/7/2001	2001	4	7	310	28	67	47.5	15.5	5953
4/8/2001	2001	4	8	311	23	66	44.5	12.5	5965.5
4/9/2001	2001	4	9	312	30	72	51	19	5984.5
4/10/2001	2001	4	10	313	28	71	49.5	17.5	6002
4/11/2001	2001	4	11	314	25	59	42	10	6012
4/12/2001	2001	4	12	315	21	57	39	7	6019
4/13/2001	2001	4	13	316	27	71	49	17	6036
4/14/2001	2001	4	14	317	30	72	51	19	6055
4/15/2001	2001	4	15	318	27	78	52.5	20.5	6075.5
4/16/2001	2001	4	16	319	42	83	62.5	30.5	6106
4/17/2001	2001	4	17	320	39	73	56	24	6130
4/18/2001	2001	4	18	321	41	84	62.5	30.5	6160.5
4/19/2001	2001	4	19	322	46	74	60	28	6188.5
4/20/2001	2001	4	20	323	35	70	52.5	20.5	6209
4/21/2001	2001	4	21	324	31	74	52.5	20.5	6229.5
4/22/2001	2001	4	22	325	23	56	39.5	7.5	6237
4/23/2001	2001	4	23	326	27	66	46.5	14.5	6251.5
4/24/2001	2001	4	24	327	30	76	53	21	6272.5
4/25/2001	2001	4	25	328	35	81	58	26	6298.5
4/26/2001	2001	4	26	329	38	80	59	27	6325.5
4/27/2001	2001	4	27	330	43	76	59.5	27.5	6353
4/28/2001	2001	4	28	331	38	77	57.5	25.5	6378.5
4/29/2001	2001	4	29	332	36	80	58	26	6404.5
4/30/2001	2001	4	30	333	36	82	59	27	6431.5
5/1/2001	2001	5	1	334	44	84	64	32	6463.5
5/2/2001	2001	5	2	335	36	80	58	26	6489.5
5/3/2001	2001	5	3	336	33	73	53	21	6510.5
5/4/2001	2001	5	4	337	31	56	43.5	11.5	6522
5/5/2001	2001	5	5	338	40	68	54	22	6544
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5/7/2001	2001	5	7	340	35	81	58	26	6590
5/8/2001	2001	5	8	341	42	85	63.5	31.5	6621.5
5/9/2001	2001	5	9	342	44	84	64	32	6653.5
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5/12/2001	2001	5	12	345	47	85	66	34	6757
5/13/2001	2001	5	13	346	42	75	58.5	26.5	6783.5
5/14/2001	2001	5	14	347	38	73	55.5	23.5	6807
5/15/2001	2001	5	15	348	39	83	61	29	6836
5/16/2001	2001	5	16	349	39	83	61	29	6865
5/17/2001	2001	5	17	350	52	87	69.5	37.5	6902.5
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5/19/2001	2001	5	19	352	45	59	52	20	6960
5/20/2001	2001	5	20	353	42	82	62	30	6990
5/21/2001	2001	5	21	354	37	77	57	25	7015
5/22/2001	2001	5	22	355	39	83	61	29	7044
5/23/2001	2001	5	23	356	39	87	63	31	7075
5/24/2001	2001	5	24	357	58	90	74	42	7117
5/25/2001	2001	5	25	358	54	88	71	39	7156
5/26/2001	2001	5	26	359	55	92	73.5	41.5	7197.5
5/27/2001	2001	5	27	360	47	90	68.5	36.5	7234
5/28/2001	2001	5	28	361	43	91	67	35	7269
5/29/2001	2001	5	29	362	42	85	63.5	31.5	7300.5
5/30/2001	2001	5	30	363	39	90	64.5	32.5	7333
5/31/2001	2001	5	31	364	40	91	65.5	33.5	7366.5

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6/3/2001	2001	6	3	3	44	85	64.5	32.5	109
6/4/2001	2001	6	4	4	48	83	65.5	33.5	142.5
6/5/2001	2001	6	5	5	43	88	65.5	33.5	176
6/6/2001	2001	6	6	6	47	94	70.5	38.5	214.5
6/7/2001	2001	6	7	7	60	95	77.5	45.5	260
6/8/2001	2001	6	8	8	60	93	76.5	44.5	304.5
6/9/2001	2001	6	9	9	52	95	73.5	41.5	346
6/10/2001	2001	6	10	10	50	91	70.5	38.5	384.5
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6/12/2001	2001	6	12	12	50	90	70	38	462
6/13/2001	2001	6	13	13	32	81	56.5	24.5	486.5
6/14/2001	2001	6	14	14	34	76	55	23	509.5
6/15/2001	2001	6	15	15	38	90	64	32	541.5
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6/17/2001	2001	6	17	17	50	96	73	41	620.5
6/18/2001	2001	6	18	18	48	90	69	37	657.5
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6/24/2001	2001	6	24	24	54	88	71	39	914
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6/26/2001	2001	6	26	26	48	77	62.5	30.5	985
6/27/2001	2001	6	27	27	49	90	69.5	37.5	1022.5
6/28/2001	2001	6	28	28	56	94	75	43	1065.5
6/29/2001	2001	6	29	29	58	92	75	43	1108.5
6/30/2001	2001	6	30	30	58	98	78	46	1154.5
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7/5/2001	2001	7	5	35	53	94	73.5	41.5	1368
7/6/2001	2001	7	6	36	58	97	77.5	45.5	1413.5
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7/23/2001	2001	7	23	53	61	97	79	47	2135
7/24/2001	2001	7	24	54	56	88	72	40	2175
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8/31/2001	2001	8	31	92	45	80	62.5	30.5	3694.5
9/1/2001	2001	9	1	93	46	84	65	33	3727.5

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9/3/2001	2001	9	3	95	44	93	68.5	36.5	3797
9/4/2001	2001	9	4	96	50	91	70.5	38.5	3835.5
9/5/2001	2001	9	5	97	51	91	71	39	3874.5
9/6/2001	2001	9	6	98	47	87	67	35	3909.5
9/7/2001	2001	9	7	99	47	84	65.5	33.5	3943
9/8/2001	2001	9	8	100	32	81	56.5	24.5	3967.5
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9/10/2001	2001	9	10	102	44	87	65.5	33.5	4027
9/11/2001	2001	9	11	103	44	87	65.5	33.5	4060.5
9/12/2001	2001	9	12	104	57	86	71.5	39.5	4100
9/13/2001	2001	9	13	105	57	86	71.5	39.5	4139.5
9/14/2001	2001	9	14	106	50	87	68.5	36.5	4176
9/15/2001	2001	9	15	107	50	83	66.5	34.5	4210.5
9/16/2001	2001	9	16	108	52	81	66.5	34.5	4245
9/17/2001	2001	9	17	109	47	82	64.5	32.5	4277.5
9/18/2001	2001	9	18	110	41	81	61	29	4306.5
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9/24/2001	2001	9	24	116	42	87	64.5	32.5	4498
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9/26/2001	2001	9	26	118	40	90	65	33	4566
9/27/2001	2001	9	27	119	43	91	67	35	4601
9/28/2001	2001	9	28	120	43	91	67	35	4636
9/29/2001	2001	9	29	121	41	87	64	32	4668
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10/5/2001	2001	10	5	127	42	82	62	30	4837.75
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11/9/2001	2001	11	9	162	27	60	43.5	11.5	5588.75
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11/12/2001	2001	11	12	165	32	73	52.5	20.5	5642.25
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11/14/2001	2001	11	14	167	37	50	43.5	11.5	5672.75
11/15/2001	2001	11	15	168	37	49	43	11	5683.75
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11/17/2001	2001	11	17	170	26	63	44.5	12.5	5706.25
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11/21/2001	2001	11	21	174	19	63	41	9	5740.75
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11/26/2001	2001	11	26	179	17	42	29.5	-2.5	5764.25
11/27/2001	2001	11	27	180	1	33	17	-15	5749.25
11/28/2001	2001	11	28	181	8	35	21.5	-10.5	5738.75
11/29/2001	2001	11	29	182	21	45	33	1	5739.75
11/30/2001	2001	11	30	183	17	45	31	-1	5738.75
12/1/2001	2001	12	1	184	20	57	38.5	6.5	5745.25
12/2/2001	2001	12	2	185	25	63	44	12	5757.25
12/3/2001	2001	12	3	186	19	65	42	10	5767.25

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12/5/2001	2001	12	5	188	13	60	36.5	4.5	5779.25
12/6/2001	2001	12	6	189	15	53	34	2	5781.25
12/7/2001	2001	12	7	190	13	48	30.5	-1.5	5779.75
12/8/2001	2001	12	8	191	5	46	25.5	-6.5	5773.25
12/9/2001	2001	12	9	192	22	52	37	5	5778.25
12/10/2001	2001	12	10	193	17	45	31	-1	5777.25
12/11/2001	2001	12	11	194	10	35	22.5	-9.5	5767.75
12/12/2001	2001	12	12	195	9	38	23.5	-8.5	5759.25
12/13/2001	2001	12	13	196	8	37	22.5	-9.5	5749.75
12/14/2001	2001	12	14	197	22	45	33.5	1.5	5751.25
12/15/2001	2001	12	15	198	16	40	28	-4	5747.25
12/16/2001	2001	12	16	199	10	38	24	-8	5739.25
12/17/2001	2001	12	17	200	17	55	36	4	5743.25
12/18/2001	2001	12	18	201	11	50	30.5	-1.5	5741.75
12/19/2001	2001	12	19	202	12	58	35	3	5744.75
12/20/2001	2001	12	20	203	32	58	45	13	5757.75
12/21/2001	2001	12	21	204	26	44	35	3	5760.75
12/22/2001	2001	12	22	205	11	53	32	0	5760.75
12/23/2001	2001	12	23	206	19	38	28.5	-3.5	5757.25
12/24/2001	2001	12	24	207	10	44	27	-5	5752.25
12/25/2001	2001	12	25	208	10	48	29	-3	5749.25
12/26/2001	2001	12	26	209	22	55	38.5	6.5	5755.75
12/27/2001	2001	12	27	210	17	50	33.5	1.5	5757.25
12/28/2001	2001	12	28	211	25	50	37.5	5.5	5762.75
12/29/2001	2001	12	29	212	25	58	41.5	9.5	5772.25
12/30/2001	2001	12	30	213	23	50	36.5	4.5	5776.75
12/31/2001	2001	12	31	214	30	35	32.5	0.5	5777.25
1/1/2002	2002	1	1	215	18	38	28	-4	5773.25
1/2/2002	2002	1	2	216	18	40	29	-3	5770.25
1/3/2002	2002	1	3	217	27	47	37	5	5775.25
1/4/2002	2002	1	4	218	18	39	28.5	-3.5	5771.75
1/5/2002	2002	1	5	219	25	50	37.5	5.5	5777.25
1/6/2002	2002	1	6	220	25	50	37.5	5.5	5782.75
1/7/2002	2002	1	7	221	25	50	37.5	5.5	5788.25
1/8/2002	2002	1	8	222	20	63	41.5	9.5	5797.75
1/9/2002	2002	1	9	223	29	61	45	13	5810.75
1/10/2002	2002	1	10	224	12	37	24.5	-7.5	5803.25
1/11/2002	2002	1	11	225	9	43	26	-6	5797.25
1/12/2002	2002	1	12	226	16	45	30.5	-1.5	5795.75
1/13/2002	2002	1	13	227	10	56	33	1	5796.75
1/14/2002	2002	1	14	228	23	53	38	6	5802.75
1/15/2002	2002	1	15	229	26	54	40	8	5810.75
1/16/2002	2002	1	16	230	15	53	34	2	5812.75
1/17/2002	2002	1	17	231	14	48	31	-1	5811.75
1/18/2002	2002	1	18	232	6	42	24	-8	5803.75
1/19/2002	2002	1	19	233	18	42	30	-2	5801.75
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1/21/2002	2002	1	21	235	17	56	36.5	4.5	5800.25
1/22/2002	2002	1	22	236	25	54	39.5	7.5	5807.75
1/23/2002	2002	1	23	237	5	43	24	-8	5799.75
1/24/2002	2002	1	24	238	9	35	22	-10	5789.75
1/25/2002	2002	1	25	239	12	53	32.5	0.5	5790.25
1/26/2002	2002	1	26	240	22	65	43.5	11.5	5801.75
1/27/2002	2002	1	27	241	23	61	42	10	5811.75
1/28/2002	2002	1	28	242	28	55	41.5	9.5	5821.25
1/29/2002	2002	1	29	243	19	53	36	4	5825.25
1/30/2002	2002	1	30	244	2	35	18.5	-13.5	5811.75
1/31/2002	2002	1	31	245	-3	25	11	-21	5790.75
2/1/2002	2002	2	1	246	16	39	27.5	-4.5	5786.25
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2/6/2002	2002	2	6	251	10	48	29	-3	5765.25
2/7/2002	2002	2	7	252	13	57	35	3	5768.25
2/8/2002	2002	2	8	253	20	58	39	7	5775.25
2/9/2002	2002	2	9	254	10	39	24.5	-7.5	5767.75
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2/17/2002	2002	2	17	262	28	66	47	15	5825.25
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2/24/2002	2002	2	24	269	15	63	39	7	5893.75
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3/2/2002	2002	3	2	275	0	33	16.5	-15.5	5899.25
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3/9/2002	2002	3	9	282	14	61	37.5	5.5	5944.75
3/10/2002	2002	3	10	283	34	61	47.5	15.5	5960.25
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3/13/2002	2002	3	13	286	30	74	52	20	6006.75
3/15/2002	2002	3	15	287	16	53	34.5	2.5	6009.25
3/16/2002	2002	3	16	288	15	53	34	2	6011.25
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3/22/2002	2002	3	22	294	31	73	52	20	6076.75
3/23/2002	2002	3	23	295	33	74	53.5	21.5	6098.25
3/24/2002	2002	3	24	296	32	54	43	11	6109.25
3/25/2002	2002	3	25	297	18	59	38.5	6.5	6115.75
3/26/2002	2002	3	26	298	22	68	45	13	6128.75
3/27/2002	2002	3	27	299	33	72	52.5	20.5	6149.25
3/28/2002	2002	3	28	300	33	75	54	22	6171.25
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4/3/2002	2002	4	3	306	38	74	56	24	6293.25
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4/7/2002	2002	4	7	310	33	60	46.5	14.5	6363.25
4/8/2002	2002	4	8	311	31	71	51	19	6382.25
4/9/2002	2002	4	9	312	39	77	58	26	6408.25
4/10/2002	2002	4	10	313	41	75	58	26	6434.25
4/11/2002	2002	4	11	314	42	77	59.5	27.5	6461.75
4/12/2002	2002	4	12	315	37	78	57.5	25.5	6487.25
4/13/2002	2002	4	13	316	32	79	55.5	23.5	6510.75
4/14/2002	2002	4	14	317	41	84	62.5	30.5	6541.25
4/15/2002	2002	4	15	318	46	80	63	31	6572.25
4/16/2002	2002	4	16	319	33	69	51	19	6591.25
4/17/2002	2002	4	17	320	38	77	57.5	25.5	6616.75
4/18/2002	2002	4	18	321	37	80	58.5	26.5	6643.25
4/19/2002	2002	4	19	322	22	68	45	13	6656.25
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4/24/2002	2002	4	24	327	46	82	64	32	6764.25
4/25/2002	2002	4	25	328	41	67	54	22	6786.25
4/26/2002	2002	4	26	329	39	80	59.5	27.5	6813.75
4/27/2002	2002	4	27	330	35	66	50.5	18.5	6832.25
4/28/2002	2002	4	28	331	40	79	59.5	27.5	6859.75
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4/30/2002	2002	4	30	333	33	80	56.5	24.5	6911.75
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5/2/2002	2002	5	2	335	30	68	49	17	6950.75
5/3/2002	2002	5	3	336	29	78	53.5	21.5	6972.25
5/4/2002	2002	5	4	337	30	82	56	24	6996.25
5/5/2002	2002	5	5	338	32	80	56	24	7020.25
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5/9/2002	2002	5	9	342	44	79	61.5	29.5	7128.25
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5/15/2002	2002	5	15	348	39	84	61.5	29.5	7299.75
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5/18/2002	2002	5	18	351	53	80	66.5	34.5	7400.25
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5/20/2002	2002	5	20	353	47	84	65.5	33.5	7466.25
5/21/2002	2002	5	21	354	33	80	56.5	24.5	7490.75
5/22/2002	2002	5	22	355	37	76	56.5	24.5	7515.25
5/23/2002	2002	5	23	356	41	79	60	28	7543.25
5/24/2002	2002	5	24	357	35	81	58	26	7569.25
5/25/2002	2002	5	25	358	44	84	64	32	7601.25
5/26/2002	2002	5	26	359	54	81	67.5	35.5	7636.75
5/27/2002	2002	5	27	360	43	82	62.5	30.5	7667.25
5/28/2002	2002	5	28	361	42	90	66	34	7701.25
5/29/2002	2002	5	29	362	45	95	70	38	7739.25
5/30/2002	2002	5	30	363	47	99	73	41	7780.25
5/31/2002	2002	5	31	364	55	97	76	44	7824.25
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6/2/2002	2002	6	2	2	45	92	68.5	36.5	77
6/3/2002	2002	6	3	3	48	83	65.5	33.5	110.5
6/4/2002	2002	6	4	4	46	80	63	31	141.5
6/5/2002	2002	6	5	5	45	85	65	33	174.5
6/6/2002	2002	6	6	6	56	94	75	43	217.5
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6/11/2002	2002	6	11	11	43	93	68	36	417.5
6/12/2002	2002	6	12	12	41	93	67	35	452.5
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6/15/2002	2002	6	15	15	57	95	76	44	580
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6/18/2002	2002	6	18	18	55	98	76.5	44.5	712.5
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7/6/2002	2002	7	6	36	62	87	74.5	42.5	1485
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7/16/2002	2002	7	16	46	52	88	70	38	1909
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7/18/2002	2002	7	18	48	54	90	72	40	1991
7/19/2002	2002	7	19	49	54	75	64.5	32.5	2023.5
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9/12/2002	2002	9	12	104	47	79	63	31	4221
9/13/2002	2002	9	13	105	47	79	63	31	4252
9/14/2002	2002	9	14	106	51	77	64	32	4284
9/15/2002	2002	9	15	107	43	77	60	28	4312
9/16/2002	2002	9	16	108	52	77	64.5	32.5	4344.5
9/17/2002	2002	9	17	109	54	83	68.5	36.5	4381
9/18/2002	2002	9	18	110	42	58	50	18	4399
9/19/2002	2002	9	19	111	38	75	56.5	24.5	4423.5
9/20/2002	2002	9	20	112	39	82	60.5	28.5	4452
9/21/2002	2002	9	21	113	43	87	65	33	4485
9/22/2002	2002	9	22	114	42	88	65	33	4518
9/23/2002	2002	9	23	115	43	88	65.5	33.5	4551.5
9/24/2002	2002	9	24	116	54	88	71	39	4590.5
9/25/2002	2002	9	25	117	46	86	66	34	4624.5
9/26/2002	2002	9	26	118	44	83	63.5	31.5	4656
9/27/2002	2002	9	27	119	47	77	62	30	4686
9/28/2002	2002	9	28	120	41	73	57	25	4711
9/29/2002	2002	9	29	121	40	78	59	27	4738
9/30/2002	2002	9	30	122	50	78	64	32	4770
10/1/2002	2002	10	1	123	49	79	64	32	4802
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10/3/2002	2002	10	3	125	29	63	46	14	4840.5
10/4/2002	2002	10	4	126	30	70	50	18	4858.5
10/5/2002	2002	10	5	127	36	76	56	24	4882.5
10/6/2002	2002	10	6	128	40	78	59	27	4909.5
10/7/2002	2002	10	7	129	34	79	56.5	24.5	4934
10/8/2002	2002	10	8	130	33	81	57	25	4959
10/9/2002	2002	10	9	131	33	79	56	24	4983
10/10/2002	2002	10	10	132	35	78	56.5	24.5	5007.5
10/11/2002	2002	10	11	133	40	79	59.5	27.5	5035
10/12/2002	2002	10	12	134	43	74	58.5	26.5	5061.5
10/13/2002	2002	10	13	135	34	61	47.5	15.5	5077
10/14/2002	2002	10	14	136	38	76	57	25	5102
10/15/2002	2002	10	15	137	35	72	53.5	21.5	5123.5
10/16/2002	2002	10	16	138	43	79	61	29	5152.5
10/17/2002	2002	10	17	139	42	64	53	21	5173.5
10/18/2002	2002	10	18	140	33	64	48.5	16.5	5190
10/19/2002	2002	10	19	141	32	65	48.5	16.5	5206.5
10/20/2002	2002	10	20	142	42	73	57.5	25.5	5232
10/21/2002	2002	10	21	143	37	65	51	19	5251
10/22/2002	2002	10	22	144	38	65	51.5	19.5	5270.5
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10/24/2002	2002	10	24	146	29	64	46.5	14.5	5305
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10/28/2002	2002	10	28	150	40	56	48	16	5363
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10/30/2002	2002	10	30	152	26	61	43.5	11.5	5385.5
10/31/2002	2002	10	31	153	30	64	47	15	5400.5
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11/5/2002	2002	11	5	158	20	60	40	8	5461
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11/22/2002	2002	11	22	175	23	73	48	16	5646
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11/24/2002	2002	11	24	177	32	65	48.5	16.5	5671
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2/23/2003	2003	2	23	268	20	57	38.5	6.5	6116.5
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2/25/2003	2003	2	25	270	28	51	39.5	7.5	6132
2/26/2003	2003	2	26	271	30	52	41	9	6141
2/27/2003	2003	2	27	272	25	50	37.5	5.5	6146.5
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3/1/2003	2003	3	1	274	19	51	35	3	6150
3/2/2003	2003	3	2	275	17	47	32	0	6150
3/3/2003	2003	3	3	276	32	57	44.5	12.5	6162.5
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3/8/2003	2003	3	8	281	18	69	43.5	11.5	6201.5
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3/10/2003	2003	3	10	283	20	76	48	16	6232
3/11/2003	2003	3	11	284	23	75	49	17	6249
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3/14/2003	2003	3	14	287	36	71	53.5	21.5	6304.5

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3/16/2003	2003	3	16	289	34	53	43.5	11.5	6335.5
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3/23/2003	2003	3	23	296	34	72	53	21	6409
3/24/2003	2003	3	24	297	33	68	50.5	18.5	6427.5
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4/8/2003	2003	4	8	312	22	62	42	10	6627
4/9/2003	2003	4	9	313	26	68	47	15	6642
4/10/2003	2003	4	10	314	34	81	57.5	25.5	6667.5
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4/12/2003	2003	4	12	316	42	78	60	28	6720
4/13/2003	2003	4	13	317	36	80	58	26	6746
4/14/2003	2003	4	14	318	38	71	54.5	22.5	6768.5
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4/21/2003	2003	4	21	325	35	69	52	20	6890
4/22/2003	2003	4	22	326	26	71	48.5	16.5	6906.5
4/23/2003	2003	4	23	327	35	71	53	21	6927.5
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4/25/2003	2003	4	25	329	38	77	57.5	25.5	6972.5
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4/28/2003	2003	4	28	332	31	78	54.5	22.5	7044.5
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4/30/2003	2003	4	30	334	28	70	49	17	7085
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5/19/2003	2003	5	19	353	50	87	68.5	36.5	7594.5
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5/29/2003	2003	5	29	363	50	91	70.5	38.5	7950.5
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6/2/2003	2003	6	2	2	54	92	73	41	78
6/3/2003	2003	6	3	3	48	93	70.5	38.5	116.5
6/4/2003	2003	6	4	4	54	93	73.5	41.5	158
6/5/2003	2003	6	5	5	54	92	73	41	199
6/6/2003	2003	6	6	6	50	83	66.5	34.5	233.5
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6/8/2003	2003	6	8	8	48	94	71	39	310
6/9/2003	2003	6	9	9	50	86	68	36	346
6/10/2003	2003	6	10	10	46	88	67	35	381
6/11/2003	2003	6	11	11	51	86	68.5	36.5	417.5
6/12/2003	2003	6	12	12	51	91	71	39	456.5
6/13/2003	2003	6	13	13	51	91	71	39	495.5
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6/15/2003	2003	6	15	15	63	95	79	47	587

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6/17/2003	2003	6	17	17	52	82	67	35	663
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6/19/2003	2003	6	19	19	52	80	66	34	730
6/20/2003	2003	6	20	20	48	84	66	34	764
6/21/2003	2003	6	21	21	47	89	68	36	800
6/22/2003	2003	6	22	22	45	90	67.5	35.5	835.5
6/23/2003	2003	6	23	23	50	93	71.5	39.5	875
6/24/2003	2003	6	24	24	51	90	70.5	38.5	913.5
6/25/2003	2003	6	25	25	45	90	67.5	35.5	949
6/26/2003	2003	6	26	26	57	91	74	42	991
6/27/2003	2003	6	27	27	47	96	71.5	39.5	1030.5
6/28/2003	2003	6	28	28	50	94	72	40	1070.5
6/29/2003	2003	6	29	29	61	98	79.5	47.5	1118
6/30/2003	2003	6	30	30	58	97	77.5	45.5	1163.5
7/1/2003	2003	7	1	31	54	99	76.5	44.5	1208
7/2/2003	2003	7	2	32	64	100	82	50	1258
7/3/2003	2003	7	3	33	54	101	77.5	45.5	1303.5
7/4/2003	2003	7	4	34	51	102	76.5	44.5	1348
7/5/2003	2003	7	5	35	60	104	82	50	1398
7/6/2003	2003	7	6	36	56	100	78	46	1444
7/7/2003	2003	7	7	37	60	100	80	48	1492
7/8/2003	2003	7	8	38	50	103	76.5	44.5	1536.5
7/9/2003	2003	7	9	39	53	105	79	47	1583.5
7/10/2003	2003	7	10	40	63	102	82.5	50.5	1634
7/11/2003	2003	7	11	41	64	99	81.5	49.5	1683.5
7/12/2003	2003	7	12	42	56	102	79	47	1730.5
7/13/2003	2003	7	13	43	59	103	81	49	1779.5
7/14/2003	2003	7	14	44	65	106	85.5	53.5	1833
7/15/2003	2003	7	15	45	65	100	82.5	50.5	1883.5
7/16/2003	2003	7	16	46	63	95	79	47	1930.5
7/17/2003	2003	7	17	47	60	90	75	43	1973.5
7/18/2003	2003	7	18	48	60	97	78.5	46.5	2020
7/19/2003	2003	7	19	49	56	101	78.5	46.5	2066.5
7/20/2003	2003	7	20	50	57	100	78.5	46.5	2113
7/21/2003	2003	7	21	51	57	100	78.5	46.5	2159.5
7/22/2003	2003	7	22	52	67	96	81.5	49.5	2209
7/23/2003	2003	7	23	53	62	98	80	48	2257
7/24/2003	2003	7	24	54	62	100	81	49	2306
7/25/2003	2003	7	25	55	66	97	81.5	49.5	2355.5
7/26/2003	2003	7	26	56	59	99	79	47	2402.5
7/27/2003	2003	7	27	57	59	88	73.5	41.5	2444
7/28/2003	2003	7	28	58	60	89	74.5	42.5	2486.5
7/29/2003	2003	7	29	59	60	90	75	43	2529.5
7/30/2003	2003	7	30	60	60	90	75	43	2572.5
7/31/2003	2003	7	31	61	60	91	75.5	43.5	2616
8/1/2003	2003	8	1	62	58	98	78	46	2662
8/2/2003	2003	8	2	63	55	95	75	43	2705
8/3/2003	2003	8	3	64	52	89	70.5	38.5	2743.5
8/4/2003	2003	8	4	65	54	96	75	43	2786.5
8/5/2003	2003	8	5	66	60	94	77	45	2831.5
8/6/2003	2003	8	6	67	61	93	77	45	2876.5
8/7/2003	2003	8	7	68	60	95	77.5	45.5	2922
8/8/2003	2003	8	8	69	62	97	79.5	47.5	2969.5
8/9/2003	2003	8	9	70	60	100	80	48	3017.5
8/10/2003	2003	8	10	71	56	97	76.5	44.5	3062
8/11/2003	2003	8	11	72	58	93	75.5	43.5	3105.5
8/12/2003	2003	8	12	73	58	93	75.5	43.5	3149
8/13/2003	2003	8	13	74	60	87	73.5	41.5	3190.5
8/14/2003	2003	8	14	75	55	87	71	39	3229.5
8/15/2003	2003	8	15	76	51	78	64.5	32.5	3262
8/16/2003	2003	8	16	77	52	75	63.5	31.5	3293.5
8/17/2003	2003	8	17	78	52	88	70	38	3331.5
8/18/2003	2003	8	18	79	52	93	72.5	40.5	3372
8/19/2003	2003	8	19	80	52	93	72.5	40.5	3412.5
8/20/2003	2003	8	20	81	53	94	73.5	41.5	3454
8/21/2003	2003	8	21	82	58	95	76.5	44.5	3498.5
8/22/2003	2003	8	22	83	60	91	75.5	43.5	3542
8/23/2003	2003	8	23	84	58	89	73.5	41.5	3583.5
8/24/2003	2003	8	24	85	60	90	75	43	3626.5
8/25/2003	2003	8	25	86	56	87	71.5	39.5	3666
8/26/2003	2003	8	26	87	60	85	72.5	40.5	3706.5
8/27/2003	2003	8	27	88	55	84	69.5	37.5	3744
8/28/2003	2003	8	28	89	57	82	69.5	37.5	3781.5
8/29/2003	2003	8	29	90	58	86	72	40	3821.5
8/30/2003	2003	8	30	91	55	79	67	35	3856.5
8/31/2003	2003	8	31	92	58	90	74	42	3898.5
9/1/2003	2003	9	1	93	58	92	75	43	3941.5
9/2/2003	2003	9	2	94	54	91	72.5	40.5	3982
9/3/2003	2003	9	3	95	56	88	72	40	4022
9/4/2003	2003	9	4	96	55	78	66.5	34.5	4056.5
9/5/2003	2003	9	5	97	51	76	63.5	31.5	4088
9/6/2003	2003	9	6	98	47	82	64.5	32.5	4120.5
9/7/2003	2003	9	7	99	46	83	64.5	32.5	4153
9/8/2003	2003	9	8	100	55	86	70.5	38.5	4191.5
9/9/2003	2003	9	9	101	55	79	67	35	4226.5
9/10/2003	2003	9	10	102	43	72	57.5	25.5	4252
9/11/2003	2003	9	11	103	40	75	57.5	25.5	4277.5
9/12/2003	2003	9	12	104	43	83	63	31	4308.5
9/13/2003	2003	9	13	105	44	86	65	33	4341.5
9/14/2003	2003	9	14	106	46	88	67	35	4376.5
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9/16/2003	2003	9	16	108	48	88	68	36	4446

9/17/2003	2003	9	17	109	48	86	67	35	4481
9/18/2003	2003	9	18	110	43	84	63.5	31.5	4512.5
9/19/2003	2003	9	19	111	41	88	64.5	32.5	4545
9/20/2003	2003	9	20	112	37	88	62.5	30.5	4575.5
9/21/2003	2003	9	21	113	43	83	63	31	4606.5
9/22/2003	2003	9	22	114	50	86	68	36	4642.5
9/23/2003	2003	9	23	115	44	90	67	35	4677.5
9/24/2003	2003	9	24	116	52	85	68.5	36.5	4714
9/25/2003	2003	9	25	117	38	85	61.5	29.5	4743.5
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9/27/2003	2003	9	27	119	40	88	64	32	4806.5
9/28/2003	2003	9	28	120	45	90	67.5	35.5	4842
9/29/2003	2003	9	29	121	41	92	66.5	34.5	4876.5
9/30/2003	2003	9	30	122	47	91	69	37	4913.5
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10/2/2003	2003	10	2	124	50	80	65	33	4986
10/3/2003	2003	10	3	125	45	79	62	30	5016
10/4/2003	2003	10	4	126	41	73	57	25	5041
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10/6/2003	2003	10	6	128	45	78	61.5	29.5	5098
10/7/2003	2003	10	7	129	49	68	58.5	26.5	5124.5
10/8/2003	2003	10	8	130	41	76	58.5	26.5	5151
10/9/2003	2003	10	9	131	42	78	60	28	5179
10/10/2003	2003	10	10	132	46	78	62	30	5209
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10/12/2003	2003	10	12	134	41	83	62	30	5270
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10/14/2003	2003	10	14	136	31	73	52	20	5311
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10/17/2003	2003	10	17	139	35	81	58	26	5385.5
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10/19/2003	2003	10	19	141	36	89	62.5	30.5	5443.5
10/20/2003	2003	10	20	142	33	83	58	26	5469.5
10/21/2003	2003	10	21	143	33	83	58	26	5495.5
10/22/2003	2003	10	22	144	34	83	58.5	26.5	5522
10/23/2003	2003	10	23	145	33	87	60	28	5550
10/24/2003	2003	10	24	146	31	76	53.5	21.5	5571.5
10/25/2003	2003	10	25	147	20	62	41	9	5580.5
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10/27/2003	2003	10	27	149	32	72	52	20	5610.5
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10/29/2003	2003	10	29	151	42	76	59	27	5659
10/30/2003	2003	10	30	152	40	74	57	25	5684
10/31/2003	2003	10	31	153	37	72	54.5	22.5	5706.5
11/1/2003	2003	11	1	154	33	70	51.5	19.5	5726
11/2/2003	2003	11	2	155	38	69	53.5	21.5	5747.5
11/3/2003	2003	11	3	156	22	59	40.5	8.5	5756
11/4/2003	2003	11	4	157	15	58	36.5	4.5	5760.5
11/5/2003	2003	11	5	158	17	63	40	8	5768.5
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11/7/2003	2003	11	7	160	25	59	42	10	5788
11/8/2003	2003	11	8	161	25	59	42	10	5798
11/9/2003	2003	11	9	162	32	72	52	20	5818
11/10/2003	2003	11	10	163	38	72	55	23	5841
11/11/2003	2003	11	11	164	44	66	55	23	5864
11/12/2003	2003	11	12	165	34	52	43	11	5875
11/13/2003	2003	11	13	166	34	37	35.5	3.5	5878.5
11/14/2003	2003	11	14	167	25	61	43	11	5889.5
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11/16/2003	2003	11	16	169	22	59	40.5	8.5	5906.5
11/17/2003	2003	11	17	170	27	53	40	8	5914.5
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11/19/2003	2003	11	19	172	20	66	43	11	5933
11/20/2003	2003	11	20	173	20	70	45	13	5946
11/21/2003	2003	11	21	174	20	66	43	11	5957
11/22/2003	2003	11	22	175	12	54	33	1	5958
11/23/2003	2003	11	23	176	10	53	31.5	-0.5	5957.5
11/24/2003	2003	11	24	177	15	52	33.5	1.5	5959
11/25/2003	2003	11	25	178	27	59	43	11	5970
11/26/2003	2003	11	26	179	19	57	38	6	5976
11/27/2003	2003	11	27	180	10	43	26.5	-5.5	5970.5
11/28/2003	2003	11	28	181	12	50	31	-1	5969.5
11/29/2003	2003	11	29	182	21	67	44	12	5981.5
11/30/2003	2003	11	30	183	15	73	44	12	5993.5
12/1/2003	2003	12	1	184	32	61	46.5	14.5	6008
12/2/2003	2003	12	2	185	15	61	38	6	6014
12/3/2003	2003	12	3	186	15	59	37	5	6019
12/4/2003	2003	12	4	187	15	59	37	5	6024
12/5/2003	2003	12	5	188	20	46	33	1	6025
12/6/2003	2003	12	6	189	32	68	50	18	6043
12/7/2003	2003	12	7	190	31	64	47.5	15.5	6058.5
12/8/2003	2003	12	8	191	20	43	31.5	-0.5	6058
12/9/2003	2003	12	9	192	11	44	27.5	-4.5	6053.5
12/10/2003	2003	12	10	193	13	58	35.5	3.5	6057
12/11/2003	2003	12	11	194	26	52	39	7	6064
12/12/2003	2003	12	12	195	17	57	37	5	6069
12/13/2003	2003	12	13	196	17	57	37	5	6074
12/14/2003	2003	12	14	197	17	57	37	5	6079
12/15/2003	2003	12	15	198	10	37	23.5	-8.5	6070.5
12/16/2003	2003	12	16	199	10	42	26	-6	6064.5
12/17/2003	2003	12	17	200	15	57	36	4	6068.5
12/18/2003	2003	12	18	201	15	57	36	4	6072.5

12/19/2003	2003	12	19	202	16	60	38	6	6078.5
12/20/2003	2003	12	20	203	22	67	44.5	12.5	6091
12/21/2003	2003	12	21	204	23	58	40.5	8.5	6099.5
12/22/2003	2003	12	22	205	13	46	29.5	-2.5	6097
12/23/2003	2003	12	23	206	17	50	33.5	1.5	6098.5
12/24/2003	2003	12	24	207	22	57	39.5	7.5	6106
12/25/2003	2003	12	25	208	29	55	42	10	6116
12/26/2003	2003	12	26	209	16	51	33.5	1.5	6117.5
12/27/2003	2003	12	27	210	4	30	17	-15	6102.5
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12/29/2003	2003	12	29	212	17	50	33.5	1.5	6088
12/30/2003	2003	12	30	213	16	51	33.5	1.5	6089.5
12/31/2003	2003	12	31	214	27	42	34.5	2.5	6092
1/1/2004	2004	1	1	215	31	56	43.5	11.5	6103.5
1/2/2004	2004	1	2	216	32	60	46	14	6117.5
1/3/2004	2004	1	3	217	3	52	27.5	-4.5	6113
1/4/2004	2004	1	4	218	6	40	23	-9	6104
1/5/2004	2004	1	5	219	6	37	21.5	-10.5	6093.5
1/6/2004	2004	1	6	220	19	48	33.5	1.5	6095
1/7/2004	2004	1	7	221	20	59	39.5	7.5	6102.5
1/8/2004	2004	1	8	222	15	60	37.5	5.5	6108
1/9/2004	2004	1	9	223	12	61	36.5	4.5	6112.5
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1/11/2004	2004	1	11	225	17	58	37.5	5.5	6121
1/12/2004	2004	1	12	226	16	59	37.5	5.5	6126.5
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1/19/2004	2004	1	19	233	29	54	41.5	9.5	6160.5
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1/21/2004	2004	1	21	235	16	47	31.5	-0.5	6158.5
1/22/2004	2004	1	22	236	16	53	34.5	2.5	6161
1/23/2004	2004	1	23	237	16	58	37	5	6166
1/24/2004	2004	1	24	238	31	53	42	10	6176
1/25/2004	2004	1	25	239	8	45	26.5	-5.5	6170.5
1/26/2004	2004	1	26	240	6	33	19.5	-12.5	6158
1/27/2004	2004	1	27	241	12	47	29.5	-2.5	6155.5
1/28/2004	2004	1	28	242	18	56	37	5	6160.5
1/29/2004	2004	1	29	243	15	60	37.5	5.5	6166
1/30/2004	2004	1	30	244	29	59	44	12	6178
1/31/2004	2004	1	31	245	16	47	31.5	-0.5	6177.5
2/1/2004	2004	2	1	246	16	47	31.5	-0.5	6177
2/2/2004	2004	2	2	247	5	38	21.5	-10.5	6166.5
2/3/2004	2004	2	3	248	20	50	35	3	6169.5
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2/5/2004	2004	2	5	250	10	40	25	-7	6160
2/6/2004	2004	2	6	251	9	41	25	-7	6153
2/7/2004	2004	2	7	252	7	47	27	-5	6148
2/8/2004	2004	2	8	253	15	46	30.5	-1.5	6146.5
2/9/2004	2004	2	9	254	9	45	27	-5	6141.5
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2/11/2004	2004	2	11	256	12	48	30	-2	6138.5
2/12/2004	2004	2	12	257	19	48	33.5	1.5	6140
2/13/2004	2004	2	13	258	4	27	15.5	-16.5	6123.5
2/14/2004	2004	2	14	259	8	37	22.5	-9.5	6114
2/15/2004	2004	2	15	260	15	54	34.5	2.5	6116.5
2/16/2004	2004	2	16	261	14	57	35.5	3.5	6120
2/17/2004	2004	2	17	262	17	59	38	6	6126
2/18/2004	2004	2	18	263	23	68	45.5	13.5	6139.5
2/19/2004	2004	2	19	264	44	68	56	24	6163.5
2/20/2004	2004	2	20	265	22	58	40	8	6171.5
2/21/2004	2004	2	21	266	35	54	44.5	12.5	6184
2/22/2004	2004	2	22	267	22	53	37.5	5.5	6189.5
2/23/2004	2004	2	23	268	18	55	36.5	4.5	6194
2/24/2004	2004	2	24	269	27	46	36.5	4.5	6198.5
2/25/2004	2004	2	25	270	20	45	32.5	0.5	6199
2/26/2004	2004	2	26	271	18	55	36.5	4.5	6203.5
2/27/2004	2004	2	27	272	22	62	42	10	6213.5
2/28/2004	2004	2	28	273	25	60	42.5	10.5	6224
2/29/2004	2004	2	29	274	24	42	33	1	6225
3/1/2004	2004	3	1	275	20	44	32	0	6225
3/2/2004	2004	3	2	276	27	54	40.5	8.5	6233.5
3/3/2004	2004	3	3	277	30	39	34.5	2.5	6236
3/4/2004	2004	3	4	278	32	53	42.5	10.5	6246.5
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3/7/2004	2004	3	7	280	24	63	43.5	11.5	6266.5
3/8/2004	2004	3	8	281	25	69	47	15	6281.5
3/9/2004	2004	3	9	282	33	74	53.5	21.5	6303
3/10/2004	2004	3	10	283	29	67	48	16	6319
3/11/2004	2004	3	11	284	40	74	57	25	6344
3/12/2004	2004	3	12	285	29	58	43.5	11.5	6355.5
3/13/2004	2004	3	13	286	26	70	48	16	6371.5
3/14/2004	2004	3	14	287	35	70	52.5	20.5	6392
3/15/2004	2004	3	15	288	35	70	52.5	20.5	6412.5
3/16/2004	2004	3	16	289	23	69	46	14	6426.5
3/17/2004	2004	3	17	290	23	73	48	16	6442.5
3/18/2004	2004	3	18	291	25	75	50	18	6460.5
3/19/2004	2004	3	19	292	26	79	52.5	20.5	6481
3/20/2004	2004	3	20	293	28	82	55	23	6504
3/21/2004	2004	3	21	294	42	80	61	29	6533

3/22/2004	2004	3	22	295	30	74	52	20	6553
3/23/2004	2004	3	23	296	35	75	55	23	6576
3/24/2004	2004	3	24	297	40	77	58.5	26.5	6602.5
3/25/2004	2004	3	25	298	46	78	62	30	6632.5
3/26/2004	2004	3	26	299	34	78	56	24	6656.5
3/27/2004	2004	3	27	300	38	76	57	25	6681.5
3/28/2004	2004	3	28	301	26	76	51	19	6700.5
3/29/2004	2004	3	29	302	25	63	44	12	6712.5
3/30/2004	2004	3	30	303	21	72	46.5	14.5	6727
3/31/2004	2004	3	31	304	20	75	47.5	15.5	6742.5
4/1/2004	2004	4	1	305	38	77	57.5	25.5	6768
4/2/2004	2004	4	2	306	33	68	50.5	18.5	6786.5
4/3/2004	2004	4	3	307	35	56	45.5	13.5	6800
4/4/2004	2004	4	4	308	32	52	42	10	6810
4/5/2004	2004	4	5	309	34	44	39	7	6817
4/6/2004	2004	4	6	310	32	58	45	13	6830
4/7/2004	2004	4	7	311	32	58	45	13	6843
4/8/2004	2004	4	8	312	35	57	46	14	6857
4/9/2004	2004	4	9	313	36	54	45	13	6870
4/10/2004	2004	4	10	314	32	60	46	14	6884
4/11/2004	2004	4	11	315	31	43	37	5	6889
4/12/2004	2004	4	12	316	27	52	39.5	7.5	6896.5
4/13/2004	2004	4	13	317	36	66	51	19	6915.5
4/14/2004	2004	4	14	318	36	66	51	19	6934.5
4/15/2004	2004	4	15	319	33	73	53	21	6955.5
4/16/2004	2004	4	16	320	32	72	52	20	6975.5
4/17/2004	2004	4	17	321	43	77	60	28	7003.5
4/18/2004	2004	4	18	322	40	77	58.5	26.5	7030
4/19/2004	2004	4	19	323	27	68	47.5	15.5	7045.5
4/20/2004	2004	4	20	324	34	73	53.5	21.5	7067
4/21/2004	2004	4	21	325	33	70	51.5	19.5	7086.5
4/22/2004	2004	4	22	326	37	71	54	22	7108.5
4/23/2004	2004	4	23	327	30	73	51.5	19.5	7128
4/24/2004	2004	4	24	328	35	62	48.5	16.5	7144.5
4/25/2004	2004	4	25	329	35	62	48.5	16.5	7161
4/26/2004	2004	4	26	330	35	62	48.5	16.5	7177.5
4/27/2004	2004	4	27	331	35	62	48.5	16.5	7194
4/28/2004	2004	4	28	332	41	78	59.5	27.5	7221.5
4/29/2004	2004	4	29	333	41	78	59.5	27.5	7249
4/30/2004	2004	4	30	334	28	72	50	18	7267
5/1/2004	2004	5	1	335	26	58	42	10	7277
5/2/2004	2004	5	2	336	30	70	50	18	7295
5/3/2004	2004	5	3	337	32	77	54.5	22.5	7317.5
5/4/2004	2004	5	4	338	34	82	58	26	7343.5
5/5/2004	2004	5	5	339	37	88	62.5	30.5	7374
5/6/2004	2004	5	6	340	44	89	66.5	34.5	7408.5
5/7/2004	2004	5	7	341	41	88	64.5	32.5	7441
5/8/2004	2004	5	8	342	46	88	67	35	7476
5/9/2004	2004	5	9	343	40	87	63.5	31.5	7507.5
5/10/2004	2004	5	10	344	47	84	65.5	33.5	7541
5/11/2004	2004	5	11	345	47	83	65	33	7574
5/12/2004	2004	5	12	346	46	80	63	31	7605
5/13/2004	2004	5	13	347	38	75	56.5	24.5	7629.5
5/14/2004	2004	5	14	348	30	76	53	21	7650.5
5/15/2004	2004	5	15	349	40	83	61.5	29.5	7680
5/16/2004	2004	5	16	350	43	86	64.5	32.5	7712.5
5/17/2004	2004	5	17	351	42	84	63	31	7743.5
5/18/2004	2004	5	18	352	40	83	61.5	29.5	7773
5/19/2004	2004	5	19	353	37	87	62	30	7803
5/20/2004	2004	5	20	354	41	90	65.5	33.5	7836.5
5/21/2004	2004	5	21	355	40	86	63	31	7867.5
5/22/2004	2004	5	22	356	46	84	65	33	7900.5
5/23/2004	2004	5	23	357	46	84	65	33	7933.5
5/24/2004	2004	5	24	358	42	80	61	29	7962.5
5/25/2004	2004	5	25	359	44	81	62.5	30.5	7993
5/26/2004	2004	5	26	360	45	75	60	28	8021
5/27/2004	2004	5	27	361	42	82	62	30	8051
5/28/2004	2004	5	28	362	39	83	61	29	8080
5/29/2004	2004	5	29	363	47	87	67	35	8115
5/30/2004	2004	5	30	364	40	78	59	27	8142
5/31/2004	2004	5	31	365	43	80	61.5	29.5	8171.5
6/1/2004	2004	6	1	1	41	88	64.5	32.5	32.5
6/2/2004	2004	6	2	2	41	91	66	34	66.5
6/3/2004	2004	6	3	3	41	94	67.5	35.5	102
6/4/2004	2004	6	4	4	57	97	77	45	147
6/5/2004	2004	6	5	5	51	97	74	42	189
6/6/2004	2004	6	6	6	47	98	72.5	40.5	229.5
6/7/2004	2004	6	7	7	53	96	74.5	42.5	272
6/8/2004	2004	6	8	8	46	94	70	38	310
6/9/2004	2004	6	9	9	48	92	70	38	348
6/10/2004	2004	6	10	10	45	90	67.5	35.5	383.5
6/11/2004	2004	6	11	11	43	80	61.5	29.5	413
6/12/2004	2004	6	12	12	46	81	63.5	31.5	444.5
6/13/2004	2004	6	13	13	46	90	68	36	480.5
6/14/2004	2004	6	14	14	45	92	68.5	36.5	517
6/15/2004	2004	6	15	15	50	96	73	41	558
6/16/2004	2004	6	16	16	47	94	70.5	38.5	596.5
6/17/2004	2004	6	17	17	49	93	71	39	635.5
6/18/2004	2004	6	18	18	46	92	69	37	672.5
6/19/2004	2004	6	19	19	47	94	70.5	38.5	711
6/20/2004	2004	6	20	20	63	94	78.5	46.5	757.5
6/21/2004	2004	6	21	21	53	91	72	40	797.5
6/22/2004	2004	6	22	22	48	92	70	38	835.5

6/23/2004	2004	6	23	23	51	78	64.5	32.5	868
6/24/2004	2004	6	24	24	48	90	69	37	905
6/25/2004	2004	6	25	25	60	92	76	44	949
6/26/2004	2004	6	26	26	50	85	67.5	35.5	984.5
6/27/2004	2004	6	27	27	55	82	68.5	36.5	1021
6/28/2004	2004	6	28	28	55	82	68.5	36.5	1057.5
6/29/2004	2004	6	29	29	57	74	65.5	33.5	1091
6/30/2004	2004	6	30	30	49	81	65	33	1124
7/1/2004	2004	7	1	31	43	88	65.5	33.5	1157.5
7/2/2004	2004	7	2	32	41	91	66	34	1191.5
7/3/2004	2004	7	3	33	47	92	69.5	37.5	1229
7/4/2004	2004	7	4	34	56	91	73.5	41.5	1270.5
7/5/2004	2004	7	5	35	43	89	66	34	1304.5
7/6/2004	2004	7	6	36	48	95	71.5	39.5	1344
7/7/2004	2004	7	7	37	49	90	69.5	37.5	1381.5
7/8/2004	2004	7	8	38	49	90	69.5	37.5	1419
7/9/2004	2004	7	9	39	55	93	74	42	1461
7/10/2004	2004	7	10	40	57	90	73.5	41.5	1502.5
7/11/2004	2004	7	11	41	57	90	73.5	41.5	1544
7/12/2004	2004	7	12	42	59	92	75.5	43.5	1587.5
7/13/2004	2004	7	13	43	54	95	74.5	42.5	1630
7/14/2004	2004	7	14	44	57	91	74	42	1672
7/15/2004	2004	7	15	45	69	98	83.5	51.5	1723.5
7/16/2004	2004	7	16	46	71	97	84	52	1775.5
7/17/2004	2004	7	17	47	61	99	80	48	1823.5
7/18/2004	2004	7	18	48	60	93	76.5	44.5	1868
7/19/2004	2004	7	19	49	55	95	75	43	1911
7/20/2004	2004	7	20	50	56	95	75.5	43.5	1954.5
7/21/2004	2004	7	21	51	58	95	76.5	44.5	1999
7/22/2004	2004	7	22	52	58	99	78.5	46.5	2045.5
7/23/2004	2004	7	23	53	61	90	75.5	43.5	2089
7/24/2004	2004	7	24	54	54	84	69	37	2126
7/25/2004	2004	7	25	55	53	82	67.5	35.5	2161.5
7/26/2004	2004	7	26	56	52	76	64	32	2193.5
7/27/2004	2004	7	27	57	55	82	68.5	36.5	2230
7/28/2004	2004	7	28	58	51	85	68	36	2266
7/29/2004	2004	7	29	59	49	82	65.5	33.5	2299.5
7/30/2004	2004	7	30	60	49	91	70	38	2337.5
7/31/2004	2004	7	31	61	62	97	79.5	47.5	2385
8/1/2004	2004	8	1	62	55	92	73.5	41.5	2426.5
8/2/2004	2004	8	2	63	57	90	73.5	41.5	2468
8/3/2004	2004	8	3	64	55	77	66	34	2502
8/4/2004	2004	8	4	65	51	88	69.5	37.5	2539.5
8/5/2004	2004	8	5	66	60	93	76.5	44.5	2584
8/6/2004	2004	8	6	67	55	86	70.5	38.5	2622.5
8/7/2004	2004	8	7	68	55	93	74	42	2664.5
8/8/2004	2004	8	8	69	56	97	76.5	44.5	2709
8/9/2004	2004	8	9	70	61	97	79	47	2756
8/10/2004	2004	8	10	71	51	94	72.5	40.5	2796.5
8/11/2004	2004	8	11	72	53	95	74	42	2838.5
8/12/2004	2004	8	12	73	59	97	78	46	2884.5
8/13/2004	2004	8	13	74	57	94	75.5	43.5	2928
8/14/2004	2004	8	14	75	53	85	69	37	2965
8/15/2004	2004	8	15	76	53	82	67.5	35.5	3000.5
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8/17/2004	2004	8	17	78	50	81	65.5	33.5	3070
8/18/2004	2004	8	18	79	50	81	65.5	33.5	3103.5
8/19/2004	2004	8	19	80	48	88	68	36	3139.5
8/20/2004	2004	8	20	81	50	83	66.5	34.5	3174
8/21/2004	2004	8	21	82	50	82	66	34	3208
8/22/2004	2004	8	22	83	45	79	62	30	3238
8/23/2004	2004	8	23	84	48	84	66	34	3272
8/24/2004	2004	8	24	85	54	81	67.5	35.5	3307.5
8/25/2004	2004	8	25	86	52	84	68	36	3343.5
8/26/2004	2004	8	26	87	45	83	64	32	3375.5
8/27/2004	2004	8	27	88	48	89	68.5	36.5	3412
8/28/2004	2004	8	28	89	45	89	67	35	3447
8/29/2004	2004	8	29	90	47	87	67	35	3482
8/30/2004	2004	8	30	91	52	92	72	40	3522
8/31/2004	2004	8	31	92	44	84	64	32	3554
9/1/2004	2004	9	1	93	47	85	66	34	3588
9/2/2004	2004	9	2	94	49	85	67	35	3623
9/3/2004	2004	9	3	95	56	91	73.5	41.5	3664.5
9/4/2004	2004	9	4	96	55	81	68	36	3700.5
9/5/2004	2004	9	5	97	40	75	57.5	25.5	3726
9/6/2004	2004	9	6	98	40	80	60	28	3754
9/7/2004	2004	9	7	99	49	80	64.5	32.5	3786.5
9/8/2004	2004	9	8	100	42	82	62	30	3816.5
9/9/2004	2004	9	9	101	47	92	69.5	37.5	3854
9/10/2004	2004	9	10	102	50	86	68	36	3890
9/11/2004	2004	9	11	103	48	93	70.5	38.5	3928.5
9/12/2004	2004	9	12	104	50	89	69.5	37.5	3966
9/13/2004	2004	9	13	105	47	93	70	38	4004
9/14/2004	2004	9	14	106	48	89	68.5	36.5	4040.5
9/15/2004	2004	9	15	107	50	88	69	37	4077.5
9/16/2004	2004	9	16	108	42	88	65	33	4110.5
9/17/2004	2004	9	17	109	44	90	67	35	4145.5
9/18/2004	2004	9	18	110	49	90	69.5	37.5	4183
9/19/2004	2004	9	19	111	57	81	69	37	4220
9/20/2004	2004	9	20	112	44	71	57.5	25.5	4245.5
9/21/2004	2004	9	21	113	47	80	63.5	31.5	4277
9/22/2004	2004	9	22	114	31	73	52	20	4297
9/23/2004	2004	9	23	115	30	73	51.5	19.5	4316.5

9/24/2004	2004	9	24	116	35	79	57	25	4341.5
9/25/2004	2004	9	25	117	42	80	61	29	4370.5
9/26/2004	2004	9	26	118	38	68	53	21	4391.5
9/27/2004	2004	9	27	119	37	71	54	22	4413.5
9/28/2004	2004	9	28	120	45	82	63.5	31.5	4445
9/29/2004	2004	9	29	121	47	72	59.5	27.5	4472.5
9/30/2004	2004	9	30	122	39	63	51	19	4491.5
10/1/2004	2004	10	1	123	32	70	51	19	4510.5
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10/3/2004	2004	10	3	125	42	72	57	25	4562
10/4/2004	2004	10	4	126	41	74	57.5	25.5	4587.5
10/5/2004	2004	10	5	127	42	75	58.5	26.5	4614
10/6/2004	2004	10	6	128	36	76	56	24	4638
10/7/2004	2004	10	7	129	34	76	55	23	4661
10/8/2004	2004	10	8	130	35	77	56	24	4685
10/9/2004	2004	10	9	131	32	73	52.5	20.5	4705.5
10/10/2004	2004	10	10	132	34	79	56.5	24.5	4730
10/11/2004	2004	10	11	133	35	76	55.5	23.5	4753.5
10/12/2004	2004	10	12	134	33	61	47	15	4768.5
10/13/2004	2004	10	13	135	33	73	53	21	4789.5
10/14/2004	2004	10	14	136	28	57	42.5	10.5	4800
10/15/2004	2004	10	15	137	29	68	48.5	16.5	4816.5
10/16/2004	2004	10	16	138	32	82	57	25	4841.5
10/17/2004	2004	10	17	139	45	79	62	30	4871.5
10/18/2004	2004	10	18	140	52	69	60.5	28.5	4900
10/19/2004	2004	10	19	141	31	65	48	16	4916
10/20/2004	2004	10	20	142	31	69	50	18	4934
10/21/2004	2004	10	21	143	41	73	57	25	4959
10/22/2004	2004	10	22	144	39	65	52	20	4979
10/23/2004	2004	10	23	145	24	57	40.5	8.5	4987.5
10/24/2004	2004	10	24	146	24	67	45.5	13.5	5001
10/25/2004	2004	10	25	147	30	70	50	18	5019
10/26/2004	2004	10	26	148	35	70	52.5	20.5	5039.5
10/27/2004	2004	10	27	149	45	67	56	24	5063.5
10/28/2004	2004	10	28	150	39	65	52	20	5083.5
10/29/2004	2004	10	29	151	30	46	38	6	5089.5
10/30/2004	2004	10	30	152	20	56	38	6	5095.5
10/31/2004	2004	10	31	153	20	63	41.5	9.5	5105
11/1/2004	2004	11	1	154	20	62	41	9	5114
11/2/2004	2004	11	2	155	16	44	30	-2	5112
11/3/2004	2004	11	3	156	10	54	32	0	5112
11/4/2004	2004	11	4	157	15	65	40	8	5120
11/5/2004	2004	11	5	158	15	60	37.5	5.5	5125.5
11/6/2004	2004	11	6	159	26	68	47	15	5140.5
11/7/2004	2004	11	7	160	26	68	47	15	5155.5
11/8/2004	2004	11	8	161	26	68	47	15	5170.5
11/9/2004	2004	11	9	162	38	66	52	20	5190.5
11/10/2004	2004	11	10	163	25	52	38.5	6.5	5197
11/11/2004	2004	11	11	164	32	59	45.5	13.5	5210.5
11/12/2004	2004	11	12	165	32	59	45.5	13.5	5224
11/13/2004	2004	11	13	166	30	50	40	8	5232
11/14/2004	2004	11	14	167	32	37	34.5	2.5	5234.5
11/15/2004	2004	11	15	168	30	39	34.5	2.5	5237
11/16/2004	2004	11	16	169	36	43	39.5	7.5	5244.5
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11/18/2004	2004	11	18	171	26	62	44	12	5266
11/19/2004	2004	11	19	172	28	58	43	11	5277
11/20/2004	2004	11	20	173	25	64	44.5	12.5	5289.5
11/21/2004	2004	11	21	174	33	57	45	13	5302.5
11/22/2004	2004	11	22	175	35	54	44.5	12.5	5315
11/23/2004	2004	11	23	176	33	50	41.5	9.5	5324.5
11/24/2004	2004	11	24	177	22	52	37	5	5329.5
11/25/2004	2004	11	25	178	22	52	37	5	5334.5
11/26/2004	2004	11	26	179	22	52	37	5	5339.5
11/27/2004	2004	11	27	180	22	52	37	5	5344.5
11/28/2004	2004	11	28	181	27	60	43.5	11.5	5356
11/29/2004	2004	11	29	182	16	46	31	-1	5355
11/30/2004	2004	11	30	183	6	32	19	-13	5342
12/1/2004	2004	12	1	184	7	42	24.5	-7.5	5334.5
12/2/2004	2004	12	2	185	5	48	26.5	-5.5	5329
12/3/2004	2004	12	3	186	8	44	26	-6	5323
12/4/2004	2004	12	4	187	9	53	31	-1	5322
12/5/2004	2004	12	5	188	15	43	29	-3	5319
12/6/2004	2004	12	6	189	22	44	33	1	5320
12/7/2004	2004	12	7	190	26	45	35.5	3.5	5323.5
12/8/2004	2004	12	8	191	27	48	37.5	5.5	5329
12/9/2004	2004	12	9	192	23	52	37.5	5.5	5334.5
12/10/2004	2004	12	10	193	22	57	39.5	7.5	5342
12/11/2004	2004	12	11	194	20	59	39.5	7.5	5349.5
12/12/2004	2004	12	12	195	21	66	43.5	11.5	5361
12/13/2004	2004	12	13	196	20	68	44	12	5373
12/14/2004	2004	12	14	197	26	49	37.5	5.5	5378.5
12/15/2004	2004	12	15	198	15	49	32	0	5378.5
12/16/2004	2004	12	16	199	17	54	35.5	3.5	5382
12/17/2004	2004	12	17	200	13	54	33.5	1.5	5383.5
12/18/2004	2004	12	18	201	16	50	33	1	5384.5
12/19/2004	2004	12	19	202	12	62	37	5	5389.5
12/20/2004	2004	12	20	203	12	58	35	3	5392.5
12/21/2004	2004	12	21	204	23	62	42.5	10.5	5403
12/22/2004	2004	12	22	205	2	44	23	-9	5394
12/23/2004	2004	12	23	206	3	39	21	-11	5383
12/24/2004	2004	12	24	207	0	32	16	-16	5367
12/25/2004	2004	12	25	208	6	37	21.5	-10.5	5356.5

12/26/2004	2004	12	26	209	9	54	31.5	-0.5	5356
12/27/2004	2004	12	27	210	24	50	37	5	5361
12/28/2004	2004	12	28	211	18	49	33.5	1.5	5362.5
12/29/2004	2004	12	29	212	30	58	44	12	5374.5
12/30/2004	2004	12	30	213	37	59	48	16	5390.5
12/31/2004	2004	12	31	214	26	54	40	8	5398.5
1/1/2005	2005	1	1	215	26	46	36	4	5402.5
1/2/2005	2005	1	2	216	26	54	40	8	5410.5
1/3/2005	2005	1	3	217	33	39	36	4	5414.5
1/4/2005	2005	1	4	218	33	43	38	6	5420.5
1/5/2005	2005	1	5	219	24	51	37.5	5.5	5426
1/6/2005	2005	1	6	220	15	43	29	-3	5423
1/7/2005	2005	1	7	221	13	44	28.5	-3.5	5419.5
1/8/2005	2005	1	8	222	13	44	28.5	-3.5	5416
1/9/2005	2005	1	9	223	35	50	42.5	10.5	5426.5
1/10/2005	2005	1	10	224	33	58	45.5	13.5	5440
1/11/2005	2005	1	11	225	36	63	49.5	17.5	5457.5
1/12/2005	2005	1	12	226	25	57	41	9	5466.5
1/13/2005	2005	1	13	227	13	43	28	-4	5462.5
1/14/2005	2005	1	14	228	21	55	38	6	5468.5
1/15/2005	2005	1	15	229	14	52	33	1	5469.5
1/16/2005	2005	1	16	230	17	59	38	6	5475.5
1/17/2005	2005	1	17	231	17	61	39	7	5482.5
1/18/2005	2005	1	18	232	18	64	41	9	5491.5
1/19/2005	2005	1	19	233	21	63	42	10	5501.5
1/20/2005	2005	1	20	234	21	66	43.5	11.5	5513
1/21/2005	2005	1	21	235	27	62	44.5	12.5	5525.5
1/22/2005	2005	1	22	236	31	69	50	18	5543.5
1/23/2005	2005	1	23	237	20	54	37	5	5548.5
1/24/2005	2005	1	24	238	27	65	46	14	5562.5
1/25/2005	2005	1	25	239	32	63	47.5	15.5	5578
1/26/2005	2005	1	26	240	29	60	44.5	12.5	5590.5
1/27/2005	2005	1	27	241	37	60	48.5	16.5	5607
1/28/2005	2005	1	28	242	27	50	38.5	6.5	5613.5
1/29/2005	2005	1	29	243	19	54	36.5	4.5	5618
1/30/2005	2005	1	30	244	17	47	32	0	5618
1/31/2005	2005	1	31	245	26	45	35.5	3.5	5621.5
2/1/2005	2005	2	1	246	22	38	30	-2	5619.5
2/2/2005	2005	2	2	247	22	41	31.5	-0.5	5619
2/3/2005	2005	2	3	248	13	45	29	-3	5616
2/4/2005	2005	2	4	249	13	45	29	-3	5613
2/5/2005	2005	2	5	250	30	48	39	7	5620
2/6/2005	2005	2	6	251	28	56	42	10	5630
2/7/2005	2005	2	7	252	28	55	41.5	9.5	5639.5
2/8/2005	2005	2	8	253	28	41	34.5	2.5	5642
2/9/2005	2005	2	9	254	15	52	33.5	1.5	5643.5
2/10/2005	2005	2	10	255	22	54	38	6	5649.5
2/11/2005	2005	2	11	256	34	47	40.5	8.5	5658
2/12/2005	2005	2	12	257	38	45	41.5	9.5	5667.5
2/13/2005	2005	2	13	258	32	54	43	11	5678.5
2/14/2005	2005	2	14	259	25	58	41.5	9.5	5688
2/15/2005	2005	2	15	260	34	61	47.5	15.5	5703.5
2/16/2005	2005	2	16	261	33	60	46.5	14.5	5718
2/17/2005	2005	2	17	262	28	60	44	12	5730
2/18/2005	2005	2	18	263	38	53	45.5	13.5	5743.5
2/19/2005	2005	2	19	264	41	50	45.5	13.5	5757
2/20/2005	2005	2	20	265	26	57	41.5	9.5	5766.5
2/21/2005	2005	2	21	266	32	56	44	12	5778.5
2/22/2005	2005	2	22	267	27	56	41.5	9.5	5788
2/23/2005	2005	2	23	268	27	56	41.5	9.5	5797.5
2/24/2005	2005	2	24	269	30	53	41.5	9.5	5807
2/25/2005	2005	2	25	270	28	54	41	9	5816
2/26/2005	2005	2	26	271	27	40	33.5	1.5	5817.5
2/27/2005	2005	2	27	272	27	40	33.5	1.5	5819
2/28/2005	2005	2	28	273	19	55	37	5	5824
3/1/2005	2005	3	1	274	23	60	41.5	9.5	5833.5
3/2/2005	2005	3	2	275	20	56	38	6	5839.5
3/3/2005	2005	3	3	276	21	60	40.5	8.5	5848
3/4/2005	2005	3	4	277	21	60	40.5	8.5	5856.5
3/5/2005	2005	3	5	278	21	60	40.5	8.5	5865
3/6/2005	2005	3	6	279	21	60	40.5	8.5	5873.5
3/7/2005	2005	3	7	280	21	53	37	5	5878.5
3/8/2005	2005	3	8	281	24	63	43.5	11.5	5890
3/9/2005	2005	3	9	282	25	64	44.5	12.5	5902.5
3/10/2005	2005	3	10	283	24	70	47	15	5917.5
3/11/2005	2005	3	11	284	26	71	48.5	16.5	5934
3/12/2005	2005	3	12	285	22	73	47.5	15.5	5949.5
3/13/2005	2005	3	13	286	29	73	51	19	5968.5
3/15/2005	2005	3	15	287	20	39	29.5	-2.5	5966
3/16/2005	2005	3	16	288	14	38	26	-6	5960
3/17/2005	2005	3	17	289	24	52	38	6	5966
3/18/2005	2005	3	18	290	33	57	45	13	5979
3/19/2005	2005	3	19	291	32	52	42	10	5989
3/20/2005	2005	3	20	292	31	53	42	10	5999
3/21/2005	2005	3	21	293	32	54	43	11	6010
3/22/2005	2005	3	22	294	20	54	37	5	6015
3/23/2005	2005	3	23	295	28	61	44.5	12.5	6027.5
3/24/2005	2005	3	24	296	32	58	45	13	6040.5
3/25/2005	2005	3	25	297	28	55	41.5	9.5	6050
3/26/2005	2005	3	26	298	28	55	41.5	9.5	6059.5
3/27/2005	2005	3	27	299	17	52	34.5	2.5	6062
3/28/2005	2005	3	28	300	25	65	45	13	6075
3/29/2005	2005	3	29	301	33	70	51.5	19.5	6094.5

3/30/2005	2005	3	30	302	30	54	42	10	6104.5
3/31/2005	2005	3	31	303	20	53	36.5	4.5	6109
4/1/2005	2005	4	1	304	15	53	34	2	6111
4/2/2005	2005	4	2	305	18	66	42	10	6121
4/3/2005	2005	4	3	306	33	70	51.5	19.5	6140.5
4/4/2005	2005	4	4	307	31	73	52	20	6160.5
4/5/2005	2005	4	5	308	34	70	52	20	6180.5
4/6/2005	2005	4	6	309	24	71	47.5	15.5	6196
4/7/2005	2005	4	7	310	35	75	55	23	6219
4/8/2005	2005	4	8	311	34	71	52.5	20.5	6239.5
4/9/2005	2005	4	9	312	33	65	49	17	6256.5
4/10/2005	2005	4	10	313	30	59	44.5	12.5	6269
4/11/2005	2005	4	11	314	24	53	38.5	6.5	6275.5
4/12/2005	2005	4	12	315	20	65	42.5	10.5	6286
4/13/2005	2005	4	13	316	23	72	47.5	15.5	6301.5
4/14/2005	2005	4	14	317	34	75	54.5	22.5	6324
4/15/2005	2005	4	15	318	36	75	55.5	23.5	6347.5
4/16/2005	2005	4	16	319	37	76	56.5	24.5	6372
4/17/2005	2005	4	17	320	40	74	57	25	6397
4/18/2005	2005	4	18	321	31	77	54	22	6419
4/19/2005	2005	4	19	322	35	76	55.5	23.5	6442.5
4/20/2005	2005	4	20	323	30	77	53.5	21.5	6464
4/21/2005	2005	4	21	324	24	73	48.5	16.5	6480.5
4/22/2005	2005	4	22	325	28	74	51	19	6499.5
4/23/2005	2005	4	23	326	40	74	57	25	6524.5
4/24/2005	2005	4	24	327	40	73	56.5	24.5	6549
4/25/2005	2005	4	25	328	38	68	53	21	6570
4/26/2005	2005	4	26	329	32	61	46.5	14.5	6584.5
4/27/2005	2005	4	27	330	32	68	50	18	6602.5
4/28/2005	2005	4	28	331	34	67	50.5	18.5	6621
4/29/2005	2005	4	29	332	32	63	47.5	15.5	6636.5
4/30/2005	2005	4	30	333	30	64	47	15	6651.5
5/1/2005	2005	5	1	334	32	70	51	19	6670.5
5/2/2005	2005	5	2	335	38	71	54.5	22.5	6693
5/3/2005	2005	5	3	336	35	59	47	15	6708
5/4/2005	2005	5	4	337	31	56	43.5	11.5	6719.5
5/5/2005	2005	5	5	338	41	73	57	25	6744.5
5/6/2005	2005	5	6	339	42	74	58	26	6770.5
5/7/2005	2005	5	7	340	48	75	61.5	29.5	6800
5/8/2005	2005	5	8	341	40	76	58	26	6826
5/9/2005	2005	5	9	342	38	77	57.5	25.5	6851.5
5/10/2005	2005	5	10	343	41	78	59.5	27.5	6879
5/11/2005	2005	5	11	344	38	80	59	27	6906
5/12/2005	2005	5	12	345	26	68	47	15	6921
5/13/2005	2005	5	13	346	32	78	55	23	6944
5/14/2005	2005	5	14	347	38	80	59	27	6971
5/15/2005	2005	5	15	348	37	74	55.5	23.5	6994.5
5/16/2005	2005	5	16	349	43	79	61	29	7023.5
5/17/2005	2005	5	17	350	49	84	66.5	34.5	7058
5/18/2005	2005	5	18	351	49	77	63	31	7089
5/19/2005	2005	5	19	352	42	85	63.5	31.5	7120.5
5/20/2005	2005	5	20	353	44	93	68.5	36.5	7157
5/21/2005	2005	5	21	354	47	94	70.5	38.5	7195.5
5/22/2005	2005	5	22	355	45	96	70.5	38.5	7234
5/23/2005	2005	5	23	356	52	97	74.5	42.5	7276.5
5/24/2005	2005	5	24	357	51	94	72.5	40.5	7317
5/25/2005	2005	5	25	358	55	96	75.5	43.5	7360.5
5/26/2005	2005	5	26	359	57	95	76	44	7404.5
5/27/2005	2005	5	27	360	51	96	73.5	41.5	7446
5/28/2005	2005	5	28	361	48	80	64	32	7478
5/29/2005	2005	5	29	362	44	78	61	29	7507
5/30/2005	2005	5	30	363	52	86	69	37	7544
5/31/2005	2005	5	31	364	50	81	65.5	33.5	7577.5
6/1/2005	2005	6	1	1	38	86	62	30	30
6/2/2005	2005	6	2	2	45	87	66	34	64
6/3/2005	2005	6	3	3	48	83	65.5	33.5	97.5
6/4/2005	2005	6	4	4	37	81	59	27	124.5
6/5/2005	2005	6	5	5	38	80	59	27	151.5
6/6/2005	2005	6	6	6	46	84	65	33	184.5
6/7/2005	2005	6	7	7	47	86	66.5	34.5	219
6/8/2005	2005	6	8	8	44	84	64	32	251
6/9/2005	2005	6	9	9	43	83	63	31	282
6/10/2005	2005	6	10	10	43	83	63	31	313
6/11/2005	2005	6	11	11	49	78	63.5	31.5	344.5
6/12/2005	2005	6	12	12	47	78	62.5	30.5	375
6/13/2005	2005	6	13	13	46	77	61.5	29.5	404.5
6/14/2005	2005	6	14	14	43	88	65.5	33.5	438
6/15/2005	2005	6	15	15	43	88	65.5	33.5	471.5
6/16/2005	2005	6	16	16	47	95	71	39	510.5
6/17/2005	2005	6	17	17	45	88	66.5	34.5	545
6/18/2005	2005	6	18	18	45	90	67.5	35.5	580.5
6/19/2005	2005	6	19	19	40	93	66.5	34.5	615
6/20/2005	2005	6	20	20	52	96	74	42	657
6/21/2005	2005	6	21	21	61	96	78.5	46.5	703.5
6/22/2005	2005	6	22	22	52	95	73.5	41.5	745
6/23/2005	2005	6	23	23	54	90	72	40	785
6/24/2005	2005	6	24	24	62	92	77	45	830
6/25/2005	2005	6	25	25	58	91	74.5	42.5	872.5
6/26/2005	2005	6	26	26	57	90	73.5	41.5	914
6/27/2005	2005	6	27	27	46	90	68	36	950
6/28/2005	2005	6	28	28	53	92	72.5	40.5	990.5
6/29/2005	2005	6	29	29	47	91	69	37	1027.5
6/30/2005	2005	6	30	30	43	95	69	37	1064.5

7/1/2005	2005	7	1	31	44	97	70.5	38.5	1103
7/2/2005	2005	7	2	32	47	98	72.5	40.5	1143.5
7/3/2005	2005	7	3	33	53	97	75	43	1186.5
7/4/2005	2005	7	4	34	51	96	73.5	41.5	1228
7/5/2005	2005	7	5	35	48	99	73.5	41.5	1269.5
7/6/2005	2005	7	6	36	54	96	75	43	1312.5
7/7/2005	2005	7	7	37	52	98	75	43	1355.5
7/8/2005	2005	7	8	38	58	98	78	46	1401.5
7/9/2005	2005	7	9	39	50	95	72.5	40.5	1442
7/10/2005	2005	7	10	40	54	97	75.5	43.5	1485.5
7/11/2005	2005	7	11	41	47	93	70	38	1523.5
7/12/2005	2005	7	12	42	52	99	75.5	43.5	1567
7/13/2005	2005	7	13	43	65	98	81.5	49.5	1616.5
7/14/2005	2005	7	14	44	52	105	78.5	46.5	1663
7/15/2005	2005	7	15	45	56	103	79.5	47.5	1710.5
7/16/2005	2005	7	16	46	57	95	76	44	1754.5
7/17/2005	2005	7	17	47	59	101	80	48	1802.5
7/18/2005	2005	7	18	48	56	102	79	47	1849.5
7/19/2005	2005	7	19	49	66	100	83	51	1900.5
7/20/2005	2005	7	20	50	59	105	82	50	1950.5
7/21/2005	2005	7	21	51	60	102	81	49	1999.5
7/22/2005	2005	7	22	52	62	101	81.5	49.5	2049
7/23/2005	2005	7	23	53	62	96	79	47	2096
7/24/2005	2005	7	24	54	59	93	76	44	2140
7/25/2005	2005	7	25	55	60	93	76.5	44.5	2184.5
7/26/2005	2005	7	26	56	65	87	76	44	2228.5
7/27/2005	2005	7	27	57	61	87	74	42	2270.5
7/28/2005	2005	7	28	58	50	90	70	38	2308.5
7/29/2005	2005	7	29	59	55	93	74	42	2350.5
7/30/2005	2005	7	30	60	55	90	72.5	40.5	2391
7/31/2005	2005	7	31	61	60	91	75.5	43.5	2434.5
8/1/2005	2005	8	1	62	58	90	74	42	2476.5
8/2/2005	2005	8	2	63	51	92	71.5	39.5	2516
8/3/2005	2005	8	3	64	60	91	75.5	43.5	2559.5
8/4/2005	2005	8	4	65	55	87	71	39	2598.5
8/5/2005	2005	8	5	66	58	90	74	42	2640.5
8/6/2005	2005	8	6	67	58	88	73	41	2681.5
8/7/2005	2005	8	7	68	57	87	72	40	2721.5
8/8/2005	2005	8	8	69	60	84	72	40	2761.5
8/9/2005	2005	8	9	70	60	91	75.5	43.5	2805
8/10/2005	2005	8	10	71	60	94	77	45	2850
8/11/2005	2005	8	11	72	58	91	74.5	42.5	2892.5
8/12/2005	2005	8	12	73	60	89	74.5	42.5	2935
8/13/2005	2005	8	13	74	57	88	72.5	40.5	2975.5
8/14/2005	2005	8	14	75	58	85	71.5	39.5	3015
8/15/2005	2005	8	15	76	57	81	69	37	3052
8/16/2005	2005	8	16	77	56	76	66	34	3086
8/17/2005	2005	8	17	78	56	76	66	34	3120
8/18/2005	2005	8	18	79	51	87	69	37	3157
8/19/2005	2005	8	19	80	51	88	69.5	37.5	3194.5
8/20/2005	2005	8	20	81	50	84	67	35	3229.5
8/21/2005	2005	8	21	82	52	88	70	38	3267.5
8/22/2005	2005	8	22	83	52	90	71	39	3306.5
8/23/2005	2005	8	23	84	58	88	73	41	3347.5
8/24/2005	2005	8	24	85	57	90	73.5	41.5	3389
8/25/2005	2005	8	25	86	47	91	69	37	3426
8/26/2005	2005	8	26	87	51	91	71	39	3465
8/27/2005	2005	8	27	88	50	94	72	40	3505
8/28/2005	2005	8	28	89	48	96	72	40	3545
8/29/2005	2005	8	29	90	48	96	72	40	3585
8/30/2005	2005	8	30	91	48	92	70	38	3623
8/31/2005	2005	8	31	92	55	95	75	43	3666
9/1/2005	2005	9	1	93	60	93	76.5	44.5	3710.5
9/2/2005	2005	9	2	94	57	95	76	44	3754.5
9/3/2005	2005	9	3	95	57	80	68.5	36.5	3791
9/4/2005	2005	9	4	96	53	83	68	36	3827
9/5/2005	2005	9	5	97	52	83	67.5	35.5	3862.5
9/6/2005	2005	9	6	98	52	85	68.5	36.5	3899
9/7/2005	2005	9	7	99	51	88	69.5	37.5	3936.5
9/8/2005	2005	9	8	100	60	82	71	39	3975.5
9/9/2005	2005	9	9	101	60	82	71	39	4014.5
9/10/2005	2005	9	10	102	57	79	68	36	4050.5
9/11/2005	2005	9	11	103	49	83	66	34	4084.5
9/12/2005	2005	9	12	104	48	81	64.5	32.5	4117
9/13/2005	2005	9	13	105	38	82	60	28	4145
9/14/2005	2005	9	14	106	37	81	59	27	4172
9/15/2005	2005	9	15	107	34	80	57	25	4197
9/16/2005	2005	9	16	108	37	85	61	29	4226
9/17/2005	2005	9	17	109	36	87	61.5	29.5	4255.5
9/18/2005	2005	9	18	110	37	88	62.5	30.5	4286
9/19/2005	2005	9	19	111	43	89	66	34	4320
9/20/2005	2005	9	20	112	43	88	65.5	33.5	4353.5
9/21/2005	2005	9	21	113	43	89	66	34	4387.5
9/22/2005	2005	9	22	114	55	89	72	40	4427.5
9/23/2005	2005	9	23	115	50	83	66.5	34.5	4462
9/24/2005	2005	9	24	116	48	89	68.5	36.5	4498.5
9/25/2005	2005	9	25	117	39	87	63	31	4529.5
9/26/2005	2005	9	26	118	44	88	66	34	4563.5
9/27/2005	2005	9	27	119	48	89	68.5	36.5	4600
9/28/2005	2005	9	28	120	49	87	68	36	4636
9/29/2005	2005	9	29	121	47	81	64	32	4668
9/30/2005	2005	9	30	122	43	57	50	18	4686
10/1/2005	2005	10	1	123	46	79	62.5	30.5	4716.5

10/2/2005	2005	10	2	124	43	83	63	31	4747.5
10/3/2005	2005	10	3	125	42	77	59.5	27.5	4775
10/4/2005	2005	10	4	126	44	76	60	28	4803
10/5/2005	2005	10	5	127	45	83	64	32	4835
10/6/2005	2005	10	6	128	44	79	61.5	29.5	4864.5
10/7/2005	2005	10	7	129	42	60	51	19	4883.5
10/8/2005	2005	10	8	130	41	74	57.5	25.5	4909
10/9/2005	2005	10	9	131	41	81	61	29	4938
10/10/2005	2005	10	10	132	40	67	53.5	21.5	4959.5
10/11/2005	2005	10	11	133	37	57	47	15	4974.5
10/12/2005	2005	10	12	134	27	68	47.5	15.5	4990
10/13/2005	2005	10	13	135	30	72	51	19	5009
10/14/2005	2005	10	14	136	30	74	52	20	5029
10/15/2005	2005	10	15	137	39	71	55	23	5052
10/16/2005	2005	10	16	138	43	58	50.5	18.5	5070.5
10/17/2005	2005	10	17	139	37	70	53.5	21.5	5092
10/18/2005	2005	10	18	140	39	77	58	26	5118
10/19/2005	2005	10	19	141	40	68	54	22	5140
10/20/2005	2005	10	20	142	30	67	48.5	16.5	5156.5
10/21/2005	2005	10	21	143	32	71	51.5	19.5	5176
10/22/2005	2005	10	22	144	31	72	51.5	19.5	5195.5
10/23/2005	2005	10	23	145	32	79	55.5	23.5	5219
10/24/2005	2005	10	24	146	28	72	50	18	5237
10/25/2005	2005	10	25	147	28	72	50	18	5255
10/26/2005	2005	10	26	148	33	70	51.5	19.5	5274.5
10/27/2005	2005	10	27	149	35	71	53	21	5295.5
10/28/2005	2005	10	28	150	40	73	56.5	24.5	5320
10/29/2005	2005	10	29	151	26	71	48.5	16.5	5336.5
10/30/2005	2005	10	30	152	26	71	48.5	16.5	5353
10/31/2005	2005	10	31	153	29	70	49.5	17.5	5370.5
11/1/2005	2005	11	1	154	25	67	46	14	5384.5
11/2/2005	2005	11	2	155	26	71	48.5	16.5	5401
11/3/2005	2005	11	3	156	40	76	58	26	5427
11/4/2005	2005	11	4	157	44	67	55.5	23.5	5450.5
11/5/2005	2005	11	5	158	32	70	51	19	5469.5
11/6/2005	2005	11	6	159	24	72	48	16	5485.5
11/7/2005	2005	11	7	160	34	74	54	22	5507.5
11/8/2005	2005	11	8	161	27	76	51.5	19.5	5527
11/9/2005	2005	11	9	162	32	77	54.5	22.5	5549.5
11/10/2005	2005	11	10	163	28	71	49.5	17.5	5567
11/11/2005	2005	11	11	164	36	74	55	23	5590
11/12/2005	2005	11	12	165	33	64	48.5	16.5	5606.5
11/13/2005	2005	11	13	166	24	68	46	14	5620.5
11/14/2005	2005	11	14	167	25	64	44.5	12.5	5633
11/15/2005	2005	11	15	168	28	70	49	17	5650
11/16/2005	2005	11	16	169	12	50	31	-1	5649
11/17/2005	2005	11	17	170	16	64	40	8	5657
11/18/2005	2005	11	18	171	14	60	37	5	5662
11/19/2005	2005	11	19	172	11	60	35.5	3.5	5665.5
11/20/2005	2005	11	20	173	14	64	39	7	5672.5
11/21/2005	2005	11	21	174	13	66	39.5	7.5	5680
11/22/2005	2005	11	22	175	13	70	41.5	9.5	5689.5
11/23/2005	2005	11	23	176	14	71	42.5	10.5	5700
11/24/2005	2005	11	24	177	17	69	43	11	5711
11/25/2005	2005	11	25	178	13	68	40.5	8.5	5719.5
11/26/2005	2005	11	26	179	17	53	35	3	5722.5
11/27/2005	2005	11	27	180	6	36	21	-11	5711.5
11/28/2005	2005	11	28	181	9	38	23.5	-8.5	5703
11/29/2005	2005	11	29	182	9	38	23.5	-8.5	5694.5
11/30/2005	2005	11	30	183	15	60	37.5	5.5	5700
12/1/2005	2005	12	1	184	15	60	37.5	5.5	5705.5
12/2/2005	2005	12	2	185	15	60	37.5	5.5	5711
12/3/2005	2005	12	3	186	42	65	53.5	21.5	5732.5
12/4/2005	2005	12	4	187	13	57	35	3	5735.5
12/5/2005	2005	12	5	188	3	41	22	-10	5725.5
12/6/2005	2005	12	6	189	2	44	23	-9	5716.5
12/7/2005	2005	12	7	190	5	52	28.5	-3.5	5713
12/8/2005	2005	12	8	191	-1	43	21	-11	5702
12/9/2005	2005	12	9	192	9	45	27	-5	5697
12/10/2005	2005	12	10	193	10	56	33	1	5698
12/11/2005	2005	12	11	194	10	59	34.5	2.5	5700.5
12/12/2005	2005	12	12	195	15	47	31	-1	5699.5
12/13/2005	2005	12	13	196	30	47	38.5	6.5	5706
12/14/2005	2005	12	14	197	15	50	32.5	0.5	5706.5
12/15/2005	2005	12	15	198	8	44	26	-6	5700.5
12/16/2005	2005	12	16	199	5	42	23.5	-8.5	5692
12/17/2005	2005	12	17	200	3	47	25	-7	5685
12/18/2005	2005	12	18	201	4	49	26.5	-5.5	5679.5
12/19/2005	2005	12	19	202	16	58	37	5	5684.5
12/20/2005	2005	12	20	203	18	57	37.5	5.5	5690
12/21/2005	2005	12	21	204	17	59	38	6	5696
12/22/2005	2005	12	22	205	25	64	44.5	12.5	5708.5
12/23/2005	2005	12	23	206	19	68	43.5	11.5	5720
12/24/2005	2005	12	24	207	19	68	43.5	11.5	5731.5
12/25/2005	2005	12	25	208	15	64	39.5	7.5	5739
12/26/2005	2005	12	26	209	17	68	42.5	10.5	5749.5
12/27/2005	2005	12	27	210	17	66	41.5	9.5	5759
12/28/2005	2005	12	28	211	17	65	41	9	5768
12/29/2005	2005	12	29	212	24	65	44.5	12.5	5780.5
12/30/2005	2005	12	30	213	10	64	37	5	5785.5
12/31/2005	2005	12	31	214	10	64	37	5	5790.5
1/1/2006	2006	1	1	215	35	63	49	17	5807.5
1/2/2006	2006	1	2	216	24	61	42.5	10.5	5818

1/3/2006	2006	1	3	217	37	66	51.5	19.5	5837.5
1/4/2006	2006	1	4	218	10	60	35	3	5840.5
1/5/2006	2006	1	5	219	12	60	36	4	5844.5
1/6/2006	2006	1	6	220	13	60	36.5	4.5	5849
1/7/2006	2006	1	7	221	17	67	42	10	5859
1/8/2006	2006	1	8	222	17	67	42	10	5869
1/9/2006	2006	1	9	223	17	67	42	10	5879
1/10/2006	2006	1	10	224	3	52	27.5	-4.5	5874.5
1/11/2006	2006	1	11	225	3	55	29	-3	5871.5
1/12/2006	2006	1	12	226	18	63	40.5	8.5	5880
1/13/2006	2006	1	13	227	9	53	31	-1	5879
1/14/2006	2006	1	14	228	19	61	40	8	5887
1/15/2006	2006	1	15	229	29	60	44.5	12.5	5899.5
1/16/2006	2006	1	16	230	19	59	39	7	5906.5
1/17/2006	2006	1	17	231	5	43	24	-8	5898.5
1/18/2006	2006	1	18	232	11	54	32.5	0.5	5899
1/19/2006	2006	1	19	233	43	51	47	15	5914
1/20/2006	2006	1	20	234	19	53	36	4	5918
1/21/2006	2006	1	21	235	0	45	22.5	-9.5	5908.5
1/22/2006	2006	1	22	236	2	46	24	-8	5900.5
1/23/2006	2006	1	23	237	6	53	29.5	-2.5	5898
1/24/2006	2006	1	24	238	5	55	30	-2	5896
1/25/2006	2006	1	25	239	15	51	33	1	5897
1/26/2006	2006	1	26	240	19	36	27.5	-4.5	5892.5
1/27/2006	2006	1	27	241	15	50	32.5	0.5	5893
1/28/2006	2006	1	28	242	23	47	35	3	5896
1/29/2006	2006	1	29	243	20	50	35	3	5899
1/30/2006	2006	1	30	244	18	53	35.5	3.5	5902.5
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2/1/2006	2006	2	1	246	17	62	39.5	7.5	5917.5
2/2/2006	2006	2	2	247	21	60	40.5	8.5	5926
2/3/2006	2006	2	3	248	24	60	42	10	5936
2/4/2006	2006	2	4	249	13	56	34.5	2.5	5938.5
2/5/2006	2006	2	5	250	15	68	41.5	9.5	5948
2/6/2006	2006	2	6	251	14	60	37	5	5953
2/7/2006	2006	2	7	252	9	55	32	0	5953
2/8/2006	2006	2	8	253	10	60	35	3	5956
2/9/2006	2006	2	9	254	11	66	38.5	6.5	5962.5
2/10/2006	2006	2	10	255	9	56	32.5	0.5	5963
2/11/2006	2006	2	11	256	9	63	36	4	5967
2/12/2006	2006	2	12	257	5	50	27.5	-4.5	5962.5
2/13/2006	2006	2	13	258	7	60	33.5	1.5	5964
2/14/2006	2006	2	14	259	9	64	36.5	4.5	5968.5
2/15/2006	2006	2	15	260	26	66	46	14	5982.5
2/16/2006	2006	2	16	261	26	64	45	13	5995.5
2/17/2006	2006	2	17	262	26	52	39	7	6002.5
2/18/2006	2006	2	18	263	25	40	32.5	0.5	6003
2/19/2006	2006	2	19	264	17	60	38.5	6.5	6009.5
2/20/2006	2006	2	20	265	19	60	39.5	7.5	6017
2/21/2006	2006	2	21	266	10	56	33	1	6018
2/22/2006	2006	2	22	267	9	54	31.5	-0.5	6017.5
2/23/2006	2006	2	23	268	10	56	33	1	6018.5
2/24/2006	2006	2	24	269	10	52	31	-1	6017.5
2/25/2006	2006	2	25	270	12	65	38.5	6.5	6024
2/26/2006	2006	2	26	271	15	66	40.5	8.5	6032.5
2/27/2006	2006	2	27	272	20	62	41	9	6041.5
2/28/2006	2006	2	28	273	29	75	52	20	6061.5
3/1/2006	2006	3	1	274	36	75	55.5	23.5	6085
3/2/2006	2006	3	2	275	22	63	42.5	10.5	6095.5
3/3/2006	2006	3	3	276	26	65	45.5	13.5	6109
3/4/2006	2006	3	4	277	28	63	45.5	13.5	6122.5
3/5/2006	2006	3	5	278	13	63	38	6	6128.5
3/6/2006	2006	3	6	279	41	74	57.5	25.5	6154
3/7/2006	2006	3	7	280	41	74	57.5	25.5	6179.5
3/8/2006	2006	3	8	281	31	63	47	15	6194.5
3/9/2006	2006	3	9	282	21	53	37	5	6199.5
3/10/2006	2006	3	10	283	42	50	46	14	6213.5
3/11/2006	2006	3	11	284	23	52	37.5	5.5	6219
3/12/2006	2006	3	12	285	22	47	34.5	2.5	6221.5
3/13/2006	2006	3	13	286	5	34	19.5	-12.5	6209
3/14/2006	2006	3	14	287	9	45	27	-5	6204
3/15/2006	2006	3	15	288	36	53	44.5	12.5	6216.5
3/16/2006	2006	3	16	289	36	53	44.5	12.5	6229
3/17/2006	2006	3	17	290	36	53	44.5	12.5	6241.5
3/18/2006	2006	3	18	291	22	65	43.5	11.5	6253
3/19/2006	2006	3	19	292	23	63	43	11	6264
3/20/2006	2006	3	20	293	23	63	43	11	6275
3/21/2006	2006	3	21	294	23	53	38	6	6281
3/22/2006	2006	3	22	295	26	54	40	8	6289
3/23/2006	2006	3	23	296	16	57	36.5	4.5	6293.5
3/24/2006	2006	3	24	297	20	62	41	9	6302.5
3/25/2006	2006	3	25	298	23	70	46.5	14.5	6317
3/26/2006	2006	3	26	299	32	70	51	19	6336
3/27/2006	2006	3	27	300	32	66	49	17	6353
3/28/2006	2006	3	28	301	41	66	53.5	21.5	6374.5
3/29/2006	2006	3	29	302	32	60	46	14	6388.5
3/30/2006	2006	3	30	303	33	65	49	17	6405.5
3/31/2006	2006	3	31	304	28	60	44	12	6417.5
4/1/2006	2006	4	1	305	43	68	55.5	23.5	6441
4/2/2006	2006	4	2	306	28	64	46	14	6455
4/3/2006	2006	4	3	307	33	70	51.5	19.5	6474.5
4/4/2006	2006	4	4	308	43	70	56.5	24.5	6499
4/5/2006	2006	4	5	309	38	73	55.5	23.5	6522.5

4/6/2006	2006	4	6	310	36	68	52	20	6542.5
4/7/2006	2006	4	7	311	32	64	48	16	6558.5
4/8/2006	2006	4	8	312	35	72	53.5	21.5	6580
4/9/2006	2006	4	9	313	37	77	57	25	6605
4/10/2006	2006	4	10	314	36	79	57.5	25.5	6630.5
4/11/2006	2006	4	11	315	33	74	53.5	21.5	6652
4/12/2006	2006	4	12	316	27	71	49	17	6669
4/13/2006	2006	4	13	317	32	80	56	24	6693
4/14/2006	2006	4	14	318	43	80	61.5	29.5	6722.5
4/15/2006	2006	4	15	319	44	77	60.5	28.5	6751
4/16/2006	2006	4	16	320	32	75	53.5	21.5	6772.5
4/17/2006	2006	4	17	321	41	78	59.5	27.5	6800
4/18/2006	2006	4	18	322	22	67	44.5	12.5	6812.5
4/19/2006	2006	4	19	323	28	72	50	18	6830.5
4/20/2006	2006	4	20	324	30	78	54	22	6852.5
4/21/2006	2006	4	21	325	27	78	52.5	20.5	6873
4/22/2006	2006	4	22	326	40	80	60	28	6901
4/23/2006	2006	4	23	327	35	80	57.5	25.5	6926.5
4/24/2006	2006	4	24	328	35	80	57.5	25.5	6952
4/25/2006	2006	4	25	329	25	80	52.5	20.5	6972.5
4/26/2006	2006	4	26	330	34	74	54	22	6994.5
4/27/2006	2006	4	27	331	32	75	53.5	21.5	7016
4/28/2006	2006	4	28	332	34	77	55.5	23.5	7039.5
4/29/2006	2006	4	29	333	32	67	49.5	17.5	7057
4/30/2006	2006	4	30	334	30	73	51.5	19.5	7076.5
5/1/2006	2006	5	1	335	41	83	62	30	7106.5
5/2/2006	2006	5	2	336	40	84	62	30	7136.5
5/3/2006	2006	5	3	337	38	84	61	29	7165.5
5/4/2006	2006	5	4	338	40	81	60.5	28.5	7194
5/5/2006	2006	5	5	339	38	83	60.5	28.5	7222.5
5/6/2006	2006	5	6	340	34	74	54	22	7244.5
5/7/2006	2006	5	7	341	39	81	60	28	7272.5
5/8/2006	2006	5	8	342	37	80	58.5	26.5	7299
5/9/2006	2006	5	9	343	40	88	64	32	7331
5/10/2006	2006	5	10	344	33	73	53	21	7352
5/11/2006	2006	5	11	345	38	78	58	26	7378
5/12/2006	2006	5	12	346	38	81	59.5	27.5	7405.5
5/13/2006	2006	5	13	347	38	81	59.5	27.5	7433
5/14/2006	2006	5	14	348	42	90	66	34	7467
5/15/2006	2006	5	15	349	50	92	71	39	7506
5/16/2006	2006	5	16	350	42	73	57.5	25.5	7531.5
5/17/2006	2006	5	17	351	52	90	71	39	7570.5
5/18/2006	2006	5	18	352	51	91	71	39	7609.5
5/19/2006	2006	5	19	353	50	93	71.5	39.5	7649
5/20/2006	2006	5	20	354	51	91	71	39	7688
5/21/2006	2006	5	21	355	51	92	71.5	39.5	7727.5
5/22/2006	2006	5	22	356	48	90	69	37	7764.5
5/23/2006	2006	5	23	357	42	78	60	28	7792.5
5/24/2006	2006	5	24	358	42	88	65	33	7825.5
5/25/2006	2006	5	25	359	42	94	68	36	7861.5
5/26/2006	2006	5	26	360	50	94	72	40	7901.5
5/27/2006	2006	5	27	361	49	88	68.5	36.5	7938
5/28/2006	2006	5	28	362	49	88	68.5	36.5	7974.5
5/29/2006	2006	5	29	363	36	85	60.5	28.5	8003
5/30/2006	2006	5	30	364	40	84	62	30	8033
5/31/2006	2006	5	31	365	43	86	64.5	32.5	8065.5
6/1/2006	2006	6	1	1	50	87	68.5	36.5	36.5
6/2/2006	2006	6	2	2	49	89	69	37	73.5
6/3/2006	2006	6	3	3	50	91	70.5	38.5	112
6/4/2006	2006	6	4	4	49	95	72	40	152
6/5/2006	2006	6	5	5	50	97	73.5	41.5	193.5
6/6/2006	2006	6	6	6	50	99	74.5	42.5	236
6/7/2006	2006	6	7	7	59	97	78	46	282
6/8/2006	2006	6	8	8	46	86	66	34	316
6/9/2006	2006	6	9	9	54	86	70	38	354
6/10/2006	2006	6	10	10	48	86	67	35	389
6/11/2006	2006	6	11	11	48	91	69.5	37.5	426.5
6/12/2006	2006	6	12	12	48	94	71	39	465.5
6/13/2006	2006	6	13	13	57	97	77	45	510.5
6/14/2006	2006	6	14	14	59	96	77.5	45.5	556
6/15/2006	2006	6	15	15	58	95	76.5	44.5	600.5
6/16/2006	2006	6	16	16	50	96	73	41	641.5
6/17/2006	2006	6	17	17	45	91	68	36	677.5
6/18/2006	2006	6	18	18	49	92	70.5	38.5	716
6/19/2006	2006	6	19	19	44	98	71	39	755
6/20/2006	2006	6	20	20	50	97	73.5	41.5	796.5
6/21/2006	2006	6	21	21	49	98	73.5	41.5	838
6/22/2006	2006	6	22	22	54	98	76	44	882
6/23/2006	2006	6	23	23	60	98	79	47	929
6/24/2006	2006	6	24	24	70	99	84.5	52.5	981.5
6/25/2006	2006	6	25	25	71	99	85	53	1034.5
6/26/2006	2006	6	26	26	61	84	72.5	40.5	1075
6/27/2006	2006	6	27	27	52	84	68	36	1111
6/28/2006	2006	6	28	28	49	85	67	35	1146
6/29/2006	2006	6	29	29	56	90	73	41	1187
6/30/2006	2006	6	30	30	55	95	75	43	1230
7/1/2006	2006	7	1	31	55	96	75.5	43.5	1273.5
7/2/2006	2006	7	2	32	54	84	69	37	1310.5
7/3/2006	2006	7	3	33	59	96	77.5	45.5	1356
7/4/2006	2006	7	4	34	57	96	76.5	44.5	1400.5
7/5/2006	2006	7	5	35	65	96	80.5	48.5	1449
7/6/2006	2006	7	6	36	56	84	70	38	1487
7/7/2006	2006	7	7	37	60	79	69.5	37.5	1524.5

7/8/2006	2006	7	8	38	54	74	64	32	1556.5
7/9/2006	2006	7	9	39	55	78	66.5	34.5	1591
7/10/2006	2006	7	10	40	56	86	71	39	1630
7/11/2006	2006	7	11	41	56	86	71	39	1669
7/12/2006	2006	7	12	42	55	93	74	42	1711
7/13/2006	2006	7	13	43	56	96	76	44	1755
7/14/2006	2006	7	14	44	54	99	76.5	44.5	1799.5
7/15/2006	2006	7	15	45	64	99	81.5	49.5	1849
7/16/2006	2006	7	16	46	61	93	77	45	1894
7/17/2006	2006	7	17	47	60	95	77.5	45.5	1939.5
7/18/2006	2006	7	18	48	63	98	80.5	48.5	1988
7/19/2006	2006	7	19	49	65	94	79.5	47.5	2035.5
7/20/2006	2006	7	20	50	57	90	73.5	41.5	2077
7/21/2006	2006	7	21	51	55	95	75	43	2120
7/22/2006	2006	7	22	52	64	99	81.5	49.5	2169.5
7/23/2006	2006	7	23	53	58	90	74	42	2211.5
7/24/2006	2006	7	24	54	56	96	76	44	2255.5
7/25/2006	2006	7	25	55	61	99	80	48	2303.5
7/26/2006	2006	7	26	56	58	96	77	45	2348.5
7/27/2006	2006	7	27	57	62	97	79.5	47.5	2396
7/28/2006	2006	7	28	58	59	94	76.5	44.5	2440.5
7/29/2006	2006	7	29	59	60	80	70	38	2478.5
7/30/2006	2006	7	30	60	59	81	70	38	2516.5
7/31/2006	2006	7	31	61	65	85	75	43	2559.5
8/1/2006	2006	8	1	62	63	88	75.5	43.5	2603
8/2/2006	2006	8	2	63	53	84	68.5	36.5	2639.5
8/3/2006	2006	8	3	64	60	91	75.5	43.5	2683
8/4/2006	2006	8	4	65	58	84	71	39	2722
8/5/2006	2006	8	5	66	57	84	70.5	38.5	2760.5
8/6/2006	2006	8	6	67	58	85	71.5	39.5	2800
8/7/2006	2006	8	7	68	57	78	67.5	35.5	2835.5
8/8/2006	2006	8	8	69	57	78	67.5	35.5	2871
8/9/2006	2006	8	9	70	59	90	74.5	42.5	2913.5
8/10/2006	2006	8	10	71	56	88	72	40	2953.5
8/11/2006	2006	8	11	72	58	90	74	42	2995.5
8/12/2006	2006	8	12	73	57	91	74	42	3037.5
8/13/2006	2006	8	13	74	56	88	72	40	3077.5
8/14/2006	2006	8	14	75	55	87	71	39	3116.5
8/15/2006	2006	8	15	76	58	84	71	39	3155.5
8/16/2006	2006	8	16	77	58	72	65	33	3188.5
8/17/2006	2006	8	17	78	59	88	73.5	41.5	3230
8/18/2006	2006	8	18	79	58	86	72	40	3270
8/19/2006	2006	8	19	80	56	84	70	38	3308
8/20/2006	2006	8	20	81	55	78	66.5	34.5	3342.5
8/21/2006	2006	8	21	82	53	82	67.5	35.5	3378
8/22/2006	2006	8	22	83	55	80	67.5	35.5	3413.5
8/23/2006	2006	8	23	84	54	72	63	31	3444.5
8/24/2006	2006	8	24	85	57	80	68.5	36.5	3481
8/25/2006	2006	8	25	86	54	84	69	37	3518
8/26/2006	2006	8	26	87	50	77	63.5	31.5	3549.5
8/27/2006	2006	8	27	88	47	81	64	32	3581.5
8/28/2006	2006	8	28	89	44	86	65	33	3614.5
8/29/2006	2006	8	29	90	58	86	72	40	3654.5
8/30/2006	2006	8	30	91	53	85	69	37	3691.5
8/31/2006	2006	8	31	92	55	88	71.5	39.5	3731
9/1/2006	2006	9	1	93	55	88	71.5	39.5	3770.5
9/2/2006	2006	9	2	94	54	84	69	37	3807.5
9/3/2006	2006	9	3	95	54	86	70	38	3845.5
9/4/2006	2006	9	4	96	51	82	66.5	34.5	3880
9/5/2006	2006	9	5	97	49	83	66	34	3914
9/6/2006	2006	9	6	98	45	83	64	32	3946
9/7/2006	2006	9	7	99	50	84	67	35	3981
9/8/2006	2006	9	8	100	52	76	64	32	4013
9/9/2006	2006	9	9	101	44	77	60.5	28.5	4041.5
9/10/2006	2006	9	10	102	45	79	62	30	4071.5
9/11/2006	2006	9	11	103	47	80	63.5	31.5	4103
9/12/2006	2006	9	12	104	42	84	63	31	4134
9/13/2006	2006	9	13	105	46	85	65.5	33.5	4167.5
9/14/2006	2006	9	14	106	45	78	61.5	29.5	4197
9/15/2006	2006	9	15	107	47	75	61	29	4226
9/16/2006	2006	9	16	108	42	77	59.5	27.5	4253.5
9/17/2006	2006	9	17	109	35	78	56.5	24.5	4278
9/18/2006	2006	9	18	110	28	71	49.5	17.5	4295.5
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9/20/2006	2006	9	20	112	32	81	56.5	24.5	4340.5
9/21/2006	2006	9	21	113	37	78	57.5	25.5	4366
9/22/2006	2006	9	22	114	42	73	57.5	25.5	4391.5
9/23/2006	2006	9	23	115	38	61	49.5	17.5	4409
9/24/2006	2006	9	24	116	29	65	47	15	4424
9/25/2006	2006	9	25	117	34	69	51.5	19.5	4443.5
9/26/2006	2006	9	26	118	37	80	58.5	26.5	4470
9/27/2006	2006	9	27	119	40	83	61.5	29.5	4499.5
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9/29/2006	2006	9	29	121	31	84	57.5	25.5	4549.5
9/30/2006	2006	9	30	122	31	88	59.5	27.5	4577
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10/2/2006	2006	10	2	124	36	86	61	29	4635
10/3/2006	2006	10	3	125	42	83	62.5	30.5	4665.5
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10/24/2006	2006	10	24	146	40	76	58	26	5117
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10/28/2006	2006	10	28	150	24	59	41.5	9.5	5171.5
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10/30/2006	2006	10	30	152	30	63	46.5	14.5	5201
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11/8/2006	2006	11	8	161	29	69	49	17	5335.5
11/9/2006	2006	11	9	162	38	69	53.5	21.5	5357
11/10/2006	2006	11	10	163	38	69	53.5	21.5	5378.5
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11/12/2006	2006	11	12	165	34	59	46.5	14.5	5401.5
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11/17/2006	2006	11	17	170	20	70	45	13	5449
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11/23/2006	2006	11	23	176	18	72	45	13	5520.5
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12/2/2006	2006	12	2	185	-2	43	20.5	-11.5	5526.5
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12/5/2006	2006	12	5	188	2	43	22.5	-9.5	5491
12/6/2006	2006	12	6	189	10	55	32.5	0.5	5491.5
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12/8/2006	2006	12	8	191	15	48	31.5	-0.5	5494.5
12/9/2006	2006	12	9	192	18	54	36	4	5498.5
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12/21/2006	2006	12	21	204	5	39	22	-10	5527
12/22/2006	2006	12	22	205	-7	43	18	-14	5513
12/23/2006	2006	12	23	206	-1	42	20.5	-11.5	5501.5
12/24/2006	2006	12	24	207	-2	44	21	-11	5490.5
12/25/2006	2006	12	25	208	-2	45	21.5	-10.5	5480
12/26/2006	2006	12	26	209	5	45	25	-7	5473
12/27/2006	2006	12	27	210	10	48	29	-3	5470
12/28/2006	2006	12	28	211	17	53	35	3	5473
12/29/2006	2006	12	29	212	10	40	25	-7	5466
12/30/2006	2006	12	30	213	20	40	30	-2	5464
12/31/2006	2006	12	31	214	-6	38	16	-16	5448
1/1/2007	2007	1	1	215	0	38	19	-13	5435
1/2/2007	2007	1	2	216	6	32	19	-13	5422
1/3/2007	2007	1	3	217	-3	40	18.5	-13.5	5408.5
1/4/2007	2007	1	4	218	5	44	24.5	-7.5	5401
1/5/2007	2007	1	5	219	22	56	39	7	5408
1/6/2007	2007	1	6	220	6	47	26.5	-5.5	5402.5
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1/9/2007	2007	1	9	223	5	47	26	-6	5379

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1/11/2007	2007	1	11	225	26	45	35.5	3.5	5376
1/12/2007	2007	1	12	226	34	47	40.5	8.5	5384.5
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1/22/2007	2007	1	22	236	8	32	20	-12	5325
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1/25/2007	2007	1	25	239	8	52	30	-2	5329
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1/30/2007	2007	1	30	244	17	50	33.5	1.5	5334
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2/1/2007	2007	2	1	246	15	44	29.5	-2.5	5330
2/2/2007	2007	2	2	247	4	38	21	-11	5319
2/3/2007	2007	2	3	248	7	33	20	-12	5307
2/4/2007	2007	2	4	249	10	33	21.5	-10.5	5296.5
2/5/2007	2007	2	5	250	19	56	37.5	5.5	5302
2/6/2007	2007	2	6	251	29	60	44.5	12.5	5314.5
2/7/2007	2007	2	7	252	24	61	42.5	10.5	5325
2/8/2007	2007	2	8	253	27	62	44.5	12.5	5337.5
2/9/2007	2007	2	9	254	32	60	46	14	5351.5
2/10/2007	2007	2	10	255	30	61	45.5	13.5	5365
2/11/2007	2007	2	11	256	26	55	40.5	8.5	5373.5
2/12/2007	2007	2	12	257	29	56	42.5	10.5	5384
2/13/2007	2007	2	13	258	27	41	34	2	5386
2/14/2007	2007	2	14	259	28	44	36	4	5390
2/15/2007	2007	2	15	260	20	43	31.5	-0.5	5389.5
2/16/2007	2007	2	16	261	21	47	34	2	5391.5
2/17/2007	2007	2	17	262	27	56	41.5	9.5	5401
2/18/2007	2007	2	18	263	20	54	37	5	5406
2/19/2007	2007	2	19	264	28	56	42	10	5416
2/20/2007	2007	2	20	265	20	56	38	6	5422
2/21/2007	2007	2	21	266	23	56	39.5	7.5	5429.5
2/22/2007	2007	2	22	267	22	62	42	10	5439.5
2/23/2007	2007	2	23	268	22	60	41	9	5448.5
2/24/2007	2007	2	24	269	22	60	41	9	5457.5
2/25/2007	2007	2	25	270	34	60	47	15	5472.5
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2/27/2007	2007	2	27	272	28	62	45	13	5489.5
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3/1/2007	2007	3	1	274	18	44	31	-1	5502.5
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3/4/2007	2007	3	4	277	9	44	26.5	-5.5	5489.5
3/5/2007	2007	3	5	278	13	55	34	2	5491.5
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3/7/2007	2007	3	7	280	30	76	53	21	5517
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3/9/2007	2007	3	9	282	23	70	46.5	14.5	5549.5
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3/12/2007	2007	3	12	285	22	65	43.5	11.5	5593.5
3/13/2007	2007	3	13	286	27	78	52.5	20.5	5614
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3/15/2007	2007	3	15	288	33	80	56.5	24.5	5661
3/16/2007	2007	3	16	289	26	79	52.5	20.5	5681.5
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3/19/2007	2007	3	19	292	32	79	55.5	23.5	5752
3/20/2007	2007	3	20	293	26	71	48.5	16.5	5768.5
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3/23/2007	2007	3	23	296	42	62	52	20	5832.5
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3/25/2007	2007	3	25	298	36	60	48	16	5864.5
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3/30/2007	2007	3	30	303	29	54	41.5	9.5	5942.5
3/31/2007	2007	3	31	304	24	46	35	3	5945.5
4/1/2007	2007	4	1	305	25	70	47.5	15.5	5961
4/2/2007	2007	4	2	306	29	75	52	20	5981
4/3/2007	2007	4	3	307	37	75	56	24	6005
4/4/2007	2007	4	4	308	34	77	55.5	23.5	6028.5
4/5/2007	2007	4	5	309	34	79	56.5	24.5	6053
4/6/2007	2007	4	6	310	37	80	58.5	26.5	6079.5
4/7/2007	2007	4	7	311	38	74	56	24	6103.5
4/8/2007	2007	4	8	312	38	71	54.5	22.5	6126
4/9/2007	2007	4	9	313	37	62	49.5	17.5	6143.5
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4/11/2007	2007	4	11	315	25	64	44.5	12.5	6182.5
4/12/2007	2007	4	12	316	25	61	43	11	6193.5

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4/14/2007	2007	4	14	318	29	59	44	12	6221.5
4/15/2007	2007	4	15	319	30	65	47.5	15.5	6237
4/16/2007	2007	4	16	320	28	70	49	17	6254
4/17/2007	2007	4	17	321	30	64	47	15	6269
4/18/2007	2007	4	18	322	32	73	52.5	20.5	6289.5
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4/20/2007	2007	4	20	324	34	71	52.5	20.5	6331
4/21/2007	2007	4	21	325	32	72	52	20	6351
4/22/2007	2007	4	22	326	28	60	44	12	6363
4/23/2007	2007	4	23	327	34	70	52	20	6383
4/24/2007	2007	4	24	328	36	68	52	20	6403
4/25/2007	2007	4	25	329	31	63	47	15	6418
4/26/2007	2007	4	26	330	32	66	49	17	6435
4/27/2007	2007	4	27	331	33	79	56	24	6459
4/28/2007	2007	4	28	332	36	81	58.5	26.5	6485.5
4/29/2007	2007	4	29	333	45	77	61	29	6514.5
4/30/2007	2007	4	30	334	41	74	57.5	25.5	6540
5/1/2007	2007	5	1	335	41	85	63	31	6571
5/2/2007	2007	5	2	336	46	79	62.5	30.5	6601.5
5/3/2007	2007	5	3	337	56	78	67	35	6636.5
5/4/2007	2007	5	4	338	59	76	67.5	35.5	6672
5/5/2007	2007	5	5	339	37	72	54.5	22.5	6694.5
5/6/2007	2007	5	6	340	27	56	41.5	9.5	6704
5/7/2007	2007	5	7	341	29	60	44.5	12.5	6716.5
5/8/2007	2007	5	8	342	37	66	51.5	19.5	6736
5/9/2007	2007	5	9	343	38	70	54	22	6758
5/10/2007	2007	5	10	344	34	78	56	24	6782
5/11/2007	2007	5	11	345	38	85	61.5	29.5	6811.5
5/12/2007	2007	5	12	346	44	85	64.5	32.5	6844
5/13/2007	2007	5	13	347	46	85	65.5	33.5	6877.5
5/14/2007	2007	5	14	348	46	83	64.5	32.5	6910
5/15/2007	2007	5	15	349	47	81	64	32	6942
5/16/2007	2007	5	16	350	46	74	60	28	6970
5/17/2007	2007	5	17	351	46	74	60	28	6998
5/18/2007	2007	5	18	352	43	74	58.5	26.5	7024.5
5/19/2007	2007	5	19	353	43	79	61	29	7053.5
5/20/2007	2007	5	20	354	46	80	63	31	7084.5
5/21/2007	2007	5	21	355	45	75	60	28	7112.5
5/22/2007	2007	5	22	356	52	79	65.5	33.5	7146
5/23/2007	2007	5	23	357	42	76	59	27	7173
5/24/2007	2007	5	24	358	28	73	50.5	18.5	7191.5
5/25/2007	2007	5	25	359	47	73	60	28	7219.5
5/26/2007	2007	5	26	360	45	82	63.5	31.5	7251
5/27/2007	2007	5	27	361	41	84	62.5	30.5	7281.5
5/28/2007	2007	5	28	362	54	84	69	37	7318.5
5/29/2007	2007	5	29	363	40	84	62	30	7348.5
5/30/2007	2007	5	30	364	40	85	62.5	30.5	7379
5/31/2007	2007	5	31	365	39	86	62.5	30.5	7409.5
6/1/2007	2007	6	1	1	39	85	62	30	30
6/2/2007	2007	6	2	2	40	91	65.5	33.5	63.5
6/3/2007	2007	6	3	3	63	91	77	45	108.5
6/4/2007	2007	6	4	4	47	84	65.5	33.5	142
6/5/2007	2007	6	5	5	53	89	71	39	181
6/6/2007	2007	6	6	6	55	90	72.5	40.5	221.5
6/7/2007	2007	6	7	7	55	83	69	37	258.5
6/8/2007	2007	6	8	8	32	81	56.5	24.5	283
6/9/2007	2007	6	9	9	47	84	65.5	33.5	316.5
6/10/2007	2007	6	10	10	43	70	56.5	24.5	341
6/11/2007	2007	6	11	11	48	66	57	25	366
6/12/2007	2007	6	12	12	47	75	61	29	395
6/13/2007	2007	6	13	13	42	82	62	30	425
6/14/2007	2007	6	14	14	46	86	66	34	459
6/15/2007	2007	6	15	15	47	91	69	37	496
6/16/2007	2007	6	16	16	58	96	77	45	541
6/17/2007	2007	6	17	17	60	93	76.5	44.5	585.5
6/18/2007	2007	6	18	18	57	94	75.5	43.5	629
6/19/2007	2007	6	19	19	51	96	73.5	41.5	670.5
6/20/2007	2007	6	20	20	50	95	72.5	40.5	711
6/21/2007	2007	6	21	21	57	97	77	45	756
6/22/2007	2007	6	22	22	58	96	77	45	801
6/23/2007	2007	6	23	23	56	93	74.5	42.5	843.5
6/24/2007	2007	6	24	24	51	99	75	43	886.5
6/25/2007	2007	6	25	25	49	100	74.5	42.5	929
6/26/2007	2007	6	26	26	45	97	71	39	968
6/27/2007	2007	6	27	27	42	100	71	39	1007
6/28/2007	2007	6	28	28	55	86	70.5	38.5	1045.5
6/29/2007	2007	6	29	29	55	97	76	44	1089.5
6/30/2007	2007	6	30	30	53	98	75.5	43.5	1133
7/1/2007	2007	7	1	31	50	101	75.5	43.5	1176.5
7/2/2007	2007	7	2	32	52	102	77	45	1221.5
7/3/2007	2007	7	3	33	55	102	78.5	46.5	1268
7/4/2007	2007	7	4	34	65	103	84	52	1320
7/5/2007	2007	7	5	35	56	93	74.5	42.5	1362.5
7/6/2007	2007	7	6	36	53	95	74	42	1404.5
7/7/2007	2007	7	7	37	56	88	72	40	1444.5
7/8/2007	2007	7	8	38	54	96	75	43	1487.5
7/9/2007	2007	7	9	39	53	99	76	44	1531.5
7/10/2007	2007	7	10	40	57	98	77.5	45.5	1577
7/11/2007	2007	7	11	41	65	95	80	48	1625
7/12/2007	2007	7	12	42	60	90	75	43	1668
7/13/2007	2007	7	13	43	59	95	77	45	1713
7/14/2007	2007	7	14	44	54	97	75.5	43.5	1756.5

7/15/2007	2007	7	15	45	64	95	79.5	47.5	1804
7/16/2007	2007	7	16	46	60	97	78.5	46.5	1850.5
7/17/2007	2007	7	17	47	55	99	77	45	1895.5
7/18/2007	2007	7	18	48	56	101	78.5	46.5	1942
7/19/2007	2007	7	19	49	58	100	79	47	1989
7/20/2007	2007	7	20	50	58	89	73.5	41.5	2030.5
7/21/2007	2007	7	21	51	61	90	75.5	43.5	2074
7/22/2007	2007	7	22	52	57	89	73	41	2115
7/23/2007	2007	7	23	53	57	82	69.5	37.5	2152.5
7/24/2007	2007	7	24	54	58	90	74	42	2194.5
7/25/2007	2007	7	25	55	53	93	73	41	2235.5
7/26/2007	2007	7	26	56	60	90	75	43	2278.5
7/27/2007	2007	7	27	57	60	95	77.5	45.5	2324
7/28/2007	2007	7	28	58	60	87	73.5	41.5	2365.5
7/29/2007	2007	7	29	59	58	92	75	43	2408.5
7/30/2007	2007	7	30	60	59	94	76.5	44.5	2453
7/31/2007	2007	7	31	61	57	79	68	36	2489
8/1/2007	2007	8	1	62	59	91	75	43	2532
8/2/2007	2007	8	2	63	60	90	75	43	2575
8/3/2007	2007	8	3	64	59	89	74	42	2617
8/4/2007	2007	8	4	65	58	88	73	41	2658
8/5/2007	2007	8	5	66	57	91	74	42	2700
8/6/2007	2007	8	6	67	59	89	74	42	2742
8/7/2007	2007	8	7	68	57	90	73.5	41.5	2783.5
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8/9/2007	2007	8	9	70	54	91	72.5	40.5	2860.5
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8/11/2007	2007	8	11	72	59	92	75.5	43.5	2946
8/12/2007	2007	8	12	73	55	91	73	41	2987
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8/21/2007	2007	8	21	82	59	95	77	45	3386
8/22/2007	2007	8	22	83	52	98	75	43	3429
8/23/2007	2007	8	23	84	62	98	80	48	3477
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8/26/2007	2007	8	26	87	54	92	73	41	3605
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8/29/2007	2007	8	29	90	58	86	72	40	3721.5
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8/31/2007	2007	8	31	92	61	86	73.5	41.5	3804
9/1/2007	2007	9	1	93	53	87	70	38	3842
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9/6/2007	2007	9	6	98	55	86	70.5	38.5	4033.5
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9/17/2007	2007	9	17	109	62	87	74.5	42.5	4407.5
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9/24/2007	2007	9	24	116	43	80	61.5	29.5	4626
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9/29/2007	2007	9	29	121	56	80	68	36	4774.5
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10/7/2007	2007	10	7	129	28	76	52	20	5003
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10/24/2007	2007	10	24	146	26	76	51	19	5313.5
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11/5/2007	2007	11	5	158	27	77	52	20	5550
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11/12/2007	2007	11	12	165	26	73	49.5	17.5	5682
11/13/2007	2007	11	13	166	25	68	46.5	14.5	5696.5
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11/20/2007	2007	11	20	173	21	79	50	18	5814.5
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11/22/2007	2007	11	22	175	21	54	37.5	5.5	5839.5
11/23/2007	2007	11	23	176	31	48	39.5	7.5	5847
11/24/2007	2007	11	24	177	21	41	31	-1	5846
11/25/2007	2007	11	25	178	8	42	25	-7	5839
11/26/2007	2007	11	26	179	10	48	29	-3	5836
11/27/2007	2007	11	27	180	9	54	31.5	-0.5	5835.5
11/28/2007	2007	11	28	181	27	55	41	9	5844.5
11/29/2007	2007	11	29	182	14	57	35.5	3.5	5848
11/30/2007	2007	11	30	183	36	52	44	12	5860
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12/3/2007	2007	12	3	186	20	57	38.5	6.5	5891.5
12/4/2007	2007	12	4	187	21	60	40.5	8.5	5900
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12/7/2007	2007	12	7	190	37	60	48.5	16.5	5945
12/8/2007	2007	12	8	191	39	60	49.5	17.5	5962.5
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12/13/2007	2007	12	13	196	15	45	30	-2	5969.5
12/14/2007	2007	12	14	197	24	42	33	1	5970.5
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12/25/2007	2007	12	25	208	17	53	35	3	5968
12/26/2007	2007	12	26	209	1	33	17	-15	5953
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12/28/2007	2007	12	28	211	0	31	15.5	-16.5	5930.5
12/29/2007	2007	12	29	212	12	36	24	-8	5922.5
12/30/2007	2007	12	30	213	15	46	30.5	-1.5	5921
12/31/2007	2007	12	31	214	20	52	36	4	5925
1/1/2008	2008	1	1	215	-2	36	17	-15	5910
1/2/2008	2008	1	2	216	7	44	25.5	-6.5	5903.5
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1/6/2008	2008	1	6	220	40	57	48.5	16.5	5931
1/7/2008	2008	1	7	221	32	55	43.5	11.5	5942.5
1/8/2008	2008	1	8	222	11	40	25.5	-6.5	5936
1/9/2008	2008	1	9	223	13	44	28.5	-3.5	5932.5
1/10/2008	2008	1	10	224	11	43	27	-5	5927.5
1/11/2008	2008	1	11	225	14	45	29.5	-2.5	5925
1/12/2008	2008	1	12	226	13	43	28	-4	5921
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1/14/2008	2008	1	14	228	10	44	27	-5	5914
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1/16/2008	2008	1	16	230	13	32	22.5	-9.5	5889.5

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1/19/2008	2008	1	19	233	2	40	21	-11	5847
1/20/2008	2008	1	20	234	3	43	23	-9	5838
1/21/2008	2008	1	21	235	17	52	34.5	2.5	5840.5
1/22/2008	2008	1	22	236	13	50	31.5	-0.5	5840
1/23/2008	2008	1	23	237	9	46	27.5	-4.5	5835.5
1/24/2008	2008	1	24	238	29	53	41	9	5844.5
1/25/2008	2008	1	25	239	19	46	32.5	0.5	5845
1/26/2008	2008	1	26	240	10	50	30	-2	5843
1/27/2008	2008	1	27	241	29	55	42	10	5853
1/28/2008	2008	1	28	242	37	52	44.5	12.5	5865.5
1/29/2008	2008	1	29	243	12	39	25.5	-6.5	5859
1/30/2008	2008	1	30	244	28	41	34.5	2.5	5861.5
1/31/2008	2008	1	31	245	8	38	23	-9	5852.5
2/1/2008	2008	2	1	246	6	50	28	-4	5848.5
2/2/2008	2008	2	2	247	18	51	34.5	2.5	5851
2/3/2008	2008	2	3	248	17	52	34.5	2.5	5853.5
2/4/2008	2008	2	4	249	28	48	38	6	5859.5
2/5/2008	2008	2	5	250	4	30	17	-15	5844.5
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2/7/2008	2008	2	7	252	4	30	17	-15	5814.5
2/8/2008	2008	2	8	253	4	30	17	-15	5799.5
2/9/2008	2008	2	9	254	20	52	36	4	5803.5
2/10/2008	2008	2	10	255	20	59	39.5	7.5	5811
2/11/2008	2008	2	11	256	20	60	40	8	5819
2/12/2008	2008	2	12	257	21	60	40.5	8.5	5827.5
2/13/2008	2008	2	13	258	22	58	40	8	5835.5
2/14/2008	2008	2	14	259	32	55	43.5	11.5	5847
2/15/2008	2008	2	15	260	30	53	41.5	9.5	5856.5
2/16/2008	2008	2	16	261	30	58	44	12	5868.5
2/17/2008	2008	2	17	262	22	57	39.5	7.5	5876
2/18/2008	2008	2	18	263	15	52	33.5	1.5	5877.5
2/19/2008	2008	2	19	264	19	58	38.5	6.5	5884
2/20/2008	2008	2	20	265	30	60	45	13	5897
2/21/2008	2008	2	21	266	29	60	44.5	12.5	5909.5
2/22/2008	2008	2	22	267	27	54	40.5	8.5	5918
2/23/2008	2008	2	23	268	28	43	35.5	3.5	5921.5
2/24/2008	2008	2	24	269	29	55	42	10	5931.5
2/25/2008	2008	2	25	270	32	59	45.5	13.5	5945
2/26/2008	2008	2	26	271	22	62	42	10	5955
2/27/2008	2008	2	27	272	20	59	39.5	7.5	5962.5
2/28/2008	2008	2	28	273	20	68	44	12	5974.5
2/29/2008	2008	2	29	274	22	71	46.5	14.5	5989
3/1/2008	2008	3	1	275	22	72	47	15	6004
3/2/2008	2008	3	2	276	28	79	53.5	21.5	6025.5
3/3/2008	2008	3	3	277	18	35	26.5	-5.5	6020
3/4/2008	2008	3	4	278	18	35	26.5	-5.5	6014.5
3/5/2008	2008	3	5	279	17	60	38.5	6.5	6021
3/6/2008	2008	3	6	280	16	45	30.5	-1.5	6019.5
3/7/2008	2008	3	7	281	17	50	33.5	1.5	6021
3/8/2008	2008	3	8	282	15	55	35	3	6024
3/9/2008	2008	3	9	283	20	59	39.5	7.5	6031.5
3/10/2008	2008	3	10	284	18	64	41	9	6040.5
3/11/2008	2008	3	11	285	18	64	41	9	6049.5
3/12/2008	2008	3	12	286	22	67	44.5	12.5	6062
3/13/2008	2008	3	13	287	30	71	50.5	18.5	6080.5
3/14/2008	2008	3	14	288	35	70	52.5	20.5	6101
3/15/2008	2008	3	15	289	17	65	41	9	6110
3/16/2008	2008	3	16	290	20	60	40	8	6118
3/17/2008	2008	3	17	291	28	60	44	12	6130
3/18/2008	2008	3	18	292	24	52	38	6	6136
3/19/2008	2008	3	19	293	15	60	37.5	5.5	6141.5
3/20/2008	2008	3	20	294	15	68	41.5	9.5	6151
3/21/2008	2008	3	21	295	17	70	43.5	11.5	6162.5
3/22/2008	2008	3	22	296	18	72	45	13	6175.5
3/23/2008	2008	3	23	297	16	67	41.5	9.5	6185
3/24/2008	2008	3	24	298	16	74	45	13	6198
3/25/2008	2008	3	25	299	22	74	48	16	6214
3/26/2008	2008	3	26	300	34	74	54	22	6236
3/27/2008	2008	3	27	301	30	74	52	20	6256
3/28/2008	2008	3	28	302	28	74	51	19	6275
3/29/2008	2008	3	29	303	28	70	49	17	6292
3/30/2008	2008	3	30	304	28	70	49	17	6309
3/31/2008	2008	3	31	305	32	70	51	19	6328
4/1/2008	2008	4	1	306	21	65	43	11	6339
4/2/2008	2008	4	2	307	35	71	53	21	6360
4/3/2008	2008	4	3	308	35	71	53	21	6381
4/4/2008	2008	4	4	309	22	63	42.5	10.5	6391.5
4/5/2008	2008	4	5	310	45	69	57	25	6416.5
4/6/2008	2008	4	6	311	44	72	58	26	6442.5
4/7/2008	2008	4	7	312	47	73	60	28	6470.5
4/8/2008	2008	4	8	313	35	70	52.5	20.5	6491
4/9/2008	2008	4	9	314	35	70	52.5	20.5	6511.5
4/10/2008	2008	4	10	315	29	59	44	12	6523.5
4/11/2008	2008	4	11	316	22	59	40.5	8.5	6532
4/12/2008	2008	4	12	317	17	56	36.5	4.5	6536.5
4/13/2008	2008	4	13	318	21	65	43	11	6547.5
4/14/2008	2008	4	14	319	24	70	47	15	6562.5
4/15/2008	2008	4	15	320	28	81	54.5	22.5	6585
4/16/2008	2008	4	16	321	28	80	54	22	6607
4/17/2008	2008	4	17	322	31	69	50	18	6625
4/18/2008	2008	4	18	323	31	69	50	18	6643

4/19/2008	2008	4	19	324	31	69	50	18	6661
4/20/2008	2008	4	20	325	31	69	50	18	6679
4/21/2008	2008	4	21	326	37	67	52	20	6699
4/22/2008	2008	4	22	327	37	67	52	20	6719
4/23/2008	2008	4	23	328	28	78	53	21	6740
4/24/2008	2008	4	24	329	37	77	57	25	6765
4/25/2008	2008	4	25	330	37	77	57	25	6790
4/26/2008	2008	4	26	331	37	77	57	25	6815
4/27/2008	2008	4	27	332	37	77	57	25	6840
4/28/2008	2008	4	28	333	19	71	45	13	6853
4/29/2008	2008	4	29	334	19	71	45	13	6866
4/30/2008	2008	4	30	335	45	81	63	31	6897
5/1/2008	2008	5	1	336	45	81	63	31	6928
5/2/2008	2008	5	2	337	24	63	43.5	11.5	6939.5
5/3/2008	2008	5	3	338	21	63	42	10	6949.5
5/4/2008	2008	5	4	339	44	79	61.5	29.5	6979
5/5/2008	2008	5	5	340	30	82	56	24	7003
5/6/2008	2008	5	6	341	30	82	56	24	7027
5/7/2008	2008	5	7	342	33	73	53	21	7048
5/8/2008	2008	5	8	343	50	79	64.5	32.5	7080.5
5/9/2008	2008	5	9	344	43	75	59	27	7107.5
5/10/2008	2008	5	10	345	37	75	56	24	7131.5
5/11/2008	2008	5	11	346	30	75	52.5	20.5	7152
5/12/2008	2008	5	12	347	36	82	59	27	7179
5/13/2008	2008	5	13	348	44	76	60	28	7207
5/14/2008	2008	5	14	349	49	74	61.5	29.5	7236.5
5/15/2008	2008	5	15	350	49	74	61.5	29.5	7266
5/16/2008	2008	5	16	351	39	77	58	26	7292
5/17/2008	2008	5	17	352	37	81	59	27	7319
5/18/2008	2008	5	18	353	38	82	60	28	7347
5/19/2008	2008	5	19	354	38	89	63.5	31.5	7378.5
5/20/2008	2008	5	20	355	42	96	69	37	7415.5
5/21/2008	2008	5	21	356	41	83	62	30	7445.5
5/22/2008	2008	5	22	357	39	52	45.5	13.5	7459
5/23/2008	2008	5	23	358	35	54	44.5	12.5	7471.5
5/24/2008	2008	5	24	359	45	68	56.5	24.5	7496
5/25/2008	2008	5	25	360	41	72	56.5	24.5	7520.5
5/26/2008	2008	5	26	361	38	70	54	22	7542.5
5/27/2008	2008	5	27	362	41	79	60	28	7570.5
5/28/2008	2008	5	28	363	44	82	63	31	7601.5
5/29/2008	2008	5	29	364	40	84	62	30	7631.5
5/30/2008	2008	5	30	365	37	88	62.5	30.5	7662
5/31/2008	2008	5	31	366	39	86	62.5	30.5	7692.5
6/1/2008	2008	6	1	1	40	89	64.5	32.5	32.5
6/2/2008	2008	6	2	2	46	93	69.5	37.5	70
6/3/2008	2008	6	3	3	48	88	68	36	106
6/4/2008	2008	6	4	4	60	86	73	41	147
6/5/2008	2008	6	5	5	39	83	61	29	176
6/6/2008	2008	6	6	6	36	67	51.5	19.5	195.5
6/7/2008	2008	6	7	7	40	84	62	30	225.5
6/8/2008	2008	6	8	8	44	86	65	33	258.5
6/9/2008	2008	6	9	9	38	90	64	32	290.5
6/10/2008	2008	6	10	10	38	93	65.5	33.5	324
6/11/2008	2008	6	11	11	38	92	65	33	357
6/12/2008	2008	6	12	12	37	90	63.5	31.5	388.5
6/13/2008	2008	6	13	13	37	88	62.5	30.5	419
6/14/2008	2008	6	14	14	40	93	66.5	34.5	453.5
6/15/2008	2008	6	15	15	44	95	69.5	37.5	491
6/16/2008	2008	6	16	16	48	96	72	40	531
6/17/2008	2008	6	17	17	29	96	62.5	30.5	561.5
6/18/2008	2008	6	18	18	51	96	73.5	41.5	603
6/19/2008	2008	6	19	19	50	95	72.5	40.5	643.5
6/20/2008	2008	6	20	20	49	98	73.5	41.5	685
6/21/2008	2008	6	21	21	50	96	73	41	726
6/22/2008	2008	6	22	22	58	88	73	41	767
6/23/2008	2008	6	23	23	51	95	73	41	808
6/24/2008	2008	6	24	24	49	94	71.5	39.5	847.5
6/25/2008	2008	6	25	25	54	97	75.5	43.5	891
6/26/2008	2008	6	26	26	53	96	74.5	42.5	933.5
6/27/2008	2008	6	27	27	55	95	75	43	976.5
6/28/2008	2008	6	28	28	54	89	71.5	39.5	1016
6/29/2008	2008	6	29	29	54	89	71.5	39.5	1055.5
6/30/2008	2008	6	30	30	56	96	76	44	1099.5
7/1/2008	2008	7	1	31	53	97	75	43	1142.5
7/2/2008	2008	7	2	32	56	92	74	42	1184.5
7/3/2008	2008	7	3	33	51	90	70.5	38.5	1223
7/4/2008	2008	7	4	34	54	94	74	42	1265
7/5/2008	2008	7	5	35	55	95	75	43	1308
7/6/2008	2008	7	6	36	61	95	78	46	1354
7/7/2008	2008	7	7	37	59	90	74.5	42.5	1396.5
7/8/2008	2008	7	8	38	58	85	71.5	39.5	1436
7/9/2008	2008	7	9	39	58	90	74	42	1478
7/10/2008	2008	7	10	40	50	81	65.5	33.5	1511.5
7/11/2008	2008	7	11	41	57	84	70.5	38.5	1550
7/12/2008	2008	7	12	42	55	84	69.5	37.5	1587.5
7/13/2008	2008	7	13	43	56	83	69.5	37.5	1625
7/14/2008	2008	7	14	44	54	84	69	37	1662
7/15/2008	2008	7	15	45	56	83	69.5	37.5	1699.5
7/16/2008	2008	7	16	46	63	92	77.5	45.5	1745
7/17/2008	2008	7	17	47	58	92	75	43	1788
7/18/2008	2008	7	18	48	55	93	74	42	1830
7/19/2008	2008	7	19	49	62	96	79	47	1877
7/20/2008	2008	7	20	50	57	98	77.5	45.5	1922.5

7/21/2008	2008	7	21	51	63	85	74	42	1964.5
7/22/2008	2008	7	22	52	61	88	74.5	42.5	2007
7/23/2008	2008	7	23	53	60	90	75	43	2050
7/24/2008	2008	7	24	54	55	88	71.5	39.5	2089.5
7/25/2008	2008	7	25	55	63	90	76.5	44.5	2134
7/26/2008	2008	7	26	56	60	95	77.5	45.5	2179.5
7/27/2008	2008	7	27	57	57	83	70	38	2217.5
7/28/2008	2008	7	28	58	64	87	75.5	43.5	2261
7/29/2008	2008	7	29	59	55	94	74.5	42.5	2303.5
7/30/2008	2008	7	30	60	51	96	73.5	41.5	2345
7/31/2008	2008	7	31	61	54	98	76	44	2389
8/1/2008	2008	8	1	62	62	98	80	48	2437
8/2/2008	2008	8	2	63	55	94	74.5	42.5	2479.5
8/3/2008	2008	8	3	64	54	99	76.5	44.5	2524
8/4/2008	2008	8	4	65	55	94	74.5	42.5	2566.5
8/5/2008	2008	8	5	66	60	92	76	44	2610.5
8/6/2008	2008	8	6	67	58	86	72	40	2650.5
8/7/2008	2008	8	7	68	55	88	71.5	39.5	2690
8/8/2008	2008	8	8	69	59	87	73	41	2731
8/9/2008	2008	8	9	70	61	88	74.5	42.5	2773.5
8/10/2008	2008	8	10	71	53	89	71	39	2812.5
8/11/2008	2008	8	11	72	54	92	73	41	2853.5
8/12/2008	2008	8	12	73	50	96	73	41	2894.5
8/13/2008	2008	8	13	74	64	94	79	47	2941.5
8/14/2008	2008	8	14	75	53	92	72.5	40.5	2982
8/15/2008	2008	8	15	76	68	96	82	50	3032
8/16/2008	2008	8	16	77	62	94	78	46	3078
8/17/2008	2008	8	17	78	60	93	76.5	44.5	3122.5
8/18/2008	2008	8	18	79	43	90	66.5	34.5	3157
8/19/2008	2008	8	19	80	46	89	67.5	35.5	3192.5
8/20/2008	2008	8	20	81	55	92	73.5	41.5	3234
8/21/2008	2008	8	21	82	46	90	68	36	3270
8/22/2008	2008	8	22	83	52	93	72.5	40.5	3310.5
8/23/2008	2008	8	23	84	49	96	72.5	40.5	3351
8/24/2008	2008	8	24	85	50	92	71	39	3390
8/25/2008	2008	8	25	86	50	91	70.5	38.5	3428.5
8/26/2008	2008	8	26	87	56	90	73	41	3469.5
8/27/2008	2008	8	27	88	57	89	73	41	3510.5
8/28/2008	2008	8	28	89	60	94	77	45	3555.5
8/29/2008	2008	8	29	90	59	94	76.5	44.5	3600
8/30/2008	2008	8	30	91	58	87	72.5	40.5	3640.5
8/31/2008	2008	8	31	92	61	89	75	43	3683.5
9/1/2008	2008	9	1	93	52	76	64	32	3715.5
9/2/2008	2008	9	2	94	48	85	66.5	34.5	3750
9/3/2008	2008	9	3	95	56	88	72	40	3790
9/4/2008	2008	9	4	96	44	80	62	30	3820
9/5/2008	2008	9	5	97	40	78	59	27	3847
9/6/2008	2008	9	6	98	38	89	63.5	31.5	3878.5
9/7/2008	2008	9	7	99	44	93	68.5	36.5	3915
9/8/2008	2008	9	8	100	47	89	68	36	3951
9/9/2008	2008	9	9	101	57	90	73.5	41.5	3992.5
9/10/2008	2008	9	10	102	51	76	63.5	31.5	4024
9/11/2008	2008	9	11	103	51	81	66	34	4058
9/12/2008	2008	9	12	104	53	72	62.5	30.5	4088.5
9/13/2008	2008	9	13	105	39	79	59	27	4115.5
9/14/2008	2008	9	14	106	46	80	63	31	4146.5
9/15/2008	2008	9	15	107	47	80	63.5	31.5	4178
9/16/2008	2008	9	16	108	44	79	61.5	29.5	4207.5
9/17/2008	2008	9	17	109	48	80	64	32	4239.5
9/18/2008	2008	9	18	110	49	81	65	33	4272.5
9/19/2008	2008	9	19	111	42	80	61	29	4301.5
9/20/2008	2008	9	20	112	44	83	63.5	31.5	4333
9/21/2008	2008	9	21	113	46	85	65.5	33.5	4366.5
9/22/2008	2008	9	22	114	49	84	66.5	34.5	4401
9/23/2008	2008	9	23	115	41	83	62	30	4431
9/24/2008	2008	9	24	116	40	84	62	30	4461
9/25/2008	2008	9	25	117	46	86	66	34	4495
9/26/2008	2008	9	26	118	47	84	65.5	33.5	4528.5
9/27/2008	2008	9	27	119	48	85	66.5	34.5	4563
9/28/2008	2008	9	28	120	41	81	61	29	4592
9/29/2008	2008	9	29	121	39	84	61.5	29.5	4621.5
9/30/2008	2008	9	30	122	38	79	58.5	26.5	4648
10/1/2008	2008	10	1	123	37	78	57.5	25.5	4673.5
10/2/2008	2008	10	2	124	38	80	59	27	4700.5
10/3/2008	2008	10	3	125	44	82	63	31	4731.5
10/4/2008	2008	10	4	126	43	83	63	31	4762.5
10/5/2008	2008	10	5	127	43	79	61	29	4791.5
10/6/2008	2008	10	6	128	42	65	53.5	21.5	4813
10/7/2008	2008	10	7	129	32	68	50	18	4831
10/8/2008	2008	10	8	130	34	78	56	24	4855
10/9/2008	2008	10	9	131	33	80	56.5	24.5	4879.5
10/10/2008	2008	10	10	132	36	81	58.5	26.5	4906
10/11/2008	2008	10	11	133	51	77	64	32	4938
10/12/2008	2008	10	12	134	36	68	52	20	4958
10/13/2008	2008	10	13	135	23	65	44	12	4970
10/14/2008	2008	10	14	136	26	66	46	14	4984
10/15/2008	2008	10	15	137	15	61	38	6	4990
10/16/2008	2008	10	16	138	29	66	47.5	15.5	5005.5
10/17/2008	2008	10	17	139	31	76	53.5	21.5	5027
10/18/2008	2008	10	18	140	29	81	55	23	5050
10/19/2008	2008	10	19	141	32	78	55	23	5073
10/20/2008	2008	10	20	142	33	80	56.5	24.5	5097.5
10/21/2008	2008	10	21	143	31	75	53	21	5118.5

10/22/2008	2008	10	22	144	33	76	54.5	22.5	5141
10/23/2008	2008	10	23	145	28	71	49.5	17.5	5158.5
10/24/2008	2008	10	24	146	19	68	43.5	11.5	5170
10/25/2008	2008	10	25	147	23	75	49	17	5187
10/26/2008	2008	10	26	148	25	77	51	19	5206
10/27/2008	2008	10	27	149	31	78	54.5	22.5	5228.5
10/28/2008	2008	10	28	150	27	80	53.5	21.5	5250
10/29/2008	2008	10	29	151	30	79	54.5	22.5	5272.5
10/30/2008	2008	10	30	152	29	80	54.5	22.5	5295
10/31/2008	2008	10	31	153	29	81	55	23	5318
11/1/2008	2008	11	1	154	28	80	54	22	5340
11/2/2008	2008	11	2	155	30	78	54	22	5362
11/3/2008	2008	11	3	156	43	77	60	28	5390
11/4/2008	2008	11	4	157	39	73	56	24	5414
11/5/2008	2008	11	5	158	36	67	51.5	19.5	5433.5
11/6/2008	2008	11	6	159	16	51	33.5	1.5	5435
11/7/2008	2008	11	7	160	10	50	30	-2	5433
11/8/2008	2008	11	8	161	18	56	37	5	5438
11/9/2008	2008	11	9	162	17	66	41.5	9.5	5447.5
11/10/2008	2008	11	10	163	23	57	40	8	5455.5
11/11/2008	2008	11	11	164	16	56	36	4	5459.5
11/12/2008	2008	11	12	165	20	58	39	7	5466.5
11/13/2008	2008	11	13	166	26	61	43.5	11.5	5478
11/14/2008	2008	11	14	167	32	69	50.5	18.5	5496.5
11/15/2008	2008	11	15	168	16	64	40	8	5504.5
11/16/2008	2008	11	16	169	15	62	38.5	6.5	5511
11/17/2008	2008	11	17	170	20	60	40	8	5519
11/18/2008	2008	11	18	171	21	71	46	14	5533
11/19/2008	2008	11	19	172	19	69	44	12	5545
11/20/2008	2008	11	20	173	15	74	44.5	12.5	5557.5
11/21/2008	2008	11	21	174	17	60	38.5	6.5	5564
11/22/2008	2008	11	22	175	14	56	35	3	5567
11/23/2008	2008	11	23	176	19	67	43	11	5578
11/24/2008	2008	11	24	177	13	70	41.5	9.5	5587.5
11/25/2008	2008	11	25	178	17	58	37.5	5.5	5593
11/26/2008	2008	11	26	179	25	59	42	10	5603
11/27/2008	2008	11	27	180	37	62	49.5	17.5	5620.5
11/28/2008	2008	11	28	181	36	53	44.5	12.5	5633
11/29/2008	2008	11	29	182	28	45	36.5	4.5	5637.5
11/30/2008	2008	11	30	183	27	52	39.5	7.5	5645
12/1/2008	2008	12	1	184	27	60	43.5	11.5	5656.5
12/2/2008	2008	12	2	185	22	60	41	9	5665.5
12/3/2008	2008	12	3	186	35	69	52	20	5685.5
12/4/2008	2008	12	4	187	15	59	37	5	5690.5
12/5/2008	2008	12	5	188	15	54	34.5	2.5	5693
12/6/2008	2008	12	6	189	19	55	37	5	5698
12/7/2008	2008	12	7	190	17	63	40	8	5706
12/8/2008	2008	12	8	191	27	61	44	12	5718
12/9/2008	2008	12	9	192	37	51	44	12	5730
12/10/2008	2008	12	10	193	8	48	28	-4	5726
12/11/2008	2008	12	11	194	11	45	28	-4	5722
12/12/2008	2008	12	12	195	15	50	32.5	0.5	5722.5
12/13/2008	2008	12	13	196	18	51	34.5	2.5	5725
12/14/2008	2008	12	14	197	25	55	40	8	5733
12/15/2008	2008	12	15	198	17	34	25.5	-6.5	5726.5
12/16/2008	2008	12	16	199	23	35	29	-3	5723.5
12/17/2008	2008	12	17	200	28	48	38	6	5729.5
12/18/2008	2008	12	18	201	15	35	25	-7	5722.5
12/19/2008	2008	12	19	202	20	47	33.5	1.5	5724
12/20/2008	2008	12	20	203	24	50	37	5	5729
12/21/2008	2008	12	21	204	22	50	36	4	5733
12/22/2008	2008	12	22	205	20	51	35.5	3.5	5736.5
12/23/2008	2008	12	23	206	28	41	34.5	2.5	5739
12/24/2008	2008	12	24	207	11	37	24	-8	5731
12/25/2008	2008	12	25	208	11	37	24	-8	5723
12/26/2008	2008	12	26	209	22	51	36.5	4.5	5727.5
12/27/2008	2008	12	27	210	7	32	19.5	-12.5	5715
12/28/2008	2008	12	28	211	7	29	18	-14	5701
12/29/2008	2008	12	29	212	11	43	27	-5	5696
12/30/2008	2008	12	30	213	11	51	31	-1	5695
12/31/2008	2008	12	31	214	16	55	35.5	3.5	5698.5
1/1/2009	2009	1	1	215	16	53	34.5	2.5	5701
1/2/2009	2009	1	2	216	25	56	40.5	8.5	5709.5
1/3/2009	2009	1	3	217	30	63	46.5	14.5	5724
1/4/2009	2009	1	4	218	28	51	39.5	7.5	5731.5
1/5/2009	2009	1	5	219	21	31	26	-6	5725.5
1/6/2009	2009	1	6	220	17	40	28.5	-3.5	5722
1/7/2009	2009	1	7	221	23	47	35	3	5725
1/8/2009	2009	1	8	222	24	51	37.5	5.5	5730.5
1/9/2009	2009	1	9	223	26	53	39.5	7.5	5738
1/10/2009	2009	1	10	224	25	51	38	6	5744
1/11/2009	2009	1	11	225	15	43	29	-3	5741
1/12/2009	2009	1	12	226	20	47	33.5	1.5	5742.5
1/13/2009	2009	1	13	227	18	47	32.5	0.5	5743
1/14/2009	2009	1	14	228	17	51	34	2	5745
1/15/2009	2009	1	15	229	18	51	34.5	2.5	5747.5
1/16/2009	2009	1	16	230	18	57	37.5	5.5	5753
1/17/2009	2009	1	17	231	15	56	35.5	3.5	5756.5
1/18/2009	2009	1	18	232	17	60	38.5	6.5	5763
1/19/2009	2009	1	19	233	16	58	37	5	5768
1/20/2009	2009	1	20	234	17	63	40	8	5776
1/21/2009	2009	1	21	235	17	60	38.5	6.5	5782.5
1/22/2009	2009	1	22	236	20	57	38.5	6.5	5789

1/23/2009	2009	1	23	237	33	56	44.5	12.5	5801.5
1/24/2009	2009	1	24	238	27	63	45	13	5814.5
1/25/2009	2009	1	25	239	29	56	42.5	10.5	5825
1/26/2009	2009	1	26	240	21	57	39	7	5832
1/27/2009	2009	1	27	241	17	53	35	3	5835
1/28/2009	2009	1	28	242	12	41	26.5	-5.5	5829.5
1/29/2009	2009	1	29	243	13	47	30	-2	5827.5
1/30/2009	2009	1	30	244	14	45	29.5	-2.5	5825
1/31/2009	2009	1	31	245	16	48	32	0	5825
2/1/2009	2009	2	1	246	17	63	40	8	5833
2/2/2009	2009	2	2	247	12	64	38	6	5839
2/3/2009	2009	2	3	248	13	59	36	4	5843
2/4/2009	2009	2	4	249	13	60	36.5	4.5	5847.5
2/5/2009	2009	2	5	250	15	65	40	8	5855.5
2/6/2009	2009	2	6	251	14	65	39.5	7.5	5863
2/7/2009	2009	2	7	252	19	63	41	9	5872
2/8/2009	2009	2	8	253	28	62	45	13	5885
2/9/2009	2009	2	9	254	27	52	39.5	7.5	5892.5
2/10/2009	2009	2	10	255	22	47	34.5	2.5	5895
2/11/2009	2009	2	11	256	10	45	27.5	-4.5	5890.5
2/12/2009	2009	2	12	257	22	58	40	8	5898.5
2/13/2009	2009	2	13	258	15	57	36	4	5902.5
2/14/2009	2009	2	14	259	18	52	35	3	5905.5
2/15/2009	2009	2	15	260	17	47	32	0	5905.5
2/16/2009	2009	2	16	261	17	47	32	0	5905.5
2/17/2009	2009	2	17	262	19	58	38.5	6.5	5912
2/18/2009	2009	2	18	263	22	60	41	9	5921
2/19/2009	2009	2	19	264	10	51	30.5	-1.5	5919.5
2/20/2009	2009	2	20	265	8	55	31.5	-0.5	5919
2/21/2009	2009	2	21	266	14	66	40	8	5927
2/22/2009	2009	2	22	267	17	66	41.5	9.5	5936.5
2/23/2009	2009	2	23	268	33	66	49.5	17.5	5954
2/24/2009	2009	2	24	269	30	73	51.5	19.5	5973.5
2/25/2009	2009	2	25	270	28	72	50	18	5991.5
2/26/2009	2009	2	26	271	18	73	45.5	13.5	6005
2/27/2009	2009	2	27	272	21	66	43.5	11.5	6016.5
2/28/2009	2009	2	28	273	16	66	41	9	6025.5
3/1/2009	2009	3	1	274	17	76	46.5	14.5	6040
3/2/2009	2009	3	2	275	18	77	47.5	15.5	6055.5
3/3/2009	2009	3	3	276	25	82	53.5	21.5	6077
3/4/2009	2009	3	4	277	25	72	48.5	16.5	6093.5
3/5/2009	2009	3	5	278	29	65	47	15	6108.5
3/6/2009	2009	3	6	279	17	65	41	9	6117.5
3/7/2009	2009	3	7	280	36	60	48	16	6133.5
3/8/2009	2009	3	8	281	11	45	28	-4	6129.5
3/9/2009	2009	3	9	282	27	61	44	12	6141.5
3/10/2009	2009	3	10	283	37	50	43.5	11.5	6153
3/11/2009	2009	3	11	284	18	51	34.5	2.5	6155.5
3/12/2009	2009	3	12	285	25	60	42.5	10.5	6166
3/13/2009	2009	3	13	286	27	60	43.5	11.5	6177.5
3/14/2009	2009	3	14	287	30	45	37.5	5.5	6183
3/15/2009	2009	3	15	288	25	45	35	3	6186
3/16/2009	2009	3	16	289	26	60	43	11	6197
3/17/2009	2009	3	17	290	27	70	48.5	16.5	6213.5
3/18/2009	2009	3	18	291	26	73	49.5	17.5	6231
3/19/2009	2009	3	19	292	25	75	50	18	6249
3/20/2009	2009	3	20	293	32	71	51.5	19.5	6268.5
3/21/2009	2009	3	21	294	30	72	51	19	6287.5
3/22/2009	2009	3	22	295	28	75	51.5	19.5	6307
3/23/2009	2009	3	23	296	32	73	52.5	20.5	6327.5
3/24/2009	2009	3	24	297	22	58	40	8	6335.5
3/25/2009	2009	3	25	298	19	60	39.5	7.5	6343
3/26/2009	2009	3	26	299	32	60	46	14	6357
3/27/2009	2009	3	27	300	19	55	37	5	6362
3/28/2009	2009	3	28	301	20	50	35	3	6365
3/29/2009	2009	3	29	302	26	67	46.5	14.5	6379.5
3/30/2009	2009	3	30	303	25	60	42.5	10.5	6390
3/31/2009	2009	3	31	304	19	63	41	9	6399
4/1/2009	2009	4	1	305	35	46	40.5	8.5	6407.5
4/2/2009	2009	4	2	306	17	55	36	4	6411.5
4/3/2009	2009	4	3	307	27	68	47.5	15.5	6427
4/4/2009	2009	4	4	308	26	66	46	14	6441
4/5/2009	2009	4	5	309	28	68	48	16	6457
4/6/2009	2009	4	6	310	17	55	36	4	6461
4/7/2009	2009	4	7	311	20	64	42	10	6471
4/8/2009	2009	4	8	312	33	78	55.5	23.5	6494.5
4/9/2009	2009	4	9	313	32	73	52.5	20.5	6515
4/10/2009	2009	4	10	314	34	70	52	20	6535
4/11/2009	2009	4	11	315	30	68	49	17	6552
4/12/2009	2009	4	12	316	27	60	43.5	11.5	6563.5
4/13/2009	2009	4	13	317	23	65	44	12	6575.5
4/14/2009	2009	4	14	318	35	70	52.5	20.5	6596
4/15/2009	2009	4	15	319	40	71	55.5	23.5	6619.5
4/16/2009	2009	4	16	320	20	62	41	9	6628.5
4/17/2009	2009	4	17	321	30	44	37	5	6633.5
4/18/2009	2009	4	18	322	35	51	43	11	6644.5
4/19/2009	2009	4	19	323	28	68	48	16	6660.5
4/20/2009	2009	4	20	324	27	73	50	18	6678.5
4/21/2009	2009	4	21	325	29	80	54.5	22.5	6701
4/22/2009	2009	4	22	326	32	81	56.5	24.5	6725.5
4/23/2009	2009	4	23	327	37	83	60	28	6753.5
4/24/2009	2009	4	24	328	28	81	54.5	22.5	6776
4/25/2009	2009	4	25	329	23	74	48.5	16.5	6792.5

4/26/2009	2009	4	26	330	26	76	51	19	6811.5
4/27/2009	2009	4	27	331	30	66	48	16	6827.5
4/28/2009	2009	4	28	332	34	71	52.5	20.5	6848
4/29/2009	2009	4	29	333	41	76	58.5	26.5	6874.5
4/30/2009	2009	4	30	334	32	81	56.5	24.5	6899
5/1/2009	2009	5	1	335	35	86	60.5	28.5	6927.5
5/2/2009	2009	5	2	336	55	82	68.5	36.5	6964
5/3/2009	2009	5	3	337	37	81	59	27	6991
5/4/2009	2009	5	4	338	54	80	67	35	7026
5/5/2009	2009	5	5	339	46	83	64.5	32.5	7058.5
5/6/2009	2009	5	6	340	46	84	65	33	7091.5
5/7/2009	2009	5	7	341	43	90	66.5	34.5	7126
5/8/2009	2009	5	8	342	50	89	69.5	37.5	7163.5
5/9/2009	2009	5	9	343	43	89	66	34	7197.5
5/10/2009	2009	5	10	344	36	87	61.5	29.5	7227
5/11/2009	2009	5	11	345	42	90	66	34	7261
5/12/2009	2009	5	12	346	45	88	66.5	34.5	7295.5
5/13/2009	2009	5	13	347	49	86	67.5	35.5	7331
5/14/2009	2009	5	14	348	50	88	69	37	7368
5/15/2009	2009	5	15	349	46	87	66.5	34.5	7402.5
5/16/2009	2009	5	16	350	53	89	71	39	7441.5
5/17/2009	2009	5	17	351	48	74	61	29	7470.5
5/18/2009	2009	5	18	352	48	88	68	36	7506.5
5/19/2009	2009	5	19	353	49	84	66.5	34.5	7541
5/20/2009	2009	5	20	354	48	84	66	34	7575
5/21/2009	2009	5	21	355	52	78	65	33	7608
5/22/2009	2009	5	22	356	49	75	62	30	7638
5/23/2009	2009	5	23	357	50	65	57.5	25.5	7663.5
5/24/2009	2009	5	24	358	47	64	55.5	23.5	7687
5/25/2009	2009	5	25	359	43	70	56.5	24.5	7711.5
5/26/2009	2009	5	26	360	38	73	55.5	23.5	7735
5/27/2009	2009	5	27	361	38	73	55.5	23.5	7758.5
5/28/2009	2009	5	28	362	38	73	55.5	23.5	7782
5/29/2009	2009	5	29	363	42	78	60	28	7810
5/30/2009	2009	5	30	364	40	74	57	25	7835
5/31/2009	2009	5	31	365	42	77	59.5	27.5	7862.5
6/1/2009	2009	6	1	1	38	78	58	26	26
6/2/2009	2009	6	2	2	45	81	63	31	57
6/3/2009	2009	6	3	3	44	84	64	32	89
6/4/2009	2009	6	4	4	45	85	65	33	122
6/5/2009	2009	6	5	5	47	85	66	34	156
6/6/2009	2009	6	6	6	46	85	65.5	33.5	189.5
6/7/2009	2009	6	7	7	38	84	61	29	218.5
6/8/2009	2009	6	8	8	46	78	62	30	248.5
6/9/2009	2009	6	9	9	42	78	60	28	276.5
6/10/2009	2009	6	10	10	46	72	59	27	303.5
6/11/2009	2009	6	11	11	46	75	60.5	28.5	332
6/12/2009	2009	6	12	12	45	74	59.5	27.5	359.5
6/13/2009	2009	6	13	13	45	74	59.5	27.5	387
6/14/2009	2009	6	14	14	42	83	62.5	30.5	417.5
6/15/2009	2009	6	15	15	45	84	64.5	32.5	450
6/16/2009	2009	6	16	16	44	84	64	32	482
6/17/2009	2009	6	17	17	44	88	66	34	516
6/18/2009	2009	6	18	18	42	85	63.5	31.5	547.5
6/19/2009	2009	6	19	19	48	86	67	35	582.5
6/20/2009	2009	6	20	20	40	91	65.5	33.5	616
6/21/2009	2009	6	21	21	47	90	68.5	36.5	652.5
6/22/2009	2009	6	22	22	44	89	66.5	34.5	687
6/23/2009	2009	6	23	23	65	91	78	46	733
6/24/2009	2009	6	24	24	62	84	73	41	774
6/25/2009	2009	6	25	25	59	89	74	42	816
6/26/2009	2009	6	26	26	58	93	75.5	43.5	859.5
6/27/2009	2009	6	27	27	59	90	74.5	42.5	902
6/28/2009	2009	6	28	28	57	87	72	40	942
6/29/2009	2009	6	29	29	50	82	66	34	976
6/30/2009	2009	6	30	30	53	88	70.5	38.5	1014.5
7/1/2009	2009	7	1	31	58	88	73	41	1055.5
7/2/2009	2009	7	2	32	56	90	73	41	1096.5
7/3/2009	2009	7	3	33	60	91	75.5	43.5	1140
7/4/2009	2009	7	4	34	56	91	73.5	41.5	1181.5
7/5/2009	2009	7	5	35	55	92	73.5	41.5	1223
7/6/2009	2009	7	6	36	54	93	73.5	41.5	1264.5
7/7/2009	2009	7	7	37	53	96	74.5	42.5	1307
7/8/2009	2009	7	8	38	57	97	77	45	1352
7/9/2009	2009	7	9	39	65	98	81.5	49.5	1401.5
7/10/2009	2009	7	10	40	62	97	79.5	47.5	1449
7/11/2009	2009	7	11	41	52	92	72	40	1489
7/12/2009	2009	7	12	42	58	95	76.5	44.5	1533.5
7/13/2009	2009	7	13	43	55	96	75.5	43.5	1577
7/14/2009	2009	7	14	44	68	97	82.5	50.5	1627.5
7/15/2009	2009	7	15	45	55	93	74	42	1669.5
7/16/2009	2009	7	16	46	67	98	82.5	50.5	1720
7/17/2009	2009	7	17	47	54	99	76.5	44.5	1764.5
7/18/2009	2009	7	18	48	63	100	81.5	49.5	1814
7/19/2009	2009	7	19	49	64	102	83	51	1865
7/20/2009	2009	7	20	50	68	98	83	51	1916
7/21/2009	2009	7	21	51	67	97	82	50	1966
7/22/2009	2009	7	22	52	55	88	71.5	39.5	2005.5
7/23/2009	2009	7	23	53	58	92	75	43	2048.5
7/24/2009	2009	7	24	54	55	92	73.5	41.5	2090
7/25/2009	2009	7	25	55	57	96	76.5	44.5	2134.5
7/26/2009	2009	7	26	56	62	97	79.5	47.5	2182
7/27/2009	2009	7	27	57	55	85	70	38	2220

7/28/2009	2009	7	28	58	56	92	74	42	2262
7/29/2009	2009	7	29	59	52	85	68.5	36.5	2298.5
7/30/2009	2009	7	30	60	48	92	70	38	2336.5
7/31/2009	2009	7	31	61	48	87	67.5	35.5	2372
8/1/2009	2009	8	1	62	52	90	71	39	2411
8/2/2009	2009	8	2	63	49	95	72	40	2451
8/3/2009	2009	8	3	64	59	96	77.5	45.5	2496.5
8/4/2009	2009	8	4	65	56	98	77	45	2541.5
8/5/2009	2009	8	5	66	64	101	82.5	50.5	2592
8/6/2009	2009	8	6	67	54	97	75.5	43.5	2635.5
8/7/2009	2009	8	7	68	54	97	75.5	43.5	2679
8/8/2009	2009	8	8	69	47	88	67.5	35.5	2714.5
8/9/2009	2009	8	9	70	45	91	68	36	2750.5
8/10/2009	2009	8	10	71	45	94	69.5	37.5	2788
8/11/2009	2009	8	11	72	48	94	71	39	2827
8/12/2009	2009	8	12	73	58	99	78.5	46.5	2873.5
8/13/2009	2009	8	13	74	60	90	75	43	2916.5
8/14/2009	2009	8	14	75	57	89	73	41	2957.5
8/15/2009	2009	8	15	76	55	79	67	35	2992.5
8/16/2009	2009	8	16	77	51	88	69.5	37.5	3030
8/17/2009	2009	8	17	78	47	87	67	35	3065
8/18/2009	2009	8	18	79	44	90	67	35	3100
8/19/2009	2009	8	19	80	45	93	69	37	3137
8/20/2009	2009	8	20	81	45	94	69.5	37.5	3174.5
8/21/2009	2009	8	21	82	64	95	79.5	47.5	3222
8/22/2009	2009	8	22	83	57	94	75.5	43.5	3265.5
8/23/2009	2009	8	23	84	59	91	75	43	3308.5
8/24/2009	2009	8	24	85	57	80	68.5	36.5	3345
8/25/2009	2009	8	25	86	65	80	72.5	40.5	3385.5
8/26/2009	2009	8	26	87	50	75	62.5	30.5	3416
8/27/2009	2009	8	27	88	50	90	70	38	3454
8/28/2009	2009	8	28	89	71	92	81.5	49.5	3503.5
8/29/2009	2009	8	29	90	71	84	77.5	45.5	3549
8/30/2009	2009	8	30	91	52	95	73.5	41.5	3590.5
8/31/2009	2009	8	31	92	52	92	72	40	3630.5
9/1/2009	2009	9	1	93	59	86	72.5	40.5	3671
9/2/2009	2009	9	2	94	54	91	72.5	40.5	3711.5
9/3/2009	2009	9	3	95	60	85	72.5	40.5	3752
9/4/2009	2009	9	4	96	51	89	70	38	3790
9/5/2009	2009	9	5	97	52	87	69.5	37.5	3827.5
9/6/2009	2009	9	6	98	51	81	66	34	3861.5
9/7/2009	2009	9	7	99	65	83	74	42	3903.5
9/8/2009	2009	9	8	100	59	83	71	39	3942.5
9/9/2009	2009	9	9	101	58	83	70.5	38.5	3981
9/10/2009	2009	9	10	102	56	78	67	35	4016
9/11/2009	2009	9	11	103	55	81	68	36	4052
9/12/2009	2009	9	12	104	47	78	62.5	30.5	4082.5
9/13/2009	2009	9	13	105	52	79	65.5	33.5	4116
9/14/2009	2009	9	14	106	51	81	66	34	4150
9/15/2009	2009	9	15	107	52	82	67	35	4185
9/16/2009	2009	9	16	108	53	85	69	37	4222
9/17/2009	2009	9	17	109	48	77	62.5	30.5	4252.5
9/18/2009	2009	9	18	110	44	65	54.5	22.5	4275
9/19/2009	2009	9	19	111	43	72	57.5	25.5	4300.5
9/20/2009	2009	9	20	112	41	80	60.5	28.5	4329
9/21/2009	2009	9	21	113	33	83	58	26	4355
9/22/2009	2009	9	22	114	34	76	55	23	4378
9/23/2009	2009	9	23	115	26	73	49.5	17.5	4395.5
9/24/2009	2009	9	24	116	43	73	58	26	4421.5
9/25/2009	2009	9	25	117	33	76	54.5	22.5	4444
9/26/2009	2009	9	26	118	34	84	59	27	4471
9/27/2009	2009	9	27	119	36	81	58.5	26.5	4497.5
9/28/2009	2009	9	28	120	39	89	64	32	4529.5
9/29/2009	2009	9	29	121	42	77	59.5	27.5	4557
9/30/2009	2009	9	30	122	31	80	55.5	23.5	4580.5
10/1/2009	2009	10	1	123	30	78	54	22	4602.5
10/2/2009	2009	10	2	124	24	70	47	15	4617.5
10/3/2009	2009	10	3	125	26	79	52.5	20.5	4638
10/4/2009	2009	10	4	126	41	77	59	27	4665
10/5/2009	2009	10	5	127	38	76	57	25	4690
10/6/2009	2009	10	6	128	34	79	56.5	24.5	4714.5
10/7/2009	2009	10	7	129	37	67	52	20	4734.5
10/8/2009	2009	10	8	130	36	77	56.5	24.5	4759
10/9/2009	2009	10	9	131	29	68	48.5	16.5	4775.5
10/10/2009	2009	10	10	132	26	76	51	19	4794.5
10/11/2009	2009	10	11	133	31	73	52	20	4814.5
10/12/2009	2009	10	12	134	32	75	53.5	21.5	4836
10/13/2009	2009	10	13	135	34	75	54.5	22.5	4858.5
10/14/2009	2009	10	14	136	38	75	56.5	24.5	4883
10/15/2009	2009	10	15	137	37	78	57.5	25.5	4908.5
10/16/2009	2009	10	16	138	29	82	55.5	23.5	4932
10/17/2009	2009	10	17	139	31	74	52.5	20.5	4952.5
10/18/2009	2009	10	18	140	30	73	51.5	19.5	4972
10/19/2009	2009	10	19	141	39	76	57.5	25.5	4997.5
10/20/2009	2009	10	20	142	40	80	60	28	5025.5
10/21/2009	2009	10	21	143	29	67	48	16	5041.5
10/22/2009	2009	10	22	144	27	67	47	15	5056.5
10/23/2009	2009	10	23	145	25	65	45	13	5069.5
10/24/2009	2009	10	24	146	24	67	45.5	13.5	5083
10/25/2009	2009	10	25	147	24	72	48	16	5099
10/26/2009	2009	10	26	148	19	66	42.5	10.5	5109.5
10/27/2009	2009	10	27	149	29	65	47	15	5124.5
10/28/2009	2009	10	28	150	15	41	28	-4	5120.5

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10/30/2009	2009	10	30	152	13	43	28	-4	5116
10/31/2009	2009	10	31	153	13	61	37	5	5121
11/1/2009	2009	11	1	154	19	64	41.5	9.5	5130.5
11/2/2009	2009	11	2	155	21	71	46	14	5144.5
11/3/2009	2009	11	3	156	21	73	47	15	5159.5
11/4/2009	2009	11	4	157	20	73	46.5	14.5	5174
11/5/2009	2009	11	5	158	20	78	49	17	5191
11/6/2009	2009	11	6	159	24	76	50	18	5209
11/7/2009	2009	11	7	160	27	79	53	21	5230
11/8/2009	2009	11	8	161	25	74	49.5	17.5	5247.5
11/9/2009	2009	11	9	162	25	74	49.5	17.5	5265
11/10/2009	2009	11	10	163	24	70	47	15	5280
11/11/2009	2009	11	11	164	26	70	48	16	5296
11/12/2009	2009	11	12	165	35	70	52.5	20.5	5316.5
11/13/2009	2009	11	13	166	28	60	44	12	5328.5
11/14/2009	2009	11	14	167	24	58	41	9	5337.5
11/15/2009	2009	11	15	168	23	54	38.5	6.5	5344
11/16/2009	2009	11	16	169	9	42	25.5	-6.5	5337.5
11/17/2009	2009	11	17	170	11	52	31.5	-0.5	5337
11/18/2009	2009	11	18	171	11	54	32.5	0.5	5337.5
11/19/2009	2009	11	19	172	13	68	40.5	8.5	5346
11/20/2009	2009	11	20	173	13	62	37.5	5.5	5351.5
11/21/2009	2009	11	21	174	11	64	37.5	5.5	5357
11/22/2009	2009	11	22	175	17	63	40	8	5365
11/23/2009	2009	11	23	176	22	65	43.5	11.5	5376.5
11/24/2009	2009	11	24	177	5	51	28	-4	5372.5
11/25/2009	2009	11	25	178	8	52	30	-2	5370.5
11/26/2009	2009	11	26	179	8	60	34	2	5372.5
11/27/2009	2009	11	27	180	9	63	36	4	5376.5
11/28/2009	2009	11	28	181	20	66	43	11	5387.5
11/29/2009	2009	11	29	182	22	54	38	6	5393.5
11/30/2009	2009	11	30	183	21	41	31	-1	5392.5
12/1/2009	2009	12	1	184	12	47	29.5	-2.5	5390
12/2/2009	2009	12	2	185	9	59	34	2	5392
12/3/2009	2009	12	3	186	6	49	27.5	-4.5	5387.5
12/4/2009	2009	12	4	187	-11	41	15	-17	5370.5
12/5/2009	2009	12	5	188	-6	48	21	-11	5359.5
12/6/2009	2009	12	6	189	12	52	32	0	5359.5
12/7/2009	2009	12	7	190	21	41	31	-1	5358.5
12/8/2009	2009	12	8	191	16	45	30.5	-1.5	5357
12/9/2009	2009	12	9	192	13	44	28.5	-3.5	5353.5
12/10/2009	2009	12	10	193	2	42	22	-10	5343.5
12/11/2009	2009	12	11	194	9	40	24.5	-7.5	5336
12/12/2009	2009	12	12	195	9	40	24.5	-7.5	5328.5
12/13/2009	2009	12	13	196	30	50	40	8	5336.5
12/14/2009	2009	12	14	197	30	50	40	8	5344.5
12/15/2009	2009	12	15	198	30	50	40	8	5352.5
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12/17/2009	2009	12	17	200	13	56	34.5	2.5	5355.5
12/18/2009	2009	12	18	201	14	55	34.5	2.5	5358
12/19/2009	2009	12	19	202	14	51	32.5	0.5	5358.5
12/20/2009	2009	12	20	203	11	53	32	0	5358.5
12/21/2009	2009	12	21	204	14	59	36.5	4.5	5363
12/22/2009	2009	12	22	205	28	59	43.5	11.5	5374.5
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12/24/2009	2009	12	24	207	17	37	27	-5	5381
12/25/2009	2009	12	25	208	4	36	20	-12	5369
12/26/2009	2009	12	26	209	0	36	18	-14	5355
12/27/2009	2009	12	27	210	-1	32	15.5	-16.5	5338.5
12/28/2009	2009	12	28	211	1	36	18.5	-13.5	5325
12/29/2009	2009	12	29	212	4	37	20.5	-11.5	5313.5
12/30/2009	2009	12	30	213	21	35	28	-4	5309.5
12/31/2009	2009	12	31	214	14	42	28	-4	5305.5
1/1/2010	2010	1	1	215	5	40	22.5	-9.5	5296
1/2/2010	2010	1	2	216	15	49	32	0	5296
1/3/2010	2010	1	3	217	10	56	33	1	5297
1/4/2010	2010	1	4	218	8	49	28.5	-3.5	5293.5
1/5/2010	2010	1	5	219	8	48	28	-4	5289.5
1/6/2010	2010	1	6	220	10	48	29	-3	5286.5
1/7/2010	2010	1	7	221	10	48	29	-3	5283.5
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1/9/2010	2010	1	9	223	8	45	26.5	-5.5	5271.5
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1/12/2010	2010	1	12	226	7	56	31.5	-0.5	5269.5
1/13/2010	2010	1	13	227	10	49	29.5	-2.5	5267
1/14/2010	2010	1	14	228	18	48	33	1	5268
1/15/2010	2010	1	15	229	15	52	33.5	1.5	5269.5
1/16/2010	2010	1	16	230	15	52	33.5	1.5	5271
1/17/2010	2010	1	17	231	11	52	31.5	-0.5	5270.5
1/18/2010	2010	1	18	232	11	52	31.5	-0.5	5270
1/19/2010	2010	1	19	233	11	52	31.5	-0.5	5269.5
1/20/2010	2010	1	20	234	11	52	31.5	-0.5	5269
1/21/2010	2010	1	21	235	11	52	31.5	-0.5	5268.5
1/22/2010	2010	1	22	236	26	41	33.5	1.5	5270
1/23/2010	2010	1	23	237	15	38	26.5	-5.5	5264.5
1/24/2010	2010	1	24	238	10	34	22	-10	5254.5
1/25/2010	2010	1	25	239	9	39	24	-8	5246.5
1/26/2010	2010	1	26	240	13	47	30	-2	5244.5
1/27/2010	2010	1	27	241	10	40	25	-7	5237.5
1/28/2010	2010	1	28	242	16	35	25.5	-6.5	5231
1/29/2010	2010	1	29	243	24	36	30	-2	5229

1/30/2010	2010	1	30	244	28	48	38	6	5235
1/31/2010	2010	1	31	245	20	43	31.5	-0.5	5234.5
2/1/2010	2010	2	1	246	20	57	38.5	6.5	5241
2/2/2010	2010	2	2	247	24	48	36	4	5245
2/3/2010	2010	2	3	248	21	47	34	2	5247
2/4/2010	2010	2	4	249	23	46	34.5	2.5	5249.5
2/5/2010	2010	2	5	250	22	52	37	5	5254.5
2/6/2010	2010	2	6	251	24	52	38	6	5260.5
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2/10/2010	2010	2	10	255	18	48	33	1	5275.5
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2/12/2010	2010	2	12	257	18	50	34	2	5279
2/13/2010	2010	2	13	258	17	54	35.5	3.5	5282.5
2/14/2010	2010	2	14	259	18	52	35	3	5285.5
2/15/2010	2010	2	15	260	12	56	34	2	5287.5
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2/17/2010	2010	2	17	262	15	58	36.5	4.5	5295
2/18/2010	2010	2	18	263	24	58	41	9	5304
2/19/2010	2010	2	19	264	26	60	43	11	5315
2/20/2010	2010	2	20	265	23	55	39	7	5322
2/21/2010	2010	2	21	266	31	48	39.5	7.5	5329.5
2/22/2010	2010	2	22	267	29	50	39.5	7.5	5337
2/23/2010	2010	2	23	268	0	29	14.5	-17.5	5319.5
2/24/2010	2010	2	24	269	8	40	24	-8	5311.5
2/25/2010	2010	2	25	270	28	42	35	3	5314.5
2/26/2010	2010	2	26	271	18	53	35.5	3.5	5318
2/27/2010	2010	2	27	272	21	48	34.5	2.5	5320.5
2/28/2010	2010	2	28	273	28	45	36.5	4.5	5325
3/1/2010	2010	3	1	274	22	52	37	5	5330
3/2/2010	2010	3	2	275	20	55	37.5	5.5	5335.5
3/3/2010	2010	3	3	276	18	58	38	6	5341.5
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3/5/2010	2010	3	5	278	25	62	43.5	11.5	5360.5
3/6/2010	2010	3	6	279	18	61	39.5	7.5	5368
3/7/2010	2010	3	7	280	34	60	47	15	5383
3/8/2010	2010	3	8	281	28	65	46.5	14.5	5397.5
3/9/2010	2010	3	9	282	25	65	45	13	5410.5
3/10/2010	2010	3	10	283	22	55	38.5	6.5	5417
3/11/2010	2010	3	11	284	19	50	34.5	2.5	5419.5
3/12/2010	2010	3	12	285	17	51	34	2	5421.5
3/13/2010	2010	3	13	286	19	56	37.5	5.5	5427
3/14/2010	2010	3	14	287	26	62	44	12	5439
3/15/2010	2010	3	15	288	19	55	37	5	5444
3/16/2010	2010	3	16	289	18	57	37.5	5.5	5449.5
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3/18/2010	2010	3	18	291	24	60	42	10	5466
3/19/2010	2010	3	19	292	40	70	55	23	5489
3/20/2010	2010	3	20	293	20	59	39.5	7.5	5496.5
3/21/2010	2010	3	21	294	12	52	32	0	5496.5
3/22/2010	2010	3	22	295	19	71	45	13	5509.5
3/23/2010	2010	3	23	296	20	53	36.5	4.5	5514
3/24/2010	2010	3	24	297	11	54	32.5	0.5	5514.5
3/25/2010	2010	3	25	298	12	64	38	6	5520.5
3/26/2010	2010	3	26	299	12	57	34.5	2.5	5523
3/27/2010	2010	3	27	300	17	55	36	4	5527
3/28/2010	2010	3	28	301	17	55	36	4	5531
3/29/2010	2010	3	29	302	15	60	37.5	5.5	5536.5
3/30/2010	2010	3	30	303	25	75	50	18	5554.5
3/31/2010	2010	3	31	304	21	78	49.5	17.5	5572
4/1/2010	2010	4	1	305	33	71	52	20	5592
4/2/2010	2010	4	2	306	16	50	33	1	5593
4/3/2010	2010	4	3	307	25	50	37.5	5.5	5598.5
4/4/2010	2010	4	4	308	32	69	50.5	18.5	5617
4/5/2010	2010	4	5	309	28	72	50	18	5635
4/6/2010	2010	4	6	310	23	55	39	7	5642
4/7/2010	2010	4	7	311	17	57	37	5	5647
4/8/2010	2010	4	8	312	15	55	35	3	5650
4/9/2010	2010	4	9	313	20	71	45.5	13.5	5663.5
4/10/2010	2010	4	10	314	24	75	49.5	17.5	5681
4/11/2010	2010	4	11	315	27	74	50.5	18.5	5699.5
4/12/2010	2010	4	12	316	28	60	44	12	5711.5
4/13/2010	2010	4	13	317	25	67	46	14	5725.5
4/14/2010	2010	4	14	318	23	69	46	14	5739.5
4/15/2010	2010	4	15	319	17	75	46	14	5753.5
4/16/2010	2010	4	16	320	37	79	58	26	5779.5
4/17/2010	2010	4	17	321	37	75	56	24	5803.5
4/18/2010	2010	4	18	322	31	69	50	18	5821.5
4/19/2010	2010	4	19	323	35	71	53	21	5842.5
4/20/2010	2010	4	20	324	43	71	57	25	5867.5
4/21/2010	2010	4	21	325	32	71	51.5	19.5	5887
4/22/2010	2010	4	22	326	21	41	31	-1	5886
4/23/2010	2010	4	23	327	29	71	50	18	5904
4/24/2010	2010	4	24	328	26	67	46.5	14.5	5918.5
4/25/2010	2010	4	25	329	29	70	49.5	17.5	5936
4/26/2010	2010	4	26	330	36	71	53.5	21.5	5957.5
4/27/2010	2010	4	27	331	27	77	52	20	5977.5
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4/29/2010	2010	4	29	333	47	75	61	29	6028.5
4/30/2010	2010	4	30	334	27	62	44.5	12.5	6041
5/1/2010	2010	5	1	335	22	53	37.5	5.5	6046.5
5/2/2010	2010	5	2	336	30	61	45.5	13.5	6060

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5/6/2010	2010	5	6	340	38	81	59.5	27.5	6136.5
5/7/2010	2010	5	7	341	39	81	60	28	6164.5
5/8/2010	2010	5	8	342	36	80	58	26	6190.5
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5/11/2010	2010	5	11	345	35	73	54	22	6265
5/12/2010	2010	5	12	346	23	77	50	18	6283
5/13/2010	2010	5	13	347	30	68	49	17	6300
5/14/2010	2010	5	14	348	41	72	56.5	24.5	6324.5
5/15/2010	2010	5	15	349	37	76	56.5	24.5	6349
5/16/2010	2010	5	16	350	33	79	56	24	6373
5/17/2010	2010	5	17	351	35	80	57.5	25.5	6398.5
5/18/2010	2010	5	18	352	47	83	65	33	6431.5
5/19/2010	2010	5	19	353	42	74	58	26	6457.5
5/20/2010	2010	5	20	354	32	78	55	23	6480.5
5/21/2010	2010	5	21	355	37	87	62	30	6510.5
5/22/2010	2010	5	22	356	39	86	62.5	30.5	6541
5/23/2010	2010	5	23	357	43	87	65	33	6574
5/24/2010	2010	5	24	358	40	82	61	29	6603
5/25/2010	2010	5	25	359	37	85	61	29	6632
5/26/2010	2010	5	26	360	35	87	61	29	6661
5/27/2010	2010	5	27	361	37	88	62.5	30.5	6691.5
5/28/2010	2010	5	28	362	51	90	70.5	38.5	6730
5/29/2010	2010	5	29	363	41	81	61	29	6759
5/30/2010	2010	5	30	364	39	86	62.5	30.5	6789.5
5/31/2010	2010	5	31	365	37	87	62	30	6819.5
6/1/2010	2010	6	1	1	41	88	64.5	32.5	32.5
6/2/2010	2010	6	2	2	56	88	72	40	72.5
6/3/2010	2010	6	3	3	41	88	64.5	32.5	105
6/4/2010	2010	6	4	4	45	91	68	36	141
6/5/2010	2010	6	5	5	54	97	75.5	43.5	184.5
6/6/2010	2010	6	6	6	52	101	76.5	44.5	229
6/7/2010	2010	6	7	7	65	102	83.5	51.5	280.5
6/8/2010	2010	6	8	8	51	98	74.5	42.5	323
6/9/2010	2010	6	9	9	54	100	77	45	368
6/10/2010	2010	6	10	10	55	96	75.5	43.5	411.5
6/11/2010	2010	6	11	11	50	90	70	38	449.5
6/12/2010	2010	6	12	12	52	88	70	38	487.5
6/13/2010	2010	6	13	13	42	83	62.5	30.5	518
6/14/2010	2010	6	14	14	41	79	60	28	546
6/15/2010	2010	6	15	15	43	84	63.5	31.5	577.5
6/16/2010	2010	6	16	16	45	87	66	34	611.5
6/17/2010	2010	6	17	17	47	90	68.5	36.5	648
6/18/2010	2010	6	18	18	43	93	68	36	684
6/19/2010	2010	6	19	19	46	96	71	39	723
6/20/2010	2010	6	20	20	44	95	69.5	37.5	760.5
6/21/2010	2010	6	21	21	47	94	70.5	38.5	799
6/22/2010	2010	6	22	22	50	94	72	40	839
6/23/2010	2010	6	23	23	43	94	68.5	36.5	875.5
6/24/2010	2010	6	24	24	60	98	79	47	922.5
6/25/2010	2010	6	25	25	64	93	78.5	46.5	969
6/26/2010	2010	6	26	26	51	95	73	41	1010
6/27/2010	2010	6	27	27	45	91	68	36	1046
6/28/2010	2010	6	28	28	54	94	74	42	1088
6/29/2010	2010	6	29	29	53	85	69	37	1125
6/30/2010	2010	6	30	30	58	85	71.5	39.5	1164.5
7/1/2010	2010	7	1	31	58	84	71	39	1203.5
7/2/2010	2010	7	2	32	58	84	71	39	1242.5
7/3/2010	2010	7	3	33	56	86	71	39	1281.5
7/4/2010	2010	7	4	34	54	92	73	41	1322.5
7/5/2010	2010	7	5	35	52	89	70.5	38.5	1361
7/6/2010	2010	7	6	36	44	91	67.5	35.5	1396.5
7/7/2010	2010	7	7	37	50	93	71.5	39.5	1436
7/8/2010	2010	7	8	38	60	90	75	43	1479
7/9/2010	2010	7	9	39	60	89	74.5	42.5	1521.5
7/10/2010	2010	7	10	40	62	90	76	44	1565.5
7/11/2010	2010	7	11	41	60	93	76.5	44.5	1610
7/12/2010	2010	7	12	42	51	89	70	38	1648
7/13/2010	2010	7	13	43	58	96	77	45	1693
7/14/2010	2010	7	14	44	63	96	79.5	47.5	1740.5
7/15/2010	2010	7	15	45	63	97	80	48	1788.5
7/16/2010	2010	7	16	46	61	99	80	48	1836.5
7/17/2010	2010	7	17	47	62	96	79	47	1883.5
7/18/2010	2010	7	18	48	57	95	76	44	1927.5
7/19/2010	2010	7	19	49	62	102	82	50	1977.5
7/20/2010	2010	7	20	50	62	99	80.5	48.5	2026
7/21/2010	2010	7	21	51	62	100	81	49	2075
7/22/2010	2010	7	22	52	64	92	78	46	2121
7/23/2010	2010	7	23	53	57	89	73	41	2162
7/24/2010	2010	7	24	54	57	85	71	39	2201
7/25/2010	2010	7	25	55	60	83	71.5	39.5	2240.5
7/26/2010	2010	7	26	56	56	81	68.5	36.5	2277
7/27/2010	2010	7	27	57	56	75	65.5	33.5	2310.5
7/28/2010	2010	7	28	58	56	88	72	40	2350.5
7/29/2010	2010	7	29	59	58	90	74	42	2392.5
7/30/2010	2010	7	30	60	59	90	74.5	42.5	2435
7/31/2010	2010	7	31	61	56	89	72.5	40.5	2475.5
8/1/2010	2010	8	1	62	57	85	71	39	2514.5
8/2/2010	2010	8	2	63	58	85	71.5	39.5	2554
8/3/2010	2010	8	3	64	53	85	69	37	2591

8/4/2010	2010	8	4	65	54	84	69	37	2628
8/5/2010	2010	8	5	66	54	91	72.5	40.5	2668.5
8/6/2010	2010	8	6	67	52	82	67	35	2703.5
8/7/2010	2010	8	7	68	54	90	72	40	2743.5
8/8/2010	2010	8	8	69	52	84	68	36	2779.5
8/9/2010	2010	8	9	70	51	80	65.5	33.5	2813
8/10/2010	2010	8	10	71	51	84	67.5	35.5	2848.5
8/11/2010	2010	8	11	72	51	90	70.5	38.5	2887
8/12/2010	2010	8	12	73	51	90	70.5	38.5	2925.5
8/13/2010	2010	8	13	74	54	92	73	41	2966.5
8/14/2010	2010	8	14	75	51	91	71	39	3005.5
8/15/2010	2010	8	15	76	51	95	73	41	3046.5
8/16/2010	2010	8	16	77	55	92	73.5	41.5	3088
8/17/2010	2010	8	17	78	55	78	66.5	34.5	3122.5
8/18/2010	2010	8	18	79	55	78	66.5	34.5	3157
8/19/2010	2010	8	19	80	55	79	67	35	3192
8/20/2010	2010	8	20	81	52	92	72	40	3232
8/21/2010	2010	8	21	82	48	92	70	38	3270
8/22/2010	2010	8	22	83	48	89	68.5	36.5	3306.5
8/23/2010	2010	8	23	84	56	86	71	39	3345.5
8/24/2010	2010	8	24	85	57	95	76	44	3389.5
8/25/2010	2010	8	25	86	49	79	64	32	3421.5
8/26/2010	2010	8	26	87	45	82	63.5	31.5	3453
8/27/2010	2010	8	27	88	45	87	66	34	3487
8/28/2010	2010	8	28	89	52	86	69	37	3524
8/29/2010	2010	8	29	90	54	82	68	36	3560
8/30/2010	2010	8	30	91	50	85	67.5	35.5	3595.5
8/31/2010	2010	8	31	92	53	84	68.5	36.5	3632
9/1/2010	2010	9	1	93	45	89	67	35	3667
9/2/2010	2010	9	2	94	42	93	67.5	35.5	3702.5
9/3/2010	2010	9	3	95	55	95	75	43	3745.5
9/4/2010	2010	9	4	96	46	86	66	34	3779.5
9/5/2010	2010	9	5	97	46	94	70	38	3817.5
9/6/2010	2010	9	6	98	46	94	70	38	3855.5
9/7/2010	2010	9	7	99	46	94	70	38	3893.5
9/8/2010	2010	9	8	100	46	94	70	38	3931.5
9/9/2010	2010	9	9	101	52	88	70	38	3969.5
9/10/2010	2010	9	10	102	44	84	64	32	4001.5
9/11/2010	2010	9	11	103	37	83	60	28	4029.5
9/12/2010	2010	9	12	104	39	84	61.5	29.5	4059
9/13/2010	2010	9	13	105	50	88	69	37	4096
9/14/2010	2010	9	14	106	42	84	63	31	4127
9/15/2010	2010	9	15	107	43	93	68	36	4163
9/16/2010	2010	9	16	108	42	94	68	36	4199
9/17/2010	2010	9	17	109	43	88	65.5	33.5	4232.5
9/18/2010	2010	9	18	110	43	92	67.5	35.5	4268
9/19/2010	2010	9	19	111	43	93	68	36	4304
9/20/2010	2010	9	20	112	40	94	67	35	4339
9/21/2010	2010	9	21	113	51	89	70	38	4377
9/22/2010	2010	9	22	114	58	91	74.5	42.5	4419.5
9/23/2010	2010	9	23	115	50	70	60	28	4447.5
9/24/2010	2010	9	24	116	48	78	63	31	4478.5
9/25/2010	2010	9	25	117	42	83	62.5	30.5	4509
9/26/2010	2010	9	26	118	44	86	65	33	4542
9/27/2010	2010	9	27	119	44	89	66.5	34.5	4576.5
9/28/2010	2010	9	28	120	42	90	66	34	4610.5
9/29/2010	2010	9	29	121	42	94	68	36	4646.5
9/30/2010	2010	9	30	122	45	87	66	34	4680.5
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10/2/2010	2010	10	2	124	45	89	67	35	4752.5
10/3/2010	2010	10	3	125	46	83	64.5	32.5	4785
10/4/2010	2010	10	4	126	42	78	60	28	4813
10/5/2010	2010	10	5	127	47	83	65	33	4846
10/6/2010	2010	10	6	128	48	71	59.5	27.5	4873.5
10/7/2010	2010	10	7	129	44	74	59	27	4900.5
10/8/2010	2010	10	8	130	43	80	61.5	29.5	4930
10/9/2010	2010	10	9	131	34	78	56	24	4954
10/10/2010	2010	10	10	132	36	77	56.5	24.5	4978.5
10/11/2010	2010	10	11	133	33	74	53.5	21.5	5000
10/12/2010	2010	10	12	134	34	78	56	24	5024
10/13/2010	2010	10	13	135	34	79	56.5	24.5	5048.5
10/14/2010	2010	10	14	136	33	80	56.5	24.5	5073
10/15/2010	2010	10	15	137	35	83	59	27	5100
10/16/2010	2010	10	16	138	33	75	54	22	5122
10/17/2010	2010	10	17	139	33	80	56.5	24.5	5146.5
10/18/2010	2010	10	18	140	43	80	61.5	29.5	5176
10/19/2010	2010	10	19	141	47	74	60.5	28.5	5204.5
10/20/2010	2010	10	20	142	34	74	54	22	5226.5
10/21/2010	2010	10	21	143	38	70	54	22	5248.5
10/22/2010	2010	10	22	144	40	68	54	22	5270.5
10/23/2010	2010	10	23	145	37	66	51.5	19.5	5290
10/24/2010	2010	10	24	146	33	64	48.5	16.5	5306.5
10/25/2010	2010	10	25	147	24	60	42	10	5316.5
10/26/2010	2010	10	26	148	28	62	45	13	5329.5
10/27/2010	2010	10	27	149	28	62	45	13	5342.5
10/28/2010	2010	10	28	150	15	55	35	3	5345.5
10/29/2010	2010	10	29	151	24	84	54	22	5367.5
10/30/2010	2010	10	30	152	27	78	52.5	20.5	5388
10/31/2010	2010	10	31	153	29	77	53	21	5409
11/1/2010	2010	11	1	154	24	71	47.5	15.5	5424.5
11/2/2010	2010	11	2	155	22	72	47	15	5439.5
11/3/2010	2010	11	3	156	24	74	49	17	5456.5
11/4/2010	2010	11	4	157	29	71	50	18	5474.5

11/5/2010	2010	11	5	158	26	72	49	17	5491.5
11/6/2010	2010	11	6	159	24	68	46	14	5505.5
11/7/2010	2010	11	7	160	27	77	52	20	5525.5
11/8/2010	2010	11	8	161	22	73	47.5	15.5	5541
11/9/2010	2010	11	9	162	35	72	53.5	21.5	5562.5
11/10/2010	2010	11	10	163	12	55	33.5	1.5	5564
11/11/2010	2010	11	11	164	27	60	43.5	11.5	5575.5
11/12/2010	2010	11	12	165	13	50	31.5	-0.5	5575
11/13/2010	2010	11	13	166	13	53	33	1	5576
11/14/2010	2010	11	14	167	15	62	38.5	6.5	5582.5
11/15/2010	2010	11	15	168	21	60	40.5	8.5	5591
11/16/2010	2010	11	16	169	23	51	37	5	5596
11/17/2010	2010	11	17	170	22	62	42	10	5606
11/18/2010	2010	11	18	171	10	63	36.5	4.5	5610.5
11/19/2010	2010	11	19	172	10	64	37	5	5615.5
11/20/2010	2010	11	20	173	10	56	33	1	5616.5
11/21/2010	2010	11	21	174	31	55	43	11	5627.5
11/22/2010	2010	11	22	175	32	56	44	12	5639.5
11/23/2010	2010	11	23	176	10	49	29.5	-2.5	5637
11/24/2010	2010	11	24	177	35	57	46	14	5651
11/25/2010	2010	11	25	178	18	49	33.5	1.5	5652.5
11/26/2010	2010	11	26	179	8	36	22	-10	5642.5
11/27/2010	2010	11	27	180	15	46	30.5	-1.5	5641
11/28/2010	2010	11	28	181	22	56	39	7	5648
11/29/2010	2010	11	29	182	25	40	32.5	0.5	5648.5
11/30/2010	2010	11	30	183	13	32	22.5	-9.5	5639
12/1/2010	2010	12	1	184	13	58	35.5	3.5	5642.5
12/2/2010	2010	12	2	185	13	62	37.5	5.5	5648
12/3/2010	2010	12	3	186	13	66	39.5	7.5	5655.5
12/4/2010	2010	12	4	187	13	69	41	9	5664.5
12/5/2010	2010	12	5	188	13	70	41.5	9.5	5674
12/6/2010	2010	12	6	189	20	66	43	11	5685
12/7/2010	2010	12	7	190	20	65	42.5	10.5	5695.5
12/8/2010	2010	12	8	191	12	60	36	4	5699.5
12/9/2010	2010	12	9	192	16	61	38.5	6.5	5706
12/10/2010	2010	12	10	193	15	66	40.5	8.5	5714.5
12/11/2010	2010	12	11	194	21	64	42.5	10.5	5725
12/12/2010	2010	12	12	195	12	57	34.5	2.5	5727.5
12/13/2010	2010	12	13	196	20	60	40	8	5735.5
12/14/2010	2010	12	14	197	37	70	53.5	21.5	5757
12/15/2010	2010	12	15	198	41	71	56	24	5781
12/16/2010	2010	12	16	199	41	71	56	24	5805
12/17/2010	2010	12	17	200	41	71	56	24	5829
12/18/2010	2010	12	18	201	34	43	38.5	6.5	5835.5
12/19/2010	2010	12	19	202	39	52	45.5	13.5	5849
12/20/2010	2010	12	20	203	35	55	45	13	5862
12/21/2010	2010	12	21	204	32	60	46	14	5876
12/22/2010	2010	12	22	205	40	55	47.5	15.5	5891.5
12/23/2010	2010	12	23	206	29	56	42.5	10.5	5902
12/24/2010	2010	12	24	207	24	53	38.5	6.5	5908.5
12/25/2010	2010	12	25	208	28	60	44	12	5920.5
12/26/2010	2010	12	26	209	35	57	46	14	5934.5
12/27/2010	2010	12	27	210	24	56	40	8	5942.5
12/28/2010	2010	12	28	211	20	50	35	3	5945.5
12/29/2010	2010	12	29	212	21	51	36	4	5949.5
12/30/2010	2010	12	30	213	21	51	36	4	5953.5
12/31/2010	2010	12	31	214	4	26	15	-17	5936.5
1/1/2011	2011	1	1	215	-14	25	5.5	-26.5	5910
1/2/2011	2011	1	2	216	-9	28	9.5	-22.5	5887.5
1/3/2011	2011	1	3	217	-8	40	16	-16	5871.5
1/4/2011	2011	1	4	218	4	48	26	-6	5865.5
1/5/2011	2011	1	5	219	0	43	21.5	-10.5	5855
1/6/2011	2011	1	6	220	0	43	21.5	-10.5	5844.5
1/7/2011	2011	1	7	221	0	43	21.5	-10.5	5834
1/8/2011	2011	1	8	222	12	43	27.5	-4.5	5829.5
1/9/2011	2011	1	9	223	11	43	27	-5	5824.5
1/10/2011	2011	1	10	224	17	47	32	0	5824.5
1/11/2011	2011	1	11	225	-1	40	19.5	-12.5	5812
1/12/2011	2011	1	12	226	7	43	25	-7	5805
1/13/2011	2011	1	13	227	12	37	24.5	-7.5	5797.5
1/14/2011	2011	1	14	228	17	53	35	3	5800.5
1/15/2011	2011	1	15	229	15	47	31	-1	5799.5
1/16/2011	2011	1	16	230	15	58	36.5	4.5	5804
1/17/2011	2011	1	17	231	25	60	42.5	10.5	5814.5
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1/19/2011	2011	1	19	233	27	65	46	14	5841
1/20/2011	2011	1	20	234	24	61	42.5	10.5	5851.5
1/21/2011	2011	1	21	235	14	52	33	1	5852.5
1/22/2011	2011	1	22	236	11	52	31.5	-0.5	5852
1/23/2011	2011	1	23	237	16	57	36.5	4.5	5856.5
1/24/2011	2011	1	24	238	8	49	28.5	-3.5	5853
1/25/2011	2011	1	25	239	7	47	27	-5	5848
1/26/2011	2011	1	26	240	11	52	31.5	-0.5	5847.5
1/27/2011	2011	1	27	241	9	54	31.5	-0.5	5847
1/28/2011	2011	1	28	242	8	56	32	0	5847
1/29/2011	2011	1	29	243	12	62	37	5	5852
1/30/2011	2011	1	30	244	22	59	40.5	8.5	5860.5
1/31/2011	2011	1	31	245	24	57	40.5	8.5	5869
2/1/2011	2011	2	1	246	15	51	33	1	5870
2/2/2011	2011	2	2	247	-5	10	2.5	-29.5	5840.5
2/3/2011	2011	2	3	248	-18	11	-3.5	-35.5	5805
2/4/2011	2011	2	4	249	22	45	33.5	1.5	5806.5
2/5/2011	2011	2	5	250	20	48	34	2	5808.5

2/6/2011	2011	2	6	251	19	43	31	-1	5807.5
2/7/2011	2011	2	7	252	14	55	34.5	2.5	5810
2/8/2011	2011	2	8	253	11	59	35	3	5813
2/9/2011	2011	2	9	254	22	61	41.5	9.5	5822.5
2/10/2011	2011	2	10	255	35	58	46.5	14.5	5837
2/11/2011	2011	2	11	256	39	70	54.5	22.5	5859.5
2/12/2011	2011	2	12	257	36	55	45.5	13.5	5873
2/13/2011	2011	2	13	258	39	48	43.5	11.5	5884.5
2/14/2011	2011	2	14	259	36	44	40	8	5892.5
2/15/2011	2011	2	15	260	33	73	53	21	5913.5
2/16/2011	2011	2	16	261	29	71	50	18	5931.5
2/17/2011	2011	2	17	262	32	66	49	17	5948.5
2/18/2011	2011	2	18	263	24	62	43	11	5959.5
2/19/2011	2011	2	19	264	31	67	49	17	5976.5
2/20/2011	2011	2	20	265	28	62	45	13	5989.5
2/21/2011	2011	2	21	266	28	61	44.5	12.5	6002
2/22/2011	2011	2	22	267	28	59	43.5	11.5	6013.5
2/23/2011	2011	2	23	268	13	61	37	5	6018.5
2/24/2011	2011	2	24	269	13	61	37	5	6023.5
2/25/2011	2011	2	25	270	30	57	43.5	11.5	6035
2/26/2011	2011	2	26	271	25	54	39.5	7.5	6042.5
2/27/2011	2011	2	27	272	19	61	40	8	6050.5
2/28/2011	2011	2	28	273	19	61	40	8	6058.5
3/1/2011	2011	3	1	274	17	51	34	2	6060.5
3/2/2011	2011	3	2	275	17	61	39	7	6067.5
3/3/2011	2011	3	3	276	29	54	41.5	9.5	6077
3/4/2011	2011	3	4	277	21	55	38	6	6083
3/5/2011	2011	3	5	278	16	61	38.5	6.5	6089.5
3/6/2011	2011	3	6	279	16	63	39.5	7.5	6097
3/7/2011	2011	3	7	280	26	56	41	9	6106
3/8/2011	2011	3	8	281	28	61	44.5	12.5	6118.5
3/9/2011	2011	3	9	282	17	61	39	7	6125.5
3/10/2011	2011	3	10	283	15	62	38.5	6.5	6132
3/11/2011	2011	3	11	284	21	73	47	15	6147
3/12/2011	2011	3	12	285	21	73	47	15	6162
3/13/2011	2011	3	13	286	21	73	47	15	6177
3/14/2011	2011	3	14	287	22	77	49.5	17.5	6194.5
3/15/2011	2011	3	15	288	25	76	50.5	18.5	6213
3/16/2011	2011	3	16	289	23	74	48.5	16.5	6229.5
3/17/2011	2011	3	17	290	34	77	55.5	23.5	6253
3/18/2011	2011	3	18	291	31	73	52	20	6273
3/19/2011	2011	3	19	292	34	73	53.5	21.5	6294.5
3/20/2011	2011	3	20	293	25	70	47.5	15.5	6310
3/21/2011	2011	3	21	294	28	71	49.5	17.5	6327.5
3/22/2011	2011	3	22	295	31	73	52	20	6347.5
3/23/2011	2011	3	23	296	15	55	35	3	6350.5
3/24/2011	2011	3	24	297	15	55	35	3	6353.5
3/25/2011	2011	3	25	298	17	67	42	10	6363.5
3/26/2011	2011	3	26	299	27	64	45.5	13.5	6377
3/27/2011	2011	3	27	300	35	70	52.5	20.5	6397.5
3/28/2011	2011	3	28	301	36	71	53.5	21.5	6419
3/29/2011	2011	3	29	302	31	72	51.5	19.5	6438.5
3/30/2011	2011	3	30	303	35	68	51.5	19.5	6458
3/31/2011	2011	3	31	304	24	70	47	15	6473
4/1/2011	2011	4	1	305	24	74	49	17	6490
4/2/2011	2011	4	2	306	23	80	51.5	19.5	6509.5
4/3/2011	2011	4	3	307	34	84	59	27	6536.5
4/4/2011	2011	4	4	308	21	72	46.5	14.5	6551
4/5/2011	2011	4	5	309	22	82	52	20	6571
4/6/2011	2011	4	6	310	42	83	62.5	30.5	6601.5
4/7/2011	2011	4	7	311	38	72	55	23	6624.5
4/8/2011	2011	4	8	312	37	66	51.5	19.5	6644
4/9/2011	2011	4	9	313	32	71	51.5	19.5	6663.5
4/10/2011	2011	4	10	314	20	61	40.5	8.5	6672
4/11/2011	2011	4	11	315	17	56	36.5	4.5	6676.5
4/12/2011	2011	4	12	316	33	76	54.5	22.5	6699
4/13/2011	2011	4	13	317	29	74	51.5	19.5	6718.5
4/14/2011	2011	4	14	318	36	71	53.5	21.5	6740
4/15/2011	2011	4	15	319	23	69	46	14	6754
4/16/2011	2011	4	16	320	24	70	47	15	6769
4/17/2011	2011	4	17	321	45	81	63	31	6800
4/20/2011	2011	4	20	322	40	79	59.5	27.5	6827.5
4/21/2011	2011	4	21	323	33	71	52	20	6847.5
4/22/2011	2011	4	22	324	44	79	61.5	29.5	6877
4/23/2011	2011	4	23	325	39	78	58.5	26.5	6903.5
4/24/2011	2011	4	24	326	36	73	54.5	22.5	6926
4/25/2011	2011	4	25	327	37	70	53.5	21.5	6947.5
4/26/2011	2011	4	26	328	35	71	53	21	6968.5
4/27/2011	2011	4	27	329	24	67	45.5	13.5	6982
4/28/2011	2011	4	28	330	23	68	45.5	13.5	6995.5
4/29/2011	2011	4	29	331	43	80	61.5	29.5	7025
4/30/2011	2011	4	30	332	22	77	49.5	17.5	7042.5
5/1/2011	2011	5	1	333	24	66	45	13	7055.5
5/2/2011	2011	5	2	334	23	53	38	6	7061.5
5/3/2011	2011	5	3	335	18	62	40	8	7069.5
5/4/2011	2011	5	4	336	34	70	52	20	7089.5
5/5/2011	2011	5	5	337	36	82	59	27	7116.5
5/6/2011	2011	5	6	338	31	85	58	26	7142.5
5/7/2011	2011	5	7	339	38	84	61	29	7171.5
5/8/2011	2011	5	8	340	44	82	63	31	7202.5
5/9/2011	2011	5	9	341	36	79	57.5	25.5	7228
5/10/2011	2011	5	10	342	35	80	57.5	25.5	7253.5
5/11/2011	2011	5	11	343	32	75	53.5	21.5	7275

5/12/2011	2011	5	12	344	32	66	49	17	7292
5/13/2011	2011	5	13	345	32	76	54	22	7314
5/14/2011	2011	5	14	346	46	84	65	33	7347
5/15/2011	2011	5	15	347	40	80	60	28	7375
5/16/2011	2011	5	16	348	44	81	62.5	30.5	7405.5
5/17/2011	2011	5	17	349	39	82	60.5	28.5	7434
5/18/2011	2011	5	18	350	37	82	59.5	27.5	7461.5
5/19/2011	2011	5	19	351	34	65	49.5	17.5	7479
5/20/2011	2011	5	20	352	33	60	46.5	14.5	7493.5
5/21/2011	2011	5	21	353	33	67	50	18	7511.5
5/22/2011	2011	5	22	354	35	81	58	26	7537.5
5/23/2011	2011	5	23	355	36	84	60	28	7565.5
5/24/2011	2011	5	24	356	37	80	58.5	26.5	7592
5/25/2011	2011	5	25	357	42	74	58	26	7618
5/26/2011	2011	5	26	358	41	82	61.5	29.5	7647.5
5/27/2011	2011	5	27	359	41	84	62.5	30.5	7678
5/28/2011	2011	5	28	360	41	90	65.5	33.5	7711.5
5/29/2011	2011	5	29	361	60	88	74	42	7753.5
5/30/2011	2011	5	30	362	44	84	64	32	7785.5
5/31/2011	2011	5	31	363	28	74	51	19	7804.5
6/1/2011	2011	6	1	1	51	85	68	36	36
6/2/2011	2011	6	2	2	39	87	63	31	67
6/3/2011	2011	6	3	3	42	93	67.5	35.5	102.5
6/4/2011	2011	6	4	4	39	87	63	31	133.5
6/5/2011	2011	6	5	5	41	92	66.5	34.5	168
6/6/2011	2011	6	6	6	55	90	72.5	40.5	208.5
6/7/2011	2011	6	7	7	40	87	63.5	31.5	240
6/8/2011	2011	6	8	8	38	89	63.5	31.5	271.5
6/9/2011	2011	6	9	9	39	88	63.5	31.5	303
6/10/2011	2011	6	10	10	39	88	63.5	31.5	334.5
6/11/2011	2011	6	11	11	49	90	69.5	37.5	372
6/12/2011	2011	6	12	12	39	89	64	32	404
6/13/2011	2011	6	13	13	42	92	67	35	439
6/14/2011	2011	6	14	14	47	90	68.5	36.5	475.5
6/15/2011	2011	6	15	15	43	89	66	34	509.5
6/16/2011	2011	6	16	16	51	96	73.5	41.5	551
6/17/2011	2011	6	17	17	54	93	73.5	41.5	592.5
6/18/2011	2011	6	18	18	43	89	66	34	626.5
6/19/2011	2011	6	19	19	60	91	75.5	43.5	670
6/20/2011	2011	6	20	20	42	86	64	32	702
6/21/2011	2011	6	21	21	42	88	65	33	735
6/22/2011	2011	6	22	22	44	90	67	35	770
6/23/2011	2011	6	23	23	49	98	73.5	41.5	811.5
6/24/2011	2011	6	24	24	59	100	79.5	47.5	859
6/25/2011	2011	6	25	25	58	99	78.5	46.5	905.5
6/26/2011	2011	6	26	26	53	96	74.5	42.5	948
6/27/2011	2011	6	27	27	50	99	74.5	42.5	990.5
6/28/2011	2011	6	28	28	52	97	74.5	42.5	1033
6/29/2011	2011	6	29	29	51	99	75	43	1076
6/30/2011	2011	6	30	30	55	96	75.5	43.5	1119.5
7/1/2011	2011	7	1	31	47	94	70.5	38.5	1158
7/2/2011	2011	7	2	32	58	100	79	47	1205
7/3/2011	2011	7	3	33	62	94	78	46	1251
7/4/2011	2011	7	4	34	65	95	80	48	1299
7/5/2011	2011	7	5	35	60	97	78.5	46.5	1345.5
7/6/2011	2011	7	6	36	56	94	75	43	1388.5
7/7/2011	2011	7	7	37	63	97	80	48	1436.5
7/8/2011	2011	7	8	38	56	99	77.5	45.5	1482
7/9/2011	2011	7	9	39	55	92	73.5	41.5	1523.5
7/10/2011	2011	7	10	40	52	94	73	41	1564.5
7/11/2011	2011	7	11	41	58	92	75	43	1607.5
7/12/2011	2011	7	12	42	52	90	71	39	1646.5
7/13/2011	2011	7	13	43	50	85	67.5	35.5	1682
7/14/2011	2011	7	14	44	52	92	72	40	1722
7/15/2011	2011	7	15	45	50	95	72.5	40.5	1762.5
7/16/2011	2011	7	16	46	54	95	74.5	42.5	1805
7/17/2011	2011	7	17	47	55	95	75	43	1848
7/18/2011	2011	7	18	48	60	90	75	43	1891
7/19/2011	2011	7	19	49	59	95	77	45	1936
7/20/2011	2011	7	20	50	57	97	77	45	1981
7/21/2011	2011	7	21	51	55	94	74.5	42.5	2023.5
7/22/2011	2011	7	22	52	57	81	69	37	2060.5
7/23/2011	2011	7	23	53	57	98	77.5	45.5	2106
7/24/2011	2011	7	24	54	60	99	79.5	47.5	2153.5
7/25/2011	2011	7	25	55	60	94	77	45	2198.5
7/26/2011	2011	7	26	56	55	91	73	41	2239.5
7/27/2011	2011	7	27	57	53	93	73	41	2280.5
7/28/2011	2011	7	28	58	53	93	73	41	2321.5
7/29/2011	2011	7	29	59	53	90	71.5	39.5	2361
7/30/2011	2011	7	30	60	53	90	71.5	39.5	2400.5
7/31/2011	2011	7	31	61	55	90	72.5	40.5	2441
8/1/2011	2011	8	1	62	54	90	72	40	2481
8/2/2011	2011	8	2	63	54	89	71.5	39.5	2520.5
8/3/2011	2011	8	3	64	57	93	75	43	2563.5
8/4/2011	2011	8	4	65	58	91	74.5	42.5	2606
8/5/2011	2011	8	5	66	58	93	75.5	43.5	2649.5
8/6/2011	2011	8	6	67	52	92	72	40	2689.5
8/7/2011	2011	8	7	68	50	98	74	42	2731.5
8/8/2011	2011	8	8	69	50	96	73	41	2772.5
8/9/2011	2011	8	9	70	47	97	72	40	2812.5
8/10/2011	2011	8	10	71	59	99	79	47	2859.5
8/11/2011	2011	8	11	72	49	95	72	40	2899.5
8/12/2011	2011	8	12	73	55	93	74	42	2941.5

8/13/2011	2011	8	13	74	59	97	78	46	2987.5
8/14/2011	2011	8	14	75	57	91	74	42	3029.5
8/15/2011	2011	8	15	76	56	89	72.5	40.5	3070
8/16/2011	2011	8	16	77	59	95	77	45	3115
8/17/2011	2011	8	17	78	55	96	75.5	43.5	3158.5
8/18/2011	2011	8	18	79	56	97	76.5	44.5	3203
8/19/2011	2011	8	19	80	57	89	73	41	3244
8/20/2011	2011	8	20	81	60	90	75	43	3287
8/21/2011	2011	8	21	82	56	89	72.5	40.5	3327.5
8/22/2011	2011	8	22	83	54	82	68	36	3363.5
8/23/2011	2011	8	23	84	55	93	74	42	3405.5
8/24/2011	2011	8	24	85	55	100	77.5	45.5	3451
8/25/2011	2011	8	25	86	57	96	76.5	44.5	3495.5
8/26/2011	2011	8	26	87	57	88	72.5	40.5	3536
8/27/2011	2011	8	27	88	56	92	74	42	3578
8/28/2011	2011	8	28	89	59	97	78	46	3624
8/29/2011	2011	8	29	90	57	95	76	44	3668
8/30/2011	2011	8	30	91	55	97	76	44	3712
8/31/2011	2011	8	31	92	53	98	75.5	43.5	3755.5
9/1/2011	2011	9	1	93	58	92	75	43	3798.5
9/2/2011	2011	9	2	94	52	87	69.5	37.5	3836
9/3/2011	2011	9	3	95	55	89	72	40	3876
9/4/2011	2011	9	4	96	57	90	73.5	41.5	3917.5
9/5/2011	2011	9	5	97	57	86	71.5	39.5	3957
9/6/2011	2011	9	6	98	55	82	68.5	36.5	3993.5
9/7/2011	2011	9	7	99	55	82	68.5	36.5	4030
9/8/2011	2011	9	8	100	53	77	65	33	4063
9/9/2011	2011	9	9	101	52	75	63.5	31.5	4094.5
9/10/2011	2011	9	10	102	50	72	61	29	4123.5
9/11/2011	2011	9	11	103	52	73	62.5	30.5	4154
9/12/2011	2011	9	12	104	50	81	65.5	33.5	4187.5
9/13/2011	2011	9	13	105	50	76	63	31	4218.5
9/14/2011	2011	9	14	106	53	84	68.5	36.5	4255
9/15/2011	2011	9	15	107	50	80	65	33	4288
9/16/2011	2011	9	16	108	45	81	63	31	4319
9/17/2011	2011	9	17	109	48	80	64	32	4351
9/18/2011	2011	9	18	110	43	81	62	30	4381
9/19/2011	2011	9	19	111	43	81	62	30	4411
9/20/2011	2011	9	20	112	43	84	63.5	31.5	4442.5
9/21/2011	2011	9	21	113	42	88	65	33	4475.5
9/22/2011	2011	9	22	114	38	83	60.5	28.5	4504
9/23/2011	2011	9	23	115	38	83	60.5	28.5	4532.5
9/24/2011	2011	9	24	116	35	90	62.5	30.5	4563
9/25/2011	2011	9	25	117	37	91	64	32	4595
9/26/2011	2011	9	26	118	43	88	65.5	33.5	4628.5
9/27/2011	2011	9	27	119	42	88	65	33	4661.5
9/28/2011	2011	9	28	120	40	90	65	33	4694.5
9/29/2011	2011	9	29	121	41	89	65	33	4727.5
9/30/2011	2011	9	30	122	47	87	67	35	4762.5
10/1/2011	2011	10	1	123	38	78	58	26	4788.5
10/2/2011	2011	10	2	124	46	83	64.5	32.5	4821
10/3/2011	2011	10	3	125	40	78	59	27	4848
10/4/2011	2011	10	4	126	42	76	59	27	4875
10/5/2011	2011	10	5	127	40	60	50	18	4893
10/6/2011	2011	10	6	128	43	67	55	23	4916
10/7/2011	2011	10	7	129	37	62	49.5	17.5	4933.5
10/8/2011	2011	10	8	130	30	56	43	11	4944.5
10/9/2011	2011	10	9	131	30	63	46.5	14.5	4959
10/10/2011	2011	10	10	132	30	63	46.5	14.5	4973.5
10/11/2011	2011	10	11	133	35	75	55	23	4996.5
10/12/2011	2011	10	12	134	37	78	57.5	25.5	5022
10/13/2011	2011	10	13	135	32	77	54.5	22.5	5044.5
10/14/2011	2011	10	14	136	33	78	55.5	23.5	5068
10/15/2011	2011	10	15	137	34	80	57	25	5093
10/16/2011	2011	10	16	138	32	81	56.5	24.5	5117.5
10/17/2011	2011	10	17	139	37	84	60.5	28.5	5146
10/18/2011	2011	10	18	140	35	71	53	21	5167
10/19/2011	2011	10	19	141	30	74	52	20	5187
10/20/2011	2011	10	20	142	36	77	56.5	24.5	5211.5
10/21/2011	2011	10	21	143	29	80	54.5	22.5	5234
10/22/2011	2011	10	22	144	27	81	54	22	5256
10/23/2011	2011	10	23	145	28	80	54	22	5278
10/24/2011	2011	10	24	146	30	79	54.5	22.5	5300.5
10/25/2011	2011	10	25	147	30	77	53.5	21.5	5322
10/26/2011	2011	10	26	148	31	77	54	22	5344
10/27/2011	2011	10	27	149	42	68	55	23	5367
10/28/2011	2011	10	28	150	25	80	52.5	20.5	5387.5
10/29/2011	2011	10	29	151	23	70	46.5	14.5	5402
10/30/2011	2011	10	30	152	27	69	48	16	5418
10/31/2011	2011	10	31	153	30	72	51	19	5437
11/1/2011	2011	11	1	154	27	77	52	20	5457
11/2/2011	2011	11	2	155	24	73	48.5	16.5	5473.5
11/3/2011	2011	11	3	156	14	57	35.5	3.5	5477
11/4/2011	2011	11	4	157	32	59	45.5	13.5	5490.5
11/5/2011	2011	11	5	158	34	56	45	13	5503.5
11/6/2011	2011	11	6	159	19	55	37	5	5508.5
11/7/2011	2011	11	7	160	24	50	37	5	5513.5
11/8/2011	2011	11	8	161	29	48	38.5	6.5	5520
11/9/2011	2011	11	9	162	29	37	33	1	5521
11/10/2011	2011	11	10	163	13	55	34	2	5523
11/11/2011	2011	11	11	164	25	61	43	11	5534
11/12/2011	2011	11	12	165	32	62	47	15	5549
11/13/2011	2011	11	13	166	39	54	46.5	14.5	5563.5

11/14/2011	2011	11	14	167	34	54	44	12	5575.5
11/15/2011	2011	11	15	168	24	57	40.5	8.5	5584
11/16/2011	2011	11	16	169	28	53	40.5	8.5	5592.5
11/17/2011	2011	11	17	170	16	61	38.5	6.5	5599
11/18/2011	2011	11	18	171	19	60	39.5	7.5	5606.5
11/19/2011	2011	11	19	172	35	60	47.5	15.5	5622
11/20/2011	2011	11	20	173	32	63	47.5	15.5	5637.5
11/21/2011	2011	11	21	174	26	56	41	9	5646.5
11/22/2011	2011	11	22	175	22	56	39	7	5653.5
11/23/2011	2011	11	23	176	19	62	40.5	8.5	5662
11/24/2011	2011	11	24	177	18	63	40.5	8.5	5670.5
11/25/2011	2011	11	25	178	39	53	46	14	5684.5
11/26/2011	2011	11	26	179	32	47	39.5	7.5	5692
11/27/2011	2011	11	27	180	16	56	36	4	5696
11/28/2011	2011	11	28	181	23	64	43.5	11.5	5707.5
11/29/2011	2011	11	29	182	27	60	43.5	11.5	5719
11/30/2011	2011	11	30	183	17	65	41	9	5728
12/1/2011	2011	12	1	184	28	53	40.5	8.5	5736.5
12/2/2011	2011	12	2	185	26	53	39.5	7.5	5744
12/3/2011	2011	12	3	186	26	40	33	1	5745
12/4/2011	2011	12	4	187	26	37	31.5	-0.5	5744.5
12/5/2011	2011	12	5	188	-2	32	15	-17	5727.5
12/6/2011	2011	12	6	189	-6	31	12.5	-19.5	5708
12/7/2011	2011	12	7	190	4	40	22	-10	5698
12/8/2011	2011	12	8	191	10	47	28.5	-3.5	5694.5
12/9/2011	2011	12	9	192	12	45	28.5	-3.5	5691
12/10/2011	2011	12	10	193	12	44	28	-4	5687
12/11/2011	2011	12	11	194	1	47	24	-8	5679
12/12/2011	2011	12	12	195	24	55	39.5	7.5	5686.5
12/13/2011	2011	12	13	196	33	40	36.5	4.5	5691
12/14/2011	2011	12	14	197	37	40	38.5	6.5	5697.5
12/15/2011	2011	12	15	198	13	35	24	-8	5689.5
12/16/2011	2011	12	16	199	12	39	25.5	-6.5	5683
12/17/2011	2011	12	17	200	12	39	25.5	-6.5	5676.5
12/18/2011	2011	12	18	201	12	47	29.5	-2.5	5674
12/19/2011	2011	12	19	202	31	40	35.5	3.5	5677.5
12/20/2011	2011	12	20	203	31	55	43	11	5688.5
12/21/2011	2011	12	21	204	15	37	26	-6	5682.5
12/22/2011	2011	12	22	205	13	37	25	-7	5675.5
12/23/2011	2011	12	23	206	14	25	19.5	-12.5	5663
12/24/2011	2011	12	24	207	-13	17	2	-30	5633
12/25/2011	2011	12	25	208	-12	15	1.5	-30.5	5602.5
12/26/2011	2011	12	26	209	-12	35	11.5	-20.5	5582
12/27/2011	2011	12	27	210	-8	23	7.5	-24.5	5557.5
12/28/2011	2011	12	28	211	0	29	14.5	-17.5	5540
12/29/2011	2011	12	29	212	4	34	19	-13	5527
12/30/2011	2011	12	30	213	8	34	21	-11	5516
12/31/2011	2011	12	31	214	10	48	29	-3	5513
1/1/2012	2012	1	1	215	3	39	21	-11	5502
1/2/2012	2012	1	2	216	0	32	16	-16	5486
1/3/2012	2012	1	3	217	0	33	16.5	-15.5	5470.5
1/4/2012	2012	1	4	218	9	35	22	-10	5460.5
1/5/2012	2012	1	5	219	1	31	16	-16	5444.5
1/6/2012	2012	1	6	220	2	36	19	-13	5431.5
1/7/2012	2012	1	7	221	4	51	27.5	-4.5	5427
1/8/2012	2012	1	8	222	19	48	33.5	1.5	5428.5
1/9/2012	2012	1	9	223	14	34	24	-8	5420.5
1/10/2012	2012	1	10	224	4	36	20	-12	5408.5
1/11/2012	2012	1	11	225	13	42	27.5	-4.5	5404
1/12/2012	2012	1	12	226	3	35	19	-13	5391
1/13/2012	2012	1	13	227	-4	36	16	-16	5375
1/14/2012	2012	1	14	228	-1	34	16.5	-15.5	5359.5
1/15/2012	2012	1	15	229	6	48	27	-5	5354.5
1/16/2012	2012	1	16	230	36	45	40.5	8.5	5363
1/17/2012	2012	1	17	231	35	42	38.5	6.5	5369.5
1/18/2012	2012	1	18	232	17	50	33.5	1.5	5371
1/19/2012	2012	1	19	233	25	51	38	6	5377
1/20/2012	2012	1	20	234	22	51	36.5	4.5	5381.5
1/21/2012	2012	1	21	235	18	54	36	4	5385.5
1/22/2012	2012	1	22	236	30	52	41	9	5394.5
1/23/2012	2012	1	23	237	15	47	31	-1	5393.5
1/24/2012	2012	1	24	238	28	46	37	5	5398.5
1/25/2012	2012	1	25	239	24	42	33	1	5399.5
1/26/2012	2012	1	26	240	24	50	37	5	5404.5
1/27/2012	2012	1	27	241	30	49	39.5	7.5	5412
1/28/2012	2012	1	28	242	17	43	30	-2	5410
1/29/2012	2012	1	29	243	18	47	32.5	0.5	5410.5
1/30/2012	2012	1	30	244	19	53	36	4	5414.5
1/31/2012	2012	1	31	245	27	52	39.5	7.5	5422
2/1/2012	2012	2	1	246	22	50	36	4	5426
2/2/2012	2012	2	2	247	28	48	38	6	5432
2/3/2012	2012	2	3	248	24	42	33	1	5433
2/4/2012	2012	2	4	249	24	42	33	1	5434
2/5/2012	2012	2	5	250	27	40	33.5	1.5	5435.5
2/6/2012	2012	2	6	251	26	48	37	5	5440.5
2/7/2012	2012	2	7	252	20	46	33	1	5441.5
2/8/2012	2012	2	8	253	29	53	41	9	5450.5
2/9/2012	2012	2	9	254	29	53	41	9	5459.5
2/10/2012	2012	2	10	255	23	55	39	7	5466.5
2/11/2012	2012	2	11	256	21	54	37.5	5.5	5472
2/12/2012	2012	2	12	257	27	52	39.5	7.5	5479.5
2/13/2012	2012	2	13	258	30	45	37.5	5.5	5485
2/14/2012	2012	2	14	259	29	45	37	5	5490

2/15/2012	2012	2	15	260	17	41	29	-3	5487
2/16/2012	2012	2	16	261	26	49	37.5	5.5	5492.5
2/17/2012	2012	2	17	262	23	49	36	4	5496.5
2/18/2012	2012	2	18	263	20	52	36	4	5500.5
2/19/2012	2012	2	19	264	20	57	38.5	6.5	5507
2/20/2012	2012	2	20	265	18	42	30	-2	5505
2/21/2012	2012	2	21	266	16	54	35	3	5508
2/22/2012	2012	2	22	267	26	61	43.5	11.5	5519.5
2/23/2012	2012	2	23	268	32	61	46.5	14.5	5534
2/24/2012	2012	2	24	269	16	53	34.5	2.5	5536.5
2/25/2012	2012	2	25	270	15	64	39.5	7.5	5544
2/26/2012	2012	2	26	271	22	61	41.5	9.5	5553.5
2/27/2012	2012	2	27	272	23	56	39.5	7.5	5561
2/28/2012	2012	2	28	273	33	57	45	13	5574
2/29/2012	2012	2	29	274	16	57	36.5	4.5	5578.5
3/1/2012	2012	3	1	275	38	56	47	15	5593.5
3/2/2012	2012	3	2	276	22	50	36	4	5597.5
3/3/2012	2012	3	3	277	13	50	31.5	-0.5	5597
3/4/2012	2012	3	4	278	16	60	38	6	5603
3/5/2012	2012	3	5	279	17	69	43	11	5614
3/6/2012	2012	3	6	280	23	67	45	13	5627
3/7/2012	2012	3	7	281	29	64	46.5	14.5	5641.5
3/8/2012	2012	3	8	282	16	47	31.5	-0.5	5641
3/9/2012	2012	3	9	283	21	43	32	0	5641
3/10/2012	2012	3	10	284	29	43	36	4	5645
3/11/2012	2012	3	11	285	27	59	43	11	5656
3/12/2012	2012	3	12	286	23	66	44.5	12.5	5668.5
3/13/2012	2012	3	13	287	19	70	44.5	12.5	5681
3/14/2012	2012	3	14	288	22	70	46	14	5695
3/15/2012	2012	3	15	289	20	72	46	14	5709
3/16/2012	2012	3	16	290	22	73	47.5	15.5	5724.5
3/17/2012	2012	3	17	291	30	70	50	18	5742.5
3/18/2012	2012	3	18	292	34	65	49.5	17.5	5760
3/19/2012	2012	3	19	293	19	38	28.5	-3.5	5756.5
3/20/2012	2012	3	20	294	20	48	34	2	5758.5
3/21/2012	2012	3	21	295	17	63	40	8	5766.5
3/22/2012	2012	3	22	296	23	71	47	15	5781.5
3/23/2012	2012	3	23	297	23	74	48.5	16.5	5798
3/24/2012	2012	3	24	298	29	78	53.5	21.5	5819.5
3/25/2012	2012	3	25	299	26	77	51.5	19.5	5839
3/26/2012	2012	3	26	300	44	74	59	27	5866
3/27/2012	2012	3	27	301	26	75	50.5	18.5	5884.5
3/28/2012	2012	3	28	302	24	74	49	17	5901.5
3/29/2012	2012	3	29	303	28	72	50	18	5919.5
3/30/2012	2012	3	30	304	29	76	52.5	20.5	5940
3/31/2012	2012	3	31	305	34	79	56.5	24.5	5964.5
4/1/2012	2012	4	1	306	34	79	56.5	24.5	5989
4/2/2012	2012	4	2	307	31	48	39.5	7.5	5996.5
4/3/2012	2012	4	3	308	34	44	39	7	6003.5
4/4/2012	2012	4	4	309	31	71	51	19	6022.5
4/5/2012	2012	4	5	310	32	72	52	20	6042.5
4/6/2012	2012	4	6	311	34	71	52.5	20.5	6063
4/7/2012	2012	4	7	312	28	68	48	16	6079
4/8/2012	2012	4	8	313	42	73	57.5	25.5	6104.5
4/9/2012	2012	4	9	314	36	77	56.5	24.5	6129
4/10/2012	2012	4	10	315	33	77	55	23	6152
4/11/2012	2012	4	11	316	40	79	59.5	27.5	6179.5
4/12/2012	2012	4	12	317	35	75	55	23	6202.5
4/13/2012	2012	4	13	318	29	69	49	17	6219.5
4/14/2012	2012	4	14	319	30	65	47.5	15.5	6235
4/15/2012	2012	4	15	320	33	56	44.5	12.5	6247.5
4/16/2012	2012	4	16	321	23	63	43	11	6258.5
4/17/2012	2012	4	17	322	25	76	50.5	18.5	6277
4/18/2012	2012	4	18	323	29	78	53.5	21.5	6298.5
4/19/2012	2012	4	19	324	53	74	63.5	31.5	6330
4/20/2012	2012	4	20	325	37	76	56.5	24.5	6354.5
4/21/2012	2012	4	21	326	33	81	57	25	6379.5
4/22/2012	2012	4	22	327	36	82	59	27	6406.5
4/23/2012	2012	4	23	328	47	84	65.5	33.5	6440
4/24/2012	2012	4	24	329	45	85	65	33	6473
4/25/2012	2012	4	25	330	36	82	59	27	6500
4/26/2012	2012	4	26	331	44	83	63.5	31.5	6531.5
4/27/2012	2012	4	27	332	44	73	58.5	26.5	6558
4/28/2012	2012	4	28	333	36	71	53.5	21.5	6579.5
4/29/2012	2012	4	29	334	33	76	54.5	22.5	6602
4/30/2012	2012	4	30	335	32	79	55.5	23.5	6625.5
5/1/2012	2012	5	1	336	39	79	59	27	6652.5
5/2/2012	2012	5	2	337	43	81	62	30	6682.5
5/3/2012	2012	5	3	338	37	81	59	27	6709.5
5/4/2012	2012	5	4	339	38	83	60.5	28.5	6738
5/5/2012	2012	5	5	340	49	81	65	33	6771
5/6/2012	2012	5	6	341	41	81	61	29	6800
5/7/2012	2012	5	7	342	32	75	53.5	21.5	6821.5
5/8/2012	2012	5	8	343	44	69	56.5	24.5	6846
5/9/2012	2012	5	9	344	38	72	55	23	6869
5/10/2012	2012	5	10	345	36	79	57.5	25.5	6894.5
5/11/2012	2012	5	11	346	34	81	57.5	25.5	6920
5/12/2012	2012	5	12	347	49	80	64.5	32.5	6952.5
5/13/2012	2012	5	13	348	53	72	62.5	30.5	6983
5/14/2012	2012	5	14	349	33	75	54	22	7005
5/15/2012	2012	5	15	350	37	80	58.5	26.5	7031.5
5/16/2012	2012	5	16	351	43	81	62	30	7061.5
5/17/2012	2012	5	17	352	48	86	67	35	7096.5

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5/19/2012	2012	5	19	354	37	79	58	26	7156.5
5/20/2012	2012	5	20	355	38	82	60	28	7184.5
5/21/2012	2012	5	21	356	55	91	73	41	7225.5
5/22/2012	2012	5	22	357	47	90	68.5	36.5	7262
5/23/2012	2012	5	23	358	51	88	69.5	37.5	7299.5
5/24/2012	2012	5	24	359	61	85	73	41	7340.5
5/25/2012	2012	5	25	360	50	87	68.5	36.5	7377
5/26/2012	2012	5	26	361	53	84	68.5	36.5	7413.5
5/27/2012	2012	5	27	362	30	78	54	22	7435.5
5/28/2012	2012	5	28	363	28	82	55	23	7458.5
5/29/2012	2012	5	29	364	34	87	60.5	28.5	7487
5/30/2012	2012	5	30	365	46	86	66	34	7521
5/31/2012	2012	5	31	366	41	88	64.5	32.5	7553.5
6/1/2012	2012	6	1	1	43	93	68	36	36
6/2/2012	2012	6	2	2	55	91	73	41	77
6/3/2012	2012	6	3	3	42	92	67	35	112
6/4/2012	2012	6	4	4	50	91	70.5	38.5	150.5
6/5/2012	2012	6	5	5	42	91	66.5	34.5	185
6/6/2012	2012	6	6	6	39	91	65	33	218
6/7/2012	2012	6	7	7	44	91	67.5	35.5	253.5
6/8/2012	2012	6	8	8	40	91	65.5	33.5	287
6/9/2012	2012	6	9	9	50	90	70	38	325
6/10/2012	2012	6	10	10	49	87	68	36	361
6/11/2012	2012	6	11	11	45	90	67.5	35.5	396.5
6/12/2012	2012	6	12	12	45	92	68.5	36.5	433
6/13/2012	2012	6	13	13	41	92	66.5	34.5	467.5
6/14/2012	2012	6	14	14	46	91	68.5	36.5	504
6/15/2012	2012	6	15	15	50	92	71	39	543
6/16/2012	2012	6	16	16	45	90	67.5	35.5	578.5
6/17/2012	2012	6	17	17	53	94	73.5	41.5	620
6/18/2012	2012	6	18	18	49	93	71	39	659
6/19/2012	2012	6	19	19	53	93	73	41	700
6/20/2012	2012	6	20	20	54	96	75	43	743
6/21/2012	2012	6	21	21	48	95	71.5	39.5	782.5
6/22/2012	2012	6	22	22	56	97	76.5	44.5	827
6/23/2012	2012	6	23	23	52	95	73.5	41.5	868.5
6/24/2012	2012	6	24	24	48	96	72	40	908.5
6/25/2012	2012	6	25	25	53	96	74.5	42.5	951
6/26/2012	2012	6	26	26	55	97	76	44	995
6/27/2012	2012	6	27	27	54	93	73.5	41.5	1036.5
6/28/2012	2012	6	28	28	53	95	74	42	1078.5
6/29/2012	2012	6	29	29	58	97	77.5	45.5	1124
6/30/2012	2012	6	30	30	51	98	74.5	42.5	1166.5
7/1/2012	2012	7	1	31	58	97	77.5	45.5	1212
7/2/2012	2012	7	2	32	68	98	83	51	1263
7/3/2012	2012	7	3	33	60	95	77.5	45.5	1308.5
7/4/2012	2012	7	4	34	57	90	73.5	41.5	1350
7/5/2012	2012	7	5	35	55	87	71	39	1389
7/6/2012	2012	7	6	36	63	84	73.5	41.5	1430.5
7/7/2012	2012	7	7	37	63	79	71	39	1469.5
7/8/2012	2012	7	8	38	63	85	74	42	1511.5
7/9/2012	2012	7	9	39	56	82	69	37	1548.5
7/10/2012	2012	7	10	40	58	82	70	38	1586.5
7/11/2012	2012	7	11	41	57	82	69.5	37.5	1624
7/12/2012	2012	7	12	42	56	87	71.5	39.5	1663.5
7/13/2012	2012	7	13	43	59	90	74.5	42.5	1706
7/14/2012	2012	7	14	44	61	90	75.5	43.5	1749.5
7/15/2012	2012	7	15	45	56	88	72	40	1789.5
7/16/2012	2012	7	16	46	61	82	71.5	39.5	1829
7/17/2012	2012	7	17	47	55	86	70.5	38.5	1867.5
7/18/2012	2012	7	18	48	54	90	72	40	1907.5
7/19/2012	2012	7	19	49	56	88	72	40	1947.5
7/20/2012	2012	7	20	50	60	86	73	41	1988.5
7/21/2012	2012	7	21	51	67	91	79	47	2035.5
7/22/2012	2012	7	22	52	62	90	76	44	2079.5
7/23/2012	2012	7	23	53	56	88	72	40	2119.5
7/24/2012	2012	7	24	54	53	82	67.5	35.5	2155
7/25/2012	2012	7	25	55	54	72	63	31	2186
7/26/2012	2012	7	26	56	51	92	71.5	39.5	2225.5
7/27/2012	2012	7	27	57	60	89	74.5	42.5	2268
7/28/2012	2012	7	28	58	55	88	71.5	39.5	2307.5
7/29/2012	2012	7	29	59	60	88	74	42	2349.5
7/30/2012	2012	7	30	60	55	92	73.5	41.5	2391
7/31/2012	2012	7	31	61	59	92	75.5	43.5	2434.5
8/1/2012	2012	8	1	62	55	90	72.5	40.5	2475
8/2/2012	2012	8	2	63	54	85	69.5	37.5	2512.5
8/3/2012	2012	8	3	64	55	86	70.5	38.5	2551
8/4/2012	2012	8	4	65	53	87	70	38	2589
8/5/2012	2012	8	5	66	62	86	74	42	2631
8/6/2012	2012	8	6	67	57	87	72	40	2671
8/7/2012	2012	8	7	68	55	86	70.5	38.5	2709.5
8/8/2012	2012	8	8	69	58	90	74	42	2751.5
8/9/2012	2012	8	9	70	52	92	72	40	2791.5
8/10/2012	2012	8	10	71	51	94	72.5	40.5	2832
8/11/2012	2012	8	11	72	61	94	77.5	45.5	2877.5
8/12/2012	2012	8	12	73	53	91	72	40	2917.5
8/13/2012	2012	8	13	74	62	82	72	40	2957.5
8/14/2012	2012	8	14	75	53	88	70.5	38.5	2996
8/15/2012	2012	8	15	76	50	90	70	38	3034
8/16/2012	2012	8	16	77	51	88	69.5	37.5	3071.5
8/17/2012	2012	8	17	78	59	86	72.5	40.5	3112
8/18/2012	2012	8	18	79	52	91	71.5	39.5	3151.5

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8/20/2012	2012	8	20	81	62	86	74	42	3234
8/21/2012	2012	8	21	82	54	90	72	40	3274
8/22/2012	2012	8	22	83	61	82	71.5	39.5	3313.5
8/23/2012	2012	8	23	84	56	81	68.5	36.5	3350
8/24/2012	2012	8	24	85	49	80	64.5	32.5	3382.5
8/25/2012	2012	8	25	86	50	88	69	37	3419.5
8/26/2012	2012	8	26	87	52	90	71	39	3458.5
8/27/2012	2012	8	27	88	56	89	72.5	40.5	3499
8/28/2012	2012	8	28	89	48	89	68.5	36.5	3535.5
8/29/2012	2012	8	29	90	46	90	68	36	3571.5
8/30/2012	2012	8	30	91	51	92	71.5	39.5	3611
8/31/2012	2012	8	31	92	46	89	67.5	35.5	3646.5
9/1/2012	2012	9	1	93	49	90	69.5	37.5	3684
9/2/2012	2012	9	2	94	49	89	69	37	3721
9/3/2012	2012	9	3	95	59	87	73	41	3762
9/4/2012	2012	9	4	96	61	90	75.5	43.5	3805.5
9/5/2012	2012	9	5	97	63	91	77	45	3850.5
9/6/2012	2012	9	6	98	55	92	73.5	41.5	3892
9/7/2012	2012	9	7	99	63	87	75	43	3935
9/8/2012	2012	9	8	100	56	73	64.5	32.5	3967.5
9/9/2012	2012	9	9	101	41	78	59.5	27.5	3995
9/10/2012	2012	9	10	102	52	85	68.5	36.5	4031.5
9/11/2012	2012	9	11	103	48	78	63	31	4062.5
9/12/2012	2012	9	12	104	57	67	62	30	4092.5
9/13/2012	2012	9	13	105	52	65	58.5	26.5	4119
9/14/2012	2012	9	14	106	43	69	56	24	4143
9/15/2012	2012	9	15	107	38	79	58.5	26.5	4169.5
9/16/2012	2012	9	16	108	38	85	61.5	29.5	4199
9/17/2012	2012	9	17	109	41	82	61.5	29.5	4228.5
9/18/2012	2012	9	18	110	39	80	59.5	27.5	4256
9/19/2012	2012	9	19	111	37	84	60.5	28.5	4284.5
9/20/2012	2012	9	20	112	36	84	60	28	4312.5
9/21/2012	2012	9	21	113	40	84	62	30	4342.5
9/22/2012	2012	9	22	114	37	88	62.5	30.5	4373
9/23/2012	2012	9	23	115	42	84	63	31	4404
9/24/2012	2012	9	24	116	44	81	62.5	30.5	4434.5
9/25/2012	2012	9	25	117	41	77	59	27	4461.5
9/26/2012	2012	9	26	118	40	80	60	28	4489.5
9/27/2012	2012	9	27	119	41	78	59.5	27.5	4517
9/28/2012	2012	9	28	120	43	78	60.5	28.5	4545.5
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9/30/2012	2012	9	30	122	34	79	56.5	24.5	4597.5
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1/3/2013	2013	1	3	125	-3	33	15	-17	4550
1/4/2013	2013	1	4	126	-4	37	16.5	-15.5	4534.5
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6/11/2013	2013	6	11	11	44	98	71	39	411
6/12/2013	2013	6	12	12	48	99	73.5	41.5	452.5
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11/13/2013	2013	11	13	157	26	58	42	10	5021
11/14/2013	2013	11	14	158	22	59	40.5	8.5	5029.5
11/15/2013	2013	11	15	159	22	65	43.5	11.5	5041
11/16/2013	2013	11	16	160	36	62	49	17	5058
11/17/2013	2013	11	17	161	38	58	48	16	5074
11/18/2013	2013	11	18	162	25	68	46.5	14.5	5088.5
11/19/2013	2013	11	19	163	24	64	44	12	5100.5
11/20/2013	2013	11	20	164	28	71	49.5	17.5	5118
11/21/2013	2013	11	21	165	35	44	39.5	7.5	5125.5
11/22/2013	2013	11	22	166	32	52	42	10	5135.5
11/23/2013	2013	11	23	167	32	52	42	10	5145.5
11/24/2013	2013	11	24	168	19	31	25	-7	5138.5
11/25/2013	2013	11	25	169	19	34	26.5	-5.5	5133
11/26/2013	2013	11	26	170	27	43	35	3	5136
11/27/2013	2013	11	27	171	19	49	34	2	5138
11/28/2013	2013	11	28	172	20	47	33.5	1.5	5139.5
11/29/2013	2013	11	29	173	20	47	33.5	1.5	5141
11/30/2013	2013	11	30	174	21	61	41	9	5150
12/1/2013	2013	12	1	175	23	65	44	12	5162
12/2/2013	2013	12	2	176	21	53	37	5	5167
12/3/2013	2013	12	3	177	21	67	44	12	5179
12/4/2013	2013	12	4	178	31	61	46	14	5193
12/5/2013	2013	12	5	179	24	54	39	7	5200
12/6/2013	2013	12	6	180	17	40	28.5	-3.5	5196.5
12/7/2013	2013	12	7	181	13	46	29.5	-2.5	5194
12/8/2013	2013	12	8	182	24	47	35.5	3.5	5197.5
12/9/2013	2013	12	9	183	17	38	27.5	-4.5	5193
12/10/2013	2013	12	10	184	0	27	13.5	-18.5	5174.5
12/11/2013	2013	12	11	185	4	44	24	-8	5166.5
12/13/2013	2013	12	13	186	17	49	33	1	5167.5
12/14/2013	2013	12	14	187	17	54	35.5	3.5	5171
12/15/2013	2013	12	15	188	13	47	30	-2	5169
12/16/2013	2013	12	16	189	10	54	32	0	5169
12/17/2013	2013	12	17	190	14	64	39	7	5176
12/18/2013	2013	12	18	191	15	61	38	6	5182
12/19/2013	2013	12	19	192	17	66	41.5	9.5	5191.5
12/20/2013	2013	12	20	193	18	58	38	6	5197.5
12/21/2013	2013	12	21	194	19	54	36.5	4.5	5202
12/22/2013	2013	12	22	195	14	41	27.5	-4.5	5197.5
12/23/2013	2013	12	23	196	10	48	29	-3	5194.5
12/24/2013	2013	12	24	197	11	53	32	0	5194.5
12/25/2013	2013	12	25	198	10	65	37.5	5.5	5200
12/26/2013	2013	12	26	199	7	52	29.5	-2.5	5197.5
12/27/2013	2013	12	27	200	8	54	31	-1	5196.5
12/28/2013	2013	12	28	201	9	63	36	4	5200.5
12/29/2013	2013	12	29	202	13	56	34.5	2.5	5203
12/30/2013	2013	12	30	203	9	51	30	-2	5201
12/31/2013	2013	12	31	204	9	55	32	0	5201
1/1/2014	2014	1	1	205	12	63	37.5	5.5	5206.5
1/2/2014	2014	1	2	206	7	54	30.5	-1.5	5205
1/3/2014	2014	1	3	207	10	62	36	4	5209
1/4/2014	2014	1	4	208	12	61	36.5	4.5	5213.5
1/5/2014	2014	1	5	209	5	60	32.5	0.5	5214
1/6/2014	2014	1	6	210	3	44	23.5	-8.5	5205.5
1/7/2014	2014	1	7	211	3	44	23.5	-8.5	5197
1/8/2014	2014	1	8	212	9	49	29	-3	5194
1/9/2014	2014	1	9	213	10	60	35	3	5197
1/10/2014	2014	1	10	214	12	57	34.5	2.5	5199.5
1/11/2014	2014	1	11	215	15	58	36.5	4.5	5204

1/12/2014	2014	1	12	216	18	61	39.5	7.5	5211.5
1/13/2014	2014	1	13	217	12	58	35	3	5214.5
1/14/2014	2014	1	14	218	13	55	34	2	5216.5
1/15/2014	2014	1	15	219	10	57	33.5	1.5	5218
1/16/2014	2014	1	16	220	10	60	35	3	5221
1/17/2014	2014	1	17	221	10	58	34	2	5223
1/18/2014	2014	1	18	222	11	59	35	3	5226
1/19/2014	2014	1	19	223	9	64	36.5	4.5	5230.5
1/20/2014	2014	1	20	224	12	67	39.5	7.5	5238
1/21/2014	2014	1	21	225	8	65	36.5	4.5	5242.5
1/22/2014	2014	1	22	226	11	67	39	7	5249.5
1/23/2014	2014	1	23	227	7	55	31	-1	5248.5
1/24/2014	2014	1	24	228	6	40	23	-9	5239.5
1/25/2014	2014	1	25	229	9	54	31.5	-0.5	5239
1/26/2014	2014	1	26	230	8	58	33	1	5240
1/27/2014	2014	1	27	231	12	54	33	1	5241
1/28/2014	2014	1	28	232	15	65	40	8	5249
1/29/2014	2014	1	29	233	9	57	33	1	5250
1/30/2014	2014	1	30	234	23	57	40	8	5258
1/31/2014	2014	1	31	235	35	64	49.5	17.5	5275.5
2/1/2014	2014	2	1	236	27	51	39	7	5282.5
2/2/2014	2014	2	2	237	9	50	29.5	-2.5	5280
2/3/2014	2014	2	3	238	11	49	30	-2	5278
2/4/2014	2014	2	4	239	13	41	27	-5	5273
2/5/2014	2014	2	5	240	19	40	29.5	-2.5	5270.5
2/6/2014	2014	2	6	241	17	36	26.5	-5.5	5265
2/7/2014	2014	2	7	242	21	37	29	-3	5262
2/8/2014	2014	2	8	243	21	48	34.5	2.5	5264.5
2/9/2014	2014	2	9	244	28	63	45.5	13.5	5278
2/10/2014	2014	2	10	245	23	70	46.5	14.5	5292.5
2/11/2014	2014	2	11	246	19	65	42	10	5302.5
2/12/2014	2014	2	12	247	18	61	39.5	7.5	5310
2/13/2014	2014	2	13	248	23	67	45	13	5323
2/14/2014	2014	2	14	249	30	71	50.5	18.5	5341.5
2/15/2014	2014	2	15	250	22	74	48	16	5357.5
2/16/2014	2014	2	16	251	25	73	49	17	5374.5
2/17/2014	2014	2	17	252	20	73	46.5	14.5	5389
2/18/2014	2014	2	18	253	24	68	46	14	5403
2/19/2014	2014	2	19	254	26	74	50	18	5421
2/20/2014	2014	2	20	255	21	71	46	14	5435
2/21/2014	2014	2	21	256	10	53	31.5	-0.5	5434.5
2/22/2014	2014	2	22	257	15	65	40	8	5442.5
2/23/2014	2014	2	23	258	17	66	41.5	9.5	5452
2/24/2014	2014	2	24	259	18	71	44.5	12.5	5464.5
2/25/2014	2014	2	25	260	17	73	45	13	5477.5
2/26/2014	2014	2	26	261	21	65	43	11	5488.5
2/27/2014	2014	2	27	262	33	70	51.5	19.5	5508
2/28/2014	2014	2	28	263	23	61	42	10	5518
3/1/2014	2014	3	1	264	38	67	52.5	20.5	5538.5
3/2/2014	2014	3	2	265	33	50	41.5	9.5	5548
3/3/2014	2014	3	3	266	24	57	40.5	8.5	5556.5
3/4/2014	2014	3	4	267	20	61	40.5	8.5	5565
3/5/2014	2014	3	5	268	27	60	43.5	11.5	5576.5
3/6/2014	2014	3	6	269	20	65	42.5	10.5	5587
3/7/2014	2014	3	7	270	32	70	51	19	5606
3/8/2014	2014	3	8	271	21	64	42.5	10.5	5616.5
3/9/2014	2014	3	9	272	15	65	40	8	5624.5
3/10/2014	2014	3	10	273	16	70	43	11	5635.5
3/11/2014	2014	3	11	274	32	79	55.5	23.5	5659
3/12/2014	2014	3	12	275	17	66	41.5	9.5	5668.5
3/13/2014	2014	3	13	276	20	54	37	5	5673.5
3/15/2014	2014	3	15	277	21	64	42.5	10.5	5684
3/16/2014	2014	3	16	278	12	56	34	2	5686
3/17/2014	2014	3	17	279	19	67	43	11	5697
3/18/2014	2014	3	18	280	22	71	46.5	14.5	5711.5
3/19/2014	2014	3	19	281	11	59	35	3	5714.5
3/20/2014	2014	3	20	282	12	64	38	6	5720.5
3/21/2014	2014	3	21	283	24	74	49	17	5737.5
3/22/2014	2014	3	22	284	28	70	49	17	5754.5
3/23/2014	2014	3	23	285	24	67	45.5	13.5	5768
3/24/2014	2014	3	24	286	21	71	46	14	5782
3/25/2014	2014	3	25	287	19	72	45.5	13.5	5795.5
3/26/2014	2014	3	26	288	23	67	45	13	5808.5
3/27/2014	2014	3	27	289	34	66	50	18	5826.5
3/28/2014	2014	3	28	290	34	63	48.5	16.5	5843
3/29/2014	2014	3	29	291	20	68	44	12	5855
3/30/2014	2014	3	30	292	25	73	49	17	5872
3/31/2014	2014	3	31	293	21	70	45.5	13.5	5885.5
4/1/2014	2014	4	1	294	30	68	49	17	5902.5
4/2/2014	2014	4	2	295	32	69	50.5	18.5	5921
4/3/2014	2014	4	3	296	28	64	46	14	5935
4/4/2014	2014	4	4	297	15	57	36	4	5939
4/5/2014	2014	4	5	298	28	61	44.5	12.5	5951.5
4/7/2014	2014	4	7	299	29	63	46	14	5965.5
4/9/2014	2014	4	9	300	25	79	52	20	5985.5
4/10/2014	2014	4	10	301	35	84	59.5	27.5	6013
4/11/2014	2014	4	11	302	33	83	58	26	6039
4/12/2014	2014	4	12	303	36	82	59	27	6066
4/13/2014	2014	4	13	304	36	73	54.5	22.5	6088.5
4/14/2014	2014	4	14	305	21	72	46.5	14.5	6103
4/15/2014	2014	4	15	306	17	60	38.5	6.5	6109.5
4/16/2014	2014	4	16	307	25	75	50	18	6127.5
4/17/2014	2014	4	17	308	27	76	51.5	19.5	6147

4/18/2014	2014	4	18	309	37	75	56	24	6171
4/19/2014	2014	4	19	310	33	76	54.5	22.5	6193.5
4/20/2014	2014	4	20	311	33	64	48.5	16.5	6210
4/21/2014	2014	4	21	312	33	77	55	23	6233
4/22/2014	2014	4	22	313	47	82	64.5	32.5	6265.5
4/23/2014	2014	4	23	314	44	80	62	30	6295.5
4/24/2014	2014	4	24	315	31	73	52	20	6315.5
4/25/2014	2014	4	25	316	29	78	53.5	21.5	6337
4/26/2014	2014	4	26	317	38	78	58	26	6363
4/28/2014	2014	4	28	318	31	68	49.5	17.5	6380.5
4/29/2014	2014	4	29	319	29	64	46.5	14.5	6395
4/30/2014	2014	4	30	320	23	61	42	10	6405
5/1/2014	2014	5	1	321	30	64	47	15	6420
5/2/2014	2014	5	2	322	28	70	49	17	6437
5/4/2014	2014	5	4	323	30	82	56	24	6461
5/5/2014	2014	5	5	324	37	84	60.5	28.5	6489.5
5/6/2014	2014	5	6	325	41	81	61	29	6518.5
5/7/2014	2014	5	7	326	30	73	51.5	19.5	6538
5/8/2014	2014	5	8	327	27	70	48.5	16.5	6554.5
5/9/2014	2014	5	9	328	28	62	45	13	6567.5
5/10/2014	2014	5	10	329	39	75	57	25	6592.5
5/11/2014	2014	5	11	330	43	79	61	29	6621.5
5/12/2014	2014	5	12	331	32	69	50.5	18.5	6640
5/13/2014	2014	5	13	332	26	62	44	12	6652
5/14/2014	2014	5	14	333	28	65	46.5	14.5	6666.5
5/15/2014	2014	5	15	334	25	70	47.5	15.5	6682
5/16/2014	2014	5	16	335	32	80	56	24	6706
5/17/2014	2014	5	17	336	38	87	62.5	30.5	6736.5
5/18/2014	2014	5	18	337	49	89	69	37	6773.5
5/19/2014	2014	5	19	338	37	84	60.5	28.5	6802
5/20/2014	2014	5	20	339	34	84	59	27	6829
5/22/2014	2014	5	22	340	29	83	56	24	6853
5/23/2014	2014	5	23	341	43	80	61.5	29.5	6882.5
5/24/2014	2014	5	24	342	43	80	61.5	29.5	6912
5/25/2014	2014	5	25	343	33	60	46.5	14.5	6926.5
5/26/2014	2014	5	26	344	33	63	48	16	6942.5
5/27/2014	2014	5	27	345	39	79	59	27	6969.5
5/28/2014	2014	5	28	346	39	90	64.5	32.5	7002
5/29/2014	2014	5	29	347	60	91	75.5	43.5	7045.5
5/30/2014	2014	5	30	348	53	86	69.5	37.5	7083
5/31/2014	2014	5	31	349	47	90	68.5	36.5	7119.5
6/2/2014	2014	6	2	1	47	91	69	37	37
6/3/2014	2014	6	3	2	51	97	74	42	79
6/4/2014	2014	6	4	3	49	97	73	41	120
6/5/2014	2014	6	5	4	40	94	67	35	155
6/6/2014	2014	6	6	5	40	94	67	35	190
6/7/2014	2014	6	7	6	40	97	68.5	36.5	226.5
6/8/2014	2014	6	8	7	51	91	71	39	265.5
6/9/2014	2014	6	9	8	47	92	69.5	37.5	303
6/10/2014	2014	6	10	9	39	89	64	32	335
6/11/2014	2014	6	11	10	51	93	72	40	375
6/12/2014	2014	6	12	11	38	90	64	32	407
6/13/2014	2014	6	13	12	55	92	73.5	41.5	448.5
6/14/2014	2014	6	14	13	50	90	70	38	486.5
6/15/2014	2014	6	15	14	40	88	64	32	518.5
6/16/2014	2014	6	16	15	47	87	67	35	553.5
6/17/2014	2014	6	17	16	50	88	69	37	590.5
6/18/2014	2014	6	18	17	50	87	68.5	36.5	627
6/19/2014	2014	6	19	18	45	84	64.5	32.5	659.5
6/20/2014	2014	6	20	19	45	92	68.5	36.5	696
6/21/2014	2014	6	21	20	46	98	72	40	736
6/22/2014	2014	6	22	21	59	95	77	45	781
6/23/2014	2014	6	23	22	51	96	73.5	41.5	822.5
6/24/2014	2014	6	24	23	47	96	71.5	39.5	862
6/25/2014	2014	6	25	24	46	95	70.5	38.5	900.5
6/26/2014	2014	6	26	25	47	94	70.5	38.5	939
6/27/2014	2014	6	27	26	61	94	77.5	45.5	984.5
6/28/2014	2014	6	28	27	58	92	75	43	1027.5
6/29/2014	2014	6	29	28	53	96	74.5	42.5	1070
6/30/2014	2014	6	30	29	55	99	77	45	1115
7/1/2014	2014	7	1	30	57	101	79	47	1162
7/2/2014	2014	7	2	31	60	99	79.5	47.5	1209.5
7/3/2014	2014	7	3	32	58	89	73.5	41.5	1251
7/4/2014	2014	7	4	33	55	95	75	43	1294
7/5/2014	2014	7	5	34	56	92	74	42	1336
7/6/2014	2014	7	6	35	53	90	71.5	39.5	1375.5
7/7/2014	2014	7	7	36	53	92	72.5	40.5	1416
7/8/2014	2014	7	8	37	53	94	73.5	41.5	1457.5
7/9/2014	2014	7	9	38	56	91	73.5	41.5	1499
7/10/2014	2014	7	10	39	55	85	70	38	1537
7/11/2014	2014	7	11	40	60	92	76	44	1581
7/12/2014	2014	7	12	41	55	94	74.5	42.5	1623.5
7/13/2014	2014	7	13	42	59	92	75.5	43.5	1667
7/14/2014	2014	7	14	43	59	92	75.5	43.5	1710.5
7/15/2014	2014	7	15	44	57	95	76	44	1754.5
7/16/2014	2014	7	16	45	56	88	72	40	1794.5
7/17/2014	2014	7	17	46	55	88	71.5	39.5	1834
7/18/2014	2014	7	18	47	56	92	74	42	1876
7/19/2014	2014	7	19	48	60	97	78.5	46.5	1922.5
7/20/2014	2014	7	20	49	66	92	79	47	1969.5
7/21/2014	2014	7	21	50	57	95	76	44	2013.5
7/22/2014	2014	7	22	51	62	93	77.5	45.5	2059
7/23/2014	2014	7	23	52	62	93	77.5	45.5	2104.5

7/24/2014	2014	7	24	53	56	98	77	45	2149.5
7/25/2014	2014	7	25	54	57	92	74.5	42.5	2192
7/26/2014	2014	7	26	55	60	96	78	46	2238
7/27/2014	2014	7	27	56	58	101	79.5	47.5	2285.5
7/28/2014	2014	7	28	57	59	95	77	45	2330.5
7/29/2014	2014	7	29	58	57	77	67	35	2365.5
7/30/2014	2014	7	30	59	57	89	73	41	2406.5
7/31/2014	2014	7	31	60	57	89	73	41	2447.5
8/1/2014	2014	8	1	61	55	82	68.5	36.5	2484
8/2/2014	2014	8	2	62	55	78	66.5	34.5	2518.5
8/3/2014	2014	8	3	63	53	78	65.5	33.5	2552
8/4/2014	2014	8	4	64	54	78	66	34	2586
8/5/2014	2014	8	5	65	51	84	67.5	35.5	2621.5
8/6/2014	2014	8	6	66	51	84	67.5	35.5	2657
8/7/2014	2014	8	7	67	53	93	73	41	2698
8/8/2014	2014	8	8	68	47	81	64	32	2730
8/9/2014	2014	8	9	69	47	81	64	32	2762
8/10/2014	2014	8	10	70	47	81	64	32	2794
8/11/2014	2014	8	11	71	50	94	72	40	2834
8/12/2014	2014	8	12	72	50	94	72	40	2874
8/13/2014	2014	8	13	73	57	87	72	40	2914
8/14/2014	2014	8	14	74	55	75	65	33	2947
8/15/2014	2014	8	15	75	57	80	68.5	36.5	2983.5
8/16/2014	2014	8	16	76	57	86	71.5	39.5	3023
8/17/2014	2014	8	17	77	52	94	73	41	3064
8/18/2014	2014	8	18	78	57	93	75	43	3107
8/19/2014	2014	8	19	79	52	87	69.5	37.5	3144.5
8/20/2014	2014	8	20	80	51	81	66	34	3178.5
8/21/2014	2014	8	21	81	50	82	66	34	3212.5
8/22/2014	2014	8	22	82	56	82	69	37	3249.5
8/23/2014	2014	8	23	83	48	73	60.5	28.5	3278
8/24/2014	2014	8	24	84	48	83	65.5	33.5	3311.5
8/25/2014	2014	8	25	85	50	85	67.5	35.5	3347
8/26/2014	2014	8	26	86	55	87	71	39	3386
8/27/2014	2014	8	27	87	48	76	62	30	3416
8/28/2014	2014	8	28	88	44	81	62.5	30.5	3446.5
8/29/2014	2014	8	29	89	45	82	63.5	31.5	3478
8/31/2014	2014	8	31	90	51	91	71	39	3517
9/1/2014	2014	9	1	91	53	89	71	39	3556
9/2/2014	2014	9	2	92	45	93	69	37	3593
9/4/2014	2014	9	4	93	47	92	69.5	37.5	3630.5
9/5/2014	2014	9	5	94	51	90	70.5	38.5	3669
9/6/2014	2014	9	6	95	56	88	72	40	3709
9/7/2014	2014	9	7	96	50	84	67	35	3744
9/8/2014	2014	9	8	97	49	84	66.5	34.5	3778.5
9/9/2014	2014	9	9	98	49	83	66	34	3812.5
9/10/2014	2014	9	10	99	51	81	66	34	3846.5
9/11/2014	2014	9	11	100	43	85	64	32	3878.5
9/12/2014	2014	9	12	101	43	86	64.5	32.5	3911
9/13/2014	2014	9	13	102	47	83	65	33	3944
9/14/2014	2014	9	14	103	47	83	65	33	3977
9/15/2014	2014	9	15	104	47	83	65	33	4010
9/16/2014	2014	9	16	105	53	86	69.5	37.5	4047.5
9/17/2014	2014	9	17	106	56	77	66.5	34.5	4082
9/18/2014	2014	9	18	107	45	69	57	25	4107
9/19/2014	2014	9	19	108	45	69	57	25	4132
9/20/2014	2014	9	20	109	46	91	68.5	36.5	4168.5
9/21/2014	2014	9	21	110	54	88	71	39	4207.5
9/22/2014	2014	9	22	111	53	80	66.5	34.5	4242
9/23/2014	2014	9	23	112	51	82	66.5	34.5	4276.5
9/24/2014	2014	9	24	113	43	85	64	32	4308.5
9/25/2014	2014	9	25	114	47	88	67.5	35.5	4344
9/26/2014	2014	9	26	115	51	88	69.5	37.5	4381.5
9/27/2014	2014	9	27	116	50	84	67	35	4416.5
9/28/2014	2014	9	28	117	53	78	65.5	33.5	4450
9/29/2014	2014	9	29	118	42	78	60	28	4478
9/30/2014	2014	9	30	119	33	73	53	21	4499
10/1/2014	2014	10	1	120	33	78	55.5	23.5	4522.5
10/2/2014	2014	10	2	121	35	79	57	25	4547.5
10/3/2014	2014	10	3	122	29	73	51	19	4566.5
10/4/2014	2014	10	4	123	30	81	55.5	23.5	4590
10/5/2014	2014	10	5	124	32	81	56.5	24.5	4614.5
10/6/2014	2014	10	6	125	34	80	57	25	4639.5
10/7/2014	2014	10	7	126	34	84	59	27	4666.5
10/8/2014	2014	10	8	127	36	84	60	28	4694.5
10/9/2014	2014	10	9	128	50	76	63	31	4725.5
10/10/2014	2014	10	10	129	45	68	56.5	24.5	4750
10/11/2014	2014	10	11	130	44	73	58.5	26.5	4776.5
10/12/2014	2014	10	12	131	39	70	54.5	22.5	4799
10/13/2014	2014	10	13	132	33	73	53	21	4820
10/14/2014	2014	10	14	133	27	98	62.5	30.5	4850.5
10/15/2014	2014	10	15	134	28	77	52.5	20.5	4871
10/16/2014	2014	10	16	135	30	78	54	22	4893
10/17/2014	2014	10	17	136	37	83	60	28	4921
10/18/2014	2014	10	18	137	38	78	58	26	4947
10/19/2014	2014	10	19	138	47	72	59.5	27.5	4974.5
10/20/2014	2014	10	20	139	34	69	51.5	19.5	4994
10/21/2014	2014	10	21	140	35	71	53	21	5015
10/22/2014	2014	10	22	141	35	69	52	20	5035
10/23/2014	2014	10	23	142	32	75	53.5	21.5	5056.5
10/24/2014	2014	10	24	143	30	70	50	18	5074.5
10/25/2014	2014	10	25	144	31	71	51	19	5093.5
10/26/2014	2014	10	26	145	32	75	53.5	21.5	5115

10/27/2014	2014	10	27	146	33	77	55	23	5138
10/28/2014	2014	10	28	147	30	75	52.5	20.5	5158.5
10/29/2014	2014	10	29	148	28	77	52.5	20.5	5179
10/30/2014	2014	10	30	149	25	78	51.5	19.5	5198.5
10/31/2014	2014	10	31	150	25	74	49.5	17.5	5216
11/1/2014	2014	11	1	151	25	66	45.5	13.5	5229.5
11/2/2014	2014	11	2	152	39	64	51.5	19.5	5249
11/3/2014	2014	11	3	153	23	60	41.5	9.5	5258.5
11/4/2014	2014	11	4	154	23	62	42.5	10.5	5269
11/5/2014	2014	11	5	155	23	62	42.5	10.5	5279.5
11/6/2014	2014	11	6	156	19	66	42.5	10.5	5290
11/7/2014	2014	11	7	157	18	67	42.5	10.5	5300.5
11/8/2014	2014	11	8	158	18	74	46	14	5314.5
11/9/2014	2014	11	9	159	20	66	43	11	5325.5
11/10/2014	2014	11	10	160	30	75	52.5	20.5	5346
11/11/2014	2014	11	11	161	30	75	52.5	20.5	5366.5
11/12/2014	2014	11	12	162	37	64	50.5	18.5	5385
11/13/2014	2014	11	13	163	20	65	42.5	10.5	5395.5
11/14/2014	2014	11	14	164	21	48	34.5	2.5	5398
11/15/2014	2014	11	15	165	21	48	34.5	2.5	5400.5
11/16/2014	2014	11	16	166	27	64	45.5	13.5	5414
11/17/2014	2014	11	17	167	4	40	22	-10	5404
11/18/2014	2014	11	18	168	5	48	26.5	-5.5	5398.5
11/19/2014	2014	11	19	169	7	53	30	-2	5396.5
11/20/2014	2014	11	20	170	14	62	38	6	5402.5
11/21/2014	2014	11	21	171	10	53	31.5	-0.5	5402
11/22/2014	2014	11	22	172	12	60	36	4	5406
11/23/2014	2014	11	23	173	12	48	30	-2	5404
11/24/2014	2014	11	24	174	8	48	28	-4	5400
11/25/2014	2014	11	25	175	5	48	26.5	-5.5	5394.5
11/26/2014	2014	11	26	176	5	56	30.5	-1.5	5393
11/27/2014	2014	11	27	177	5	56	30.5	-1.5	5391.5
11/28/2014	2014	11	28	178	13	71	42	10	5401.5
11/29/2014	2014	11	29	179	14	76	45	13	5414.5
11/30/2014	2014	11	30	180	20	69	44.5	12.5	5427
12/1/2014	2014	12	1	181	14	62	38	6	5433
12/2/2014	2014	12	2	182	17	60	38.5	6.5	5439.5
12/3/2014	2014	12	3	183	17	50	33.5	1.5	5441
12/4/2014	2014	12	4	184	17	62	39.5	7.5	5448.5
12/5/2014	2014	12	5	185	31	47	39	7	5455.5
12/6/2014	2014	12	6	186	30	58	44	12	5467.5
12/7/2014	2014	12	7	187	28	51	39.5	7.5	5475
12/8/2014	2014	12	8	188	23	59	41	9	5484
12/9/2014	2014	12	9	189	25	55	40	8	5492
12/11/2014	2014	12	11	190	24	65	44.5	12.5	5504.5
12/12/2014	2014	12	12	191	24	64	44	12	5516.5
12/13/2014	2014	12	13	192	24	64	44	12	5528.5
12/15/2014	2014	12	15	193	15	45	30	-2	5526.5
12/16/2014	2014	12	16	194	15	46	30.5	-1.5	5525
12/17/2014	2014	12	17	195	28	46	37	5	5530
12/18/2014	2014	12	18	196	22	43	32.5	0.5	5530.5
12/19/2014	2014	12	19	197	20	41	30.5	-1.5	5529
12/20/2014	2014	12	20	198	6	43	24.5	-7.5	5521.5
12/21/2014	2014	12	21	199	6	52	29	-3	5518.5
12/22/2014	2014	12	22	200	28	57	42.5	10.5	5529
12/23/2014	2014	12	23	201	25	60	42.5	10.5	5539.5
12/24/2014	2014	12	24	202	8	41	24.5	-7.5	5532
12/25/2014	2014	12	25	203	8	50	29	-3	5529
12/26/2014	2014	12	26	204	5	47	26	-6	5523
12/27/2014	2014	12	27	205	6	35	20.5	-11.5	5511.5
12/28/2014	2014	12	28	206	3	37	20	-12	5499.5
12/29/2014	2014	12	29	207	3	43	23	-9	5490.5
12/30/2014	2014	12	30	208	4	47	25.5	-6.5	5484
12/31/2014	2014	12	31	209	10	33	21.5	-10.5	5473.5
1/1/2015	2015	1	1	210	10	34	22	-10	5463.5
1/2/2015	2015	1	2	211	8	34	21	-11	5452.5
1/3/2015	2015	1	3	212	4	34	19	-13	5439.5
1/4/2015	2015	1	4	213	6	48	27	-5	5434.5
1/5/2015	2015	1	5	214	8	40	24	-8	5426.5
1/6/2015	2015	1	6	215	8	62	35	3	5429.5
1/7/2015	2015	1	7	216	20	61	40.5	8.5	5438
1/8/2015	2015	1	8	217	21	56	38.5	6.5	5444.5
1/9/2015	2015	1	9	218	22	59	40.5	8.5	5453
1/10/2015	2015	1	10	219	22	59	40.5	8.5	5461.5
1/11/2015	2015	1	11	220	22	58	40	8	5469.5
1/12/2015	2015	1	12	221	27	55	41	9	5478.5
1/13/2015	2015	1	13	222	29	39	34	2	5480.5
1/14/2015	2015	1	14	223	28	39	33.5	1.5	5482
1/15/2015	2015	1	15	224	17	39	28	-4	5478
1/16/2015	2015	1	16	225	12	50	31	-1	5477
1/17/2015	2015	1	17	226	0	53	26.5	-5.5	5471.5
1/18/2015	2015	1	18	227	17	51	34	2	5473.5
1/19/2015	2015	1	19	228	19	60	39.5	7.5	5481
1/20/2015	2015	1	20	229	19	63	41	9	5490
1/21/2015	2015	1	21	230	25	56	40.5	8.5	5498.5
1/22/2015	2015	1	22	231	19	56	37.5	5.5	5504
1/23/2015	2015	1	23	232	0	31	15.5	-16.5	5487.5
1/24/2015	2015	1	24	233	10	39	24.5	-7.5	5480
1/25/2015	2015	1	25	234	10	52	31	-1	5479
1/26/2015	2015	1	26	235	21	58	39.5	7.5	5486.5
1/27/2015	2015	1	27	236	21	59	40	8	5494.5
1/28/2015	2015	1	28	237	21	65	43	11	5505.5
1/29/2015	2015	1	29	238	21	63	42	10	5515.5

1/30/2015	2015	1	30	239	29	50	39.5	7.5	5523
1/31/2015	2015	1	31	240	29	33	31	-1	5522
2/1/2015	2015	2	1	241	25	49	37	5	5527
2/2/2015	2015	2	2	242	19	55	37	5	5532
2/3/2015	2015	2	3	243	21	61	41	9	5541
2/4/2015	2015	2	4	244	23	62	42.5	10.5	5551.5
2/5/2015	2015	2	5	245	22	66	44	12	5563.5
2/6/2015	2015	2	6	246	19	71	45	13	5576.5
2/7/2015	2015	2	7	247	19	73	46	14	5590.5
2/8/2015	2015	2	8	248	23	72	47.5	15.5	5606
2/9/2015	2015	2	9	249	23	71	47	15	5621
2/10/2015	2015	2	10	250	19	74	46.5	14.5	5635.5
2/11/2015	2015	2	11	251	22	72	47	15	5650.5
2/12/2015	2015	2	12	252	19	72	45.5	13.5	5664
2/13/2015	2015	2	13	253	35	64	49.5	17.5	5681.5
2/14/2015	2015	2	14	254	19	64	41.5	9.5	5691
2/15/2015	2015	2	15	255	19	73	46	14	5705
2/16/2015	2015	2	16	256	18	68	43	11	5716
2/17/2015	2015	2	17	257	15	57	36	4	5720
2/18/2015	2015	2	18	258	12	56	34	2	5722
2/19/2015	2015	2	19	259	10	68	39	7	5729
2/20/2015	2015	2	20	260	19	73	46	14	5743
2/21/2015	2015	2	21	261	25	65	45	13	5756
2/22/2015	2015	2	22	262	25	64	44.5	12.5	5768.5
2/23/2015	2015	2	23	263	17	51	34	2	5770.5
2/24/2015	2015	2	24	264	14	32	23	-9	5761.5
2/26/2015	2015	2	26	265	15	55	35	3	5764.5
2/27/2015	2015	2	27	266	21	49	35	3	5767.5
2/28/2015	2015	2	28	267	22	37	29.5	-2.5	5765
3/1/2015	2015	3	1	268	22	39	30.5	-1.5	5763.5
3/2/2015	2015	3	2	269	33	58	45.5	13.5	5777
3/3/2015	2015	3	3	270	23	62	42.5	10.5	5787.5
3/4/2015	2015	3	4	271	20	52	36	4	5791.5
3/5/2015	2015	3	5	272	13	52	32.5	0.5	5792
3/6/2015	2015	3	6	273	13	53	33	1	5793
3/7/2015	2015	3	7	274	13	63	38	6	5799
3/8/2015	2015	3	8	275	24	54	39	7	5806
3/9/2015	2015	3	9	276	23	70	46.5	14.5	5820.5
3/10/2015	2015	3	10	277	17	58	37.5	5.5	5826
3/11/2015	2015	3	11	278	18	68	43	11	5837
3/12/2015	2015	3	12	279	23	67	45	13	5850
3/13/2015	2015	3	13	280	35	64	49.5	17.5	5867.5
3/14/2015	2015	3	14	281	32	66	49	17	5884.5
3/15/2015	2015	3	15	282	23	63	43	11	5895.5
3/16/2015	2015	3	16	283	22	68	45	13	5908.5
3/17/2015	2015	3	17	284	25	73	49	17	5925.5
3/18/2015	2015	3	18	285	25	67	46	14	5939.5
3/19/2015	2015	3	19	286	33	61	47	15	5954.5
3/20/2015	2015	3	20	287	35	58	46.5	14.5	5969
3/21/2015	2015	3	21	288	29	52	40.5	8.5	5977.5
3/22/2015	2015	3	22	289	25	69	47	15	5992.5
3/23/2015	2015	3	23	290	28	73	50.5	18.5	6011
3/25/2015	2015	3	25	291	32	72	52	20	6031
3/26/2015	2015	3	26	292	24	70	47	15	6046
3/27/2015	2015	3	27	293	24	71	47.5	15.5	6061.5
3/28/2015	2015	3	28	294	24	78	51	19	6080.5
3/29/2015	2015	3	29	295	32	82	57	25	6105.5
3/30/2015	2015	3	30	296	32	82	57	25	6130.5
3/31/2015	2015	3	31	297	30	79	54.5	22.5	6153
4/1/2015	2015	4	1	298	30	79	54.5	22.5	6175.5
4/2/2015	2015	4	2	299	39	75	57	25	6200.5
4/3/2015	2015	4	3	300	26	71	48.5	16.5	6217
4/4/2015	2015	4	4	301	31	68	49.5	17.5	6234.5
4/5/2015	2015	4	5	302	35	66	50.5	18.5	6253
4/6/2015	2015	4	6	303	26	74	50	18	6271
4/7/2015	2015	4	7	304	30	72	51	19	6290
4/8/2015	2015	4	8	305	38	73	55.5	23.5	6313.5
4/9/2015	2015	4	9	306	19	70	44.5	12.5	6326
4/10/2015	2015	4	10	307	23	66	44.5	12.5	6338.5
4/11/2015	2015	4	11	308	28	72	50	18	6356.5
4/12/2015	2015	4	12	309	39	72	55.5	23.5	6380
4/13/2015	2015	4	13	310	38	75	56.5	24.5	6404.5
4/14/2015	2015	4	14	311	33	69	51	19	6423.5
4/15/2015	2015	4	15	312	40	75	57.5	25.5	6449
4/16/2015	2015	4	16	313	19	66	42.5	10.5	6459.5
4/17/2015	2015	4	17	314	18	55	36.5	4.5	6464
4/18/2015	2015	4	18	315	27	51	39	7	6471
4/19/2015	2015	4	19	316	30	67	48.5	16.5	6487.5
4/20/2015	2015	4	20	317	24	70	47	15	6502.5
4/21/2015	2015	4	21	318	27	74	50.5	18.5	6521
4/22/2015	2015	4	22	319	33	71	52	20	6541
4/23/2015	2015	4	23	320	27	74	50.5	18.5	6559.5
4/24/2015	2015	4	24	321	38	72	55	23	6582.5
4/25/2015	2015	4	25	322	39	64	51.5	19.5	6602
4/26/2015	2015	4	26	323	40	67	53.5	21.5	6623.5
4/27/2015	2015	4	27	324	39	52	45.5	13.5	6637
4/28/2015	2015	4	28	325	40	67	53.5	21.5	6658.5
4/29/2015	2015	4	29	326	28	63	45.5	13.5	6672
4/30/2015	2015	4	30	327	34	78	56	24	6696
5/1/2015	2015	5	1	328	38	83	60.5	28.5	6724.5
5/2/2015	2015	5	2	329	38	84	61	29	6753.5
5/3/2015	2015	5	3	330	37	93	65	33	6786.5
5/4/2015	2015	5	4	331	38	77	57.5	25.5	6812

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5/6/2015	2015	5	6	333	45	65	55	23	6856.5
5/7/2015	2015	5	7	334	32	70	51	19	6875.5
5/8/2015	2015	5	8	335	39	74	56.5	24.5	6900
5/9/2015	2015	5	9	336	36	68	52	20	6920
5/10/2015	2015	5	10	337	32	68	50	18	6938
5/11/2015	2015	5	11	338	29	67	48	16	6954
5/12/2015	2015	5	12	339	45	74	59.5	27.5	6981.5
5/13/2015	2015	5	13	340	45	68	56.5	24.5	7006
5/14/2015	2015	5	14	341	40	75	57.5	25.5	7031.5
5/15/2015	2015	5	15	342	42	74	58	26	7057.5
5/17/2015	2015	5	17	343	26	59	42.5	10.5	7068
5/18/2015	2015	5	18	344	34	74	54	22	7090
5/19/2015	2015	5	19	345	42	74	58	26	7116
5/20/2015	2015	5	20	346	32	74	53	21	7137
5/21/2015	2015	5	21	347	48	79	63.5	31.5	7168.5
5/22/2015	2015	5	22	348	43	67	55	23	7191.5
5/23/2015	2015	5	23	349	38	71	54.5	22.5	7214
5/24/2015	2015	5	24	350	37	68	52.5	20.5	7234.5
5/25/2015	2015	5	25	351	34	68	51	19	7253.5
5/26/2015	2015	5	26	352	34	71	52.5	20.5	7274
5/27/2015	2015	5	27	353	43	77	60	28	7302
5/28/2015	2015	5	28	354	37	79	58	26	7328
5/29/2015	2015	5	29	355	43	85	64	32	7360
5/30/2015	2015	5	30	356	42	81	61.5	29.5	7389.5
5/31/2015	2015	5	31	357	40	86	63	31	7420.5
6/1/2015	2015	6	1	1	53	91	72	40	40
6/2/2015	2015	6	2	2	40	88	64	32	72
6/3/2015	2015	6	3	3	42	91	66.5	34.5	106.5
6/4/2015	2015	6	4	4	38	90	64	32	138.5
6/5/2015	2015	6	5	5	55	89	72	40	178.5
6/6/2015	2015	6	6	6	51	80	65.5	33.5	212
6/7/2015	2015	6	7	7	46	85	65.5	33.5	245.5
6/8/2015	2015	6	8	8	45	88	66.5	34.5	280
6/9/2015	2015	6	9	9	60	89	74.5	42.5	322.5
6/10/2015	2015	6	10	10	57	84	70.5	38.5	361
6/11/2015	2015	6	11	11	48	89	68.5	36.5	397.5
6/12/2015	2015	6	12	12	43	85	64	32	429.5
6/13/2015	2015	6	13	13	49	84	66.5	34.5	464
6/14/2015	2015	6	14	14	43	90	66.5	34.5	498.5
6/15/2015	2015	6	15	15	48	86	67	35	533.5
6/16/2015	2015	6	16	16	58	90	74	42	575.5
6/17/2015	2015	6	17	17	54	85	69.5	37.5	613
6/18/2015	2015	6	18	18	47	98	72.5	40.5	653.5
6/19/2015	2015	6	19	19	63	98	80.5	48.5	702
6/20/2015	2015	6	20	20	47	99	73	41	743
6/21/2015	2015	6	21	21	48	100	74	42	785
6/22/2015	2015	6	22	22	52	103	77.5	45.5	830.5
6/23/2015	2015	6	23	23	61	102	81.5	49.5	880
6/24/2015	2015	6	24	24	61	96	78.5	46.5	926.5
6/25/2015	2015	6	25	25	58	92	75	43	969.5
6/26/2015	2015	6	26	26	57	96	76.5	44.5	1014
6/27/2015	2015	6	27	27	63	96	79.5	47.5	1061.5
6/28/2015	2015	6	28	28	50	89	69.5	37.5	1099
6/29/2015	2015	6	29	29	52	90	71	39	1138
6/30/2015	2015	6	30	30	62	96	79	47	1185
7/1/2015	2015	7	1	31	63	95	79	47	1232
7/2/2015	2015	7	2	32	63	98	80.5	48.5	1280.5
7/3/2015	2015	7	3	33	60	97	78.5	46.5	1327
7/4/2015	2015	7	4	34	58	87	72.5	40.5	1367.5
7/5/2015	2015	7	5	35	58	86	72	40	1407.5
7/6/2015	2015	7	6	36	57	88	72.5	40.5	1448
7/7/2015	2015	7	7	37	56	87	71.5	39.5	1487.5
7/8/2015	2015	7	8	38	52	87	69.5	37.5	1525
7/9/2015	2015	7	9	39	54	86	70	38	1563
7/10/2015	2015	7	10	40	50	66	58	26	1589
7/11/2015	2015	7	11	41	53	79	66	34	1623
7/12/2015	2015	7	12	42	53	80	66.5	34.5	1657.5
7/13/2015	2015	7	13	43	55	87	71	39	1696.5
7/14/2015	2015	7	14	44	55	84	69.5	37.5	1734
7/15/2015	2015	7	15	45	51	83	67	35	1769
7/16/2015	2015	7	16	46	50	82	66	34	1803
7/17/2015	2015	7	17	47	51	86	68.5	36.5	1839.5
7/18/2015	2015	7	18	48	55	80	67.5	35.5	1875
7/19/2015	2015	7	19	49	56	86	71	39	1914
7/20/2015	2015	7	20	50	53	82	67.5	35.5	1949.5
7/21/2015	2015	7	21	51	54	88	71	39	1988.5
7/22/2015	2015	7	22	52	52	88	70	38	2026.5
7/23/2015	2015	7	23	53	58	91	74.5	42.5	2069
7/24/2015	2015	7	24	54	61	89	75	43	2112
7/25/2015	2015	7	25	55	52	89	70.5	38.5	2150.5
7/26/2015	2015	7	26	56	57	92	74.5	42.5	2193
7/27/2015	2015	7	27	57	56	90	73	41	2234
7/28/2015	2015	7	28	58	58	90	74	42	2276
7/29/2015	2015	7	29	59	62	91	76.5	44.5	2320.5
7/30/2015	2015	7	30	60	58	82	70	38	2358.5
7/31/2015	2015	7	31	61	57	76	66.5	34.5	2393
8/1/2015	2015	8	1	62	58	82	70	38	2431
8/2/2015	2015	8	2	63	58	84	71	39	2470
8/3/2015	2015	8	3	64	53	83	68	36	2506
8/4/2015	2015	8	4	65	53	88	70.5	38.5	2544.5
8/5/2015	2015	8	5	66	50	93	71.5	39.5	2584
8/6/2015	2015	8	6	67	49	94	71.5	39.5	2623.5

8/7/2015	2015	8	7	68	61	94	77.5	45.5	2669
8/8/2015	2015	8	8	69	58	87	72.5	40.5	2709.5
8/9/2015	2015	8	9	70	49	80	64.5	32.5	2742
8/10/2015	2015	8	10	71	54	88	71	39	2781
8/11/2015	2015	8	11	72	59	87	73	41	2822
8/12/2015	2015	8	12	73	58	85	71.5	39.5	2861.5
8/13/2015	2015	8	13	74	53	89	71	39	2900.5
8/14/2015	2015	8	14	75	54	94	74	42	2942.5
8/15/2015	2015	8	15	76	56	96	76	44	2986.5
8/16/2015	2015	8	16	77	54	93	73.5	41.5	3028
8/17/2015	2015	8	17	78	54	96	75	43	3071
8/18/2015	2015	8	18	79	61	97	79	47	3118
8/19/2015	2015	8	19	80	47	95	71	39	3157
8/20/2015	2015	8	20	81	49	93	71	39	3196
8/21/2015	2015	8	21	82	55	92	73.5	41.5	3237.5
8/22/2015	2015	8	22	83	51	89	70	38	3275.5
8/23/2015	2015	8	23	84	55	91	73	41	3316.5
8/24/2015	2015	8	24	85	56	86	71	39	3355.5
8/25/2015	2015	8	25	86	55	88	71.5	39.5	3395
8/26/2015	2015	8	26	87	58	86	72	40	3435
8/27/2015	2015	8	27	88	55	80	67.5	35.5	3470.5
8/28/2015	2015	8	28	89	51	84	67.5	35.5	3506
8/29/2015	2015	8	29	90	55	88	71.5	39.5	3545.5
8/30/2015	2015	8	30	91	50	86	68	36	3581.5
8/31/2015	2015	8	31	92	54	92	73	41	3622.5
9/1/2015	2015	9	1	93	58	90	74	42	3664.5
9/2/2015	2015	9	2	94	52	85	68.5	36.5	3701
9/3/2015	2015	9	3	95	51	86	68.5	36.5	3737.5
9/4/2015	2015	9	4	96	55	85	70	38	3775.5
9/5/2015	2015	9	5	97	55	74	64.5	32.5	3808
9/6/2015	2015	9	6	98	46	74	60	28	3836
9/7/2015	2015	9	7	99	52	86	69	37	3873
9/8/2015	2015	9	8	100	51	88	69.5	37.5	3910.5
9/9/2015	2015	9	9	101	45	88	66.5	34.5	3945
9/10/2015	2015	9	10	102	46	87	66.5	34.5	3979.5
9/11/2015	2015	9	11	103	38	93	65.5	33.5	4013
9/12/2015	2015	9	12	104	47	88	67.5	35.5	4048.5
9/13/2015	2015	9	13	105	45	86	65.5	33.5	4082
9/14/2015	2015	9	14	106	51	90	70.5	38.5	4120.5
9/15/2015	2015	9	15	107	50	84	67	35	4155.5
9/16/2015	2015	9	16	108	47	83	65	33	4188.5
9/17/2015	2015	9	17	109	43	84	63.5	31.5	4220
9/18/2015	2015	9	18	110	46	86	66	34	4254
9/19/2015	2015	9	19	111	48	89	68.5	36.5	4290.5
9/20/2015	2015	9	20	112	42	81	61.5	29.5	4320
9/21/2015	2015	9	21	113	40	88	64	32	4352
9/22/2015	2015	9	22	114	44	84	64	32	4384
9/23/2015	2015	9	23	115	47	74	60.5	28.5	4412.5
9/24/2015	2015	9	24	116	45	83	64	32	4444.5
9/25/2015	2015	9	25	117	44	83	63.5	31.5	4476
9/26/2015	2015	9	26	118	40	81	60.5	28.5	4504.5
9/27/2015	2015	9	27	119	42	88	65	33	4537.5
9/28/2015	2015	9	28	120	43	90	66.5	34.5	4572
9/29/2015	2015	9	29	121	43	89	66	34	4606
9/30/2015	2015	9	30	122	49	91	70	38	4644
11/1/2015	2015	11	1	123	26	64	45	13	4657
11/2/2015	2015	11	2	124	24	73	48.5	16.5	4673.5
11/3/2015	2015	11	3	125	30	76	53	21	4694.5
11/4/2015	2015	11	4	126	37	71	54	22	4716.5
11/5/2015	2015	11	5	127	28	54	41	9	4725.5
11/6/2015	2015	11	6	128	18	49	33.5	1.5	4727
11/7/2015	2015	11	7	129	19	57	38	6	4733
11/8/2015	2015	11	8	130	21	53	37	5	4738
11/9/2015	2015	11	9	131	21	62	41.5	9.5	4747.5
11/10/2015	2015	11	10	132	26	68	47	15	4762.5
11/11/2015	2015	11	11	133	28	64	46	14	4776.5
11/12/2015	2015	11	12	134	14	51	32.5	0.5	4777
11/13/2015	2015	11	13	135	12	58	35	3	4780
11/14/2015	2015	11	14	136	13	59	36	4	4784
11/15/2015	2015	11	15	137	20	63	41.5	9.5	4793.5
11/16/2015	2015	11	16	138	28	48	38	6	4799.5
11/17/2015	2015	11	17	139	27	37	32	0	4799.5
11/18/2015	2015	11	18	140	23	52	37.5	5.5	4805
11/19/2015	2015	11	19	141	14	58	36	4	4809
11/20/2015	2015	11	20	142	17	63	40	8	4817
11/21/2015	2015	11	21	143	18	64	41	9	4826
11/22/2015	2015	11	22	144	11	53	32	0	4826
11/23/2015	2015	11	23	145	13	61	37	5	4831
11/24/2015	2015	11	24	146	16	68	42	10	4841
11/25/2015	2015	11	25	147	23	66	44.5	12.5	4853.5
11/26/2015	2015	11	26	148	32	65	48.5	16.5	4870
11/27/2015	2015	11	27	149	27	61	44	12	4882
11/28/2015	2015	11	28	150	28	47	37.5	5.5	4887.5
11/29/2015	2015	11	29	151	18	43	30.5	-1.5	4886
11/30/2015	2015	11	30	152	14	54	34	2	4888
12/1/2015	2015	12	1	153	8	45	26.5	-5.5	4882.5
12/2/2015	2015	12	2	154	6	47	26.5	-5.5	4877
12/3/2015	2015	12	3	155	9	53	31	-1	4876
12/4/2015	2015	12	4	156	12	62	37	5	4881
12/5/2015	2015	12	5	157	14	59	36.5	4.5	4885.5
12/6/2015	2015	12	6	158	10	59	34.5	2.5	4888
12/7/2015	2015	12	7	159	14	63	38.5	6.5	4894.5
12/8/2015	2015	12	8	160	14	70	42	10	4904.5

12/9/2015	2015	12	9	161	19	65	42	10	4914.5
12/10/2015	2015	12	10	162	17	66	41.5	9.5	4924
12/11/2015	2015	12	11	163	23	70	46.5	14.5	4938.5
12/12/2015	2015	12	12	164	32	58	45	13	4951.5
12/13/2015	2015	12	13	165	18	41	29.5	-2.5	4949
12/14/2015	2015	12	14	166	15	49	32	0	4949
12/15/2015	2015	12	15	167	18	45	31.5	-0.5	4948.5
12/16/2015	2015	12	16	168	9	36	22.5	-9.5	4939
12/17/2015	2015	12	17	169	8	39	23.5	-8.5	4930.5
12/18/2015	2015	12	18	170	8	42	25	-7	4923.5
12/19/2015	2015	12	19	171	10	52	31	-1	4922.5
12/20/2015	2015	12	20	172	13	45	29	-3	4919.5
12/21/2015	2015	12	21	173	19	47	33	1	4920.5
12/22/2015	2015	12	22	174	23	53	38	6	4926.5
12/23/2015	2015	12	23	175	34	49	41.5	9.5	4936
12/24/2015	2015	12	24	176	24	48	36	4	4940
12/25/2015	2015	12	25	177	25	45	35	3	4943
12/26/2015	2015	12	26	178	17	46	31.5	-0.5	4942.5
12/27/2015	2015	12	27	179	15	24	19.5	-12.5	4930
12/28/2015	2015	12	28	180	6	31	18.5	-13.5	4916.5
12/29/2015	2015	12	29	181	8	44	26	-6	4910.5
12/30/2015	2015	12	30	182	10	44	27	-5	4905.5
12/31/2015	2015	12	31	183	5	44	24.5	-7.5	4898
1/1/2016	2016	1	1	184	7	45	26	-6	4892
1/2/2016	2016	1	2	185	19	29	24	-8	4884
1/3/2016	2016	1	3	186	10	41	25.5	-6.5	4877.5
1/4/2016	2016	1	4	187	11	48	29.5	-2.5	4875
1/5/2016	2016	1	5	188	23	38	30.5	-1.5	4873.5
1/6/2016	2016	1	6	189	25	45	35	3	4876.5
1/7/2016	2016	1	7	190	28	44	36	4	4880.5
1/8/2016	2016	1	8	191	18	43	30.5	-1.5	4879
1/9/2016	2016	1	9	192	9	36	22.5	-9.5	4869.5
1/10/2016	2016	1	10	193	6	40	23	-9	4860.5
1/11/2016	2016	1	11	194	8	36	22	-10	4850.5
1/12/2016	2016	1	12	195	5	38	21.5	-10.5	4840
1/13/2016	2016	1	13	196	7	51	29	-3	4837
1/14/2016	2016	1	14	197	9	53	31	-1	4836
1/15/2016	2016	1	15	198	10	55	32.5	0.5	4836.5
1/16/2016	2016	1	16	199	13	39	26	-6	4830.5
1/17/2016	2016	1	17	200	16	36	26	-6	4824.5
1/18/2016	2016	1	18	201	10	52	31	-1	4823.5
1/19/2016	2016	1	19	202	14	57	35.5	3.5	4827
1/20/2016	2016	1	20	203	23	54	38.5	6.5	4833.5
1/21/2016	2016	1	21	204	10	57	33.5	1.5	4835
1/22/2016	2016	1	22	205	14	46	30	-2	4833
1/23/2016	2016	1	23	206	14	56	35	3	4836
1/24/2016	2016	1	24	207	18	66	42	10	4846
1/25/2016	2016	1	25	208	15	51	33	1	4847
1/26/2016	2016	1	26	209	9	46	27.5	-4.5	4842.5
1/27/2016	2016	1	27	210	9	48	28.5	-3.5	4839
1/28/2016	2016	1	28	211	12	54	33	1	4840
1/29/2016	2016	1	29	212	12	60	36	4	4844
1/30/2016	2016	1	30	213	13	67	40	8	4852
1/31/2016	2016	1	31	214	32	63	47.5	15.5	4867.5
2/1/2016	2016	2	1	215	25	59	42	10	4877.5
2/2/2016	2016	2	2	216	15	36	25.5	-6.5	4871
2/3/2016	2016	2	3	217	4	34	19	-13	4858
2/4/2016	2016	2	4	218	0	36	18	-14	4844
2/5/2016	2016	2	5	219	4	44	24	-8	4836
2/6/2016	2016	2	6	220	5	43	24	-8	4828
2/7/2016	2016	2	7	221	10	54	32	0	4828
2/8/2016	2016	2	8	222	12	58	35	3	4831
2/9/2016	2016	2	9	223	13	61	37	5	4836
2/10/2016	2016	2	10	224	11	62	36.5	4.5	4840.5
2/11/2016	2016	2	11	225	11	71	41	9	4849.5
2/12/2016	2016	2	12	226	15	69	42	10	4859.5
2/13/2016	2016	2	13	227	15	74	44.5	12.5	4872
2/14/2016	2016	2	14	228	19	72	45.5	13.5	4885.5
2/15/2016	2016	2	15	229	22	64	43	11	4896.5
2/16/2016	2016	2	16	230	20	65	42.5	10.5	4907
2/17/2016	2016	2	17	231	14	69	41.5	9.5	4916.5
2/18/2016	2016	2	18	232	21	75	48	16	4932.5
2/19/2016	2016	2	19	233	27	71	49	17	4949.5
2/20/2016	2016	2	20	234	20	69	44.5	12.5	4962
2/21/2016	2016	2	21	235	19	73	46	14	4976
2/22/2016	2016	2	22	236	12	73	42.5	10.5	4986.5
2/23/2016	2016	2	23	237	17	73	45	13	4999.5
2/24/2016	2016	2	24	238	19	46	32.5	0.5	5000
2/25/2016	2016	2	25	239	12	59	35.5	3.5	5003.5
2/26/2016	2016	2	26	240	15	67	41	9	5012.5
2/27/2016	2016	2	27	241	11	70	40.5	8.5	5021
2/28/2016	2016	2	28	242	20	73	46.5	14.5	5035.5
2/29/2016	2016	2	29	243	20	73	46.5	14.5	5050
3/1/2016	2016	3	1	244	20	73	46.5	14.5	5064.5
3/2/2016	2016	3	2	245	22	72	47	15	5079.5
3/3/2016	2016	3	3	246	22	74	48	16	5095.5
3/4/2016	2016	3	4	247	24	76	50	18	5113.5
3/5/2016	2016	3	5	248	25	78	51.5	19.5	5133
3/6/2016	2016	3	6	249	37	68	52.5	20.5	5153.5
3/7/2016	2016	3	7	250	33	70	51.5	19.5	5173
3/8/2016	2016	3	8	251	24	70	47	15	5188
3/9/2016	2016	3	9	252	13	57	35	3	5191
3/10/2016	2016	3	10	253	18	65	41.5	9.5	5200.5

3/11/2016	2016	3	11	254	10	73	41.5	9.5	5210
3/12/2016	2016	3	12	255	20	76	48	16	5226
3/13/2016	2016	3	13	256	19	54	36.5	4.5	5230.5
3/14/2016	2016	3	14	257	37	69	53	21	5251.5
3/15/2016	2016	3	15	258	34	69	51.5	19.5	5271
3/16/2016	2016	3	16	259	21	63	42	10	5281
3/17/2016	2016	3	17	260	17	67	42	10	5291
3/18/2016	2016	3	18	261	20	72	46	14	5305
3/19/2016	2016	3	19	262	20	73	46.5	14.5	5319.5
3/20/2016	2016	3	20	263	27	71	49	17	5336.5
3/21/2016	2016	3	21	264	11	69	40	8	5344.5
3/22/2016	2016	3	22	265	22	78	50	18	5362.5
3/23/2016	2016	3	23	266	27	70	48.5	16.5	5379
3/24/2016	2016	3	24	267	16	55	35.5	3.5	5382.5
3/25/2016	2016	3	25	268	14	47	30.5	-1.5	5381
3/26/2016	2016	3	26	269	17	68	42.5	10.5	5391.5
3/27/2016	2016	3	27	270	10	60	35	3	5394.5
3/28/2016	2016	3	28	271	19	71	45	13	5407.5
3/29/2016	2016	3	29	272	25	65	45	13	5420.5
3/30/2016	2016	3	30	273	23	66	44.5	12.5	5433
3/31/2016	2016	3	31	274	13	55	34	2	5435
4/1/2016	2016	4	1	275	20	61	40.5	8.5	5443.5
4/2/2016	2016	4	2	276	15	61	38	6	5449.5
4/3/2016	2016	4	3	277	19	67	43	11	5460.5
4/4/2016	2016	4	4	278	24	74	49	17	5477.5
4/5/2016	2016	4	5	279	29	78	53.5	21.5	5499
4/6/2016	2016	4	6	280	25	76	50.5	18.5	5517.5
4/7/2016	2016	4	7	281	27	78	52.5	20.5	5538
4/8/2016	2016	4	8	282	35	68	51.5	19.5	5557.5
4/9/2016	2016	4	9	283	32	73	52.5	20.5	5578
4/10/2016	2016	4	10	284	34	69	51.5	19.5	5597.5
4/11/2016	2016	4	11	285	31	65	48	16	5613.5
4/12/2016	2016	4	12	286	35	67	51	19	5632.5
4/13/2016	2016	4	13	287	30	65	47.5	15.5	5648
4/14/2016	2016	4	14	288	35	73	54	22	5670
4/15/2016	2016	4	15	289	41	76	58.5	26.5	5696.5
4/16/2016	2016	4	16	290	33	67	50	18	5714.5
4/17/2016	2016	4	17	291	33	49	41	9	5723.5
4/18/2016	2016	4	18	292	36	52	44	12	5735.5
4/19/2016	2016	4	19	293	26	63	44.5	12.5	5748
4/20/2016	2016	4	20	294	28	68	48	16	5764
4/21/2016	2016	4	21	295	32	79	55.5	23.5	5787.5
4/22/2016	2016	4	22	296	44	80	62	30	5817.5
4/23/2016	2016	4	23	297	41	77	59	27	5844.5
4/24/2016	2016	4	24	298	31	79	55	23	5867.5
4/25/2016	2016	4	25	299	34	73	53.5	21.5	5889
4/26/2016	2016	4	26	300	35	73	54	22	5911
4/27/2016	2016	4	27	301	32	60	46	14	5925
4/28/2016	2016	4	28	302	40	70	55	23	5948
4/29/2016	2016	4	29	303	32	71	51.5	19.5	5967.5
4/30/2016	2016	4	30	304	35	61	48	16	5983.5
5/1/2016	2016	5	1	305	32	62	47	15	5998.5
5/2/2016	2016	5	2	306	33	43	38	6	6004.5
5/3/2016	2016	5	3	307	33	64	48.5	16.5	6021
5/4/2016	2016	5	4	308	34	72	53	21	6042
5/5/2016	2016	5	5	309	38	75	56.5	24.5	6066.5
5/6/2016	2016	5	6	310	52	81	66.5	34.5	6101
5/7/2016	2016	5	7	311	33	83	58	26	6127
5/8/2016	2016	5	8	312	35	67	51	19	6146
5/9/2016	2016	5	9	313	40	64	52	20	6166
5/10/2016	2016	5	10	314	41	72	56.5	24.5	6190.5
5/11/2016	2016	5	11	315	40	79	59.5	27.5	6218
5/12/2016	2016	5	12	316	35	79	57	25	6243
5/13/2016	2016	5	13	317	35	83	59	27	6270
5/14/2016	2016	5	14	318	35	83	59	27	6297
5/15/2016	2016	5	15	319	47	87	67	35	6332
5/16/2016	2016	5	16	320	40	82	61	29	6361
5/17/2016	2016	5	17	321	36	77	56.5	24.5	6385.5
5/18/2016	2016	5	18	322	33	65	49	17	6402.5
5/19/2016	2016	5	19	323	29	59	44	12	6414.5
5/20/2016	2016	5	20	324	34	76	55	23	6437.5
5/21/2016	2016	5	21	325	44	81	62.5	30.5	6468
5/22/2016	2016	5	22	326	39	82	60.5	28.5	6496.5
5/23/2016	2016	5	23	327	35	81	58	26	6522.5
5/24/2016	2016	5	24	328	35	81	58	26	6548.5
5/25/2016	2016	5	25	329	37	80	58.5	26.5	6575
5/26/2016	2016	5	26	330	34	79	56.5	24.5	6599.5
5/27/2016	2016	5	27	331	37	69	53	21	6620.5
5/28/2016	2016	5	28	332	33	77	55	23	6643.5
5/29/2016	2016	5	29	333	31	79	55	23	6666.5
5/30/2016	2016	5	30	334	32	84	58	26	6692.5
5/31/2016	2016	5	31	335	40	83	61.5	29.5	6722
6/2/2016	2016	6	2	1	45	79	62	30	30
6/3/2016	2016	6	3	2	46	82	64	32	62
6/4/2016	2016	6	4	3	41	94	67.5	35.5	97.5
6/5/2016	2016	6	5	4	41	94	67.5	35.5	133
6/6/2016	2016	6	6	5	43	91	67	35	168
6/8/2016	2016	6	8	6	45	96	70.5	38.5	206.5
6/9/2016	2016	6	9	7	58	96	77	45	251.5
6/10/2016	2016	6	10	8	49	97	73	41	292.5
6/11/2016	2016	6	11	9	52	100	76	44	336.5
6/12/2016	2016	6	12	10	51	85	68	36	372.5
6/13/2016	2016	6	13	11	49	94	71.5	39.5	412

6/14/2016	2016	6	14	12	42	90	66	34	446
6/15/2016	2016	6	15	13	41	89	65	33	479
6/16/2016	2016	6	16	14	42	92	67	35	514
6/17/2016	2016	6	17	15	40	91	65.5	33.5	547.5
6/18/2016	2016	6	18	16	40	96	68	36	583.5
6/19/2016	2016	6	19	17	49	97	73	41	624.5
6/20/2016	2016	6	20	18	49	103	76	44	668.5
6/21/2016	2016	6	21	19	49	96	72.5	40.5	709
6/22/2016	2016	6	22	20	59	100	79.5	47.5	756.5
6/23/2016	2016	6	23	21	57	100	78.5	46.5	803
6/24/2016	2016	6	24	22	53	98	75.5	43.5	846.5
6/25/2016	2016	6	25	23	56	92	74	42	888.5
6/26/2016	2016	6	26	24	61	92	76.5	44.5	933
6/27/2016	2016	6	27	25	49	91	70	38	971
6/28/2016	2016	6	28	26	60	91	75.5	43.5	1014.5
6/29/2016	2016	6	29	27	51	90	70.5	38.5	1053
6/30/2016	2016	6	30	28	59	92	75.5	43.5	1096.5
7/1/2016	2016	7	1	29	58	87	72.5	40.5	1137
7/2/2016	2016	7	2	30	51	87	69	37	1174
7/3/2016	2016	7	3	31	51	85	68	36	1210
7/4/2016	2016	7	4	32	50	94	72	40	1250
7/5/2016	2016	7	5	33	51	96	73.5	41.5	1291.5
7/6/2016	2016	7	6	34	60	96	78	46	1337.5
7/7/2016	2016	7	7	35	56	96	76	44	1381.5
7/8/2016	2016	7	8	36	55	95	75	43	1424.5
7/9/2016	2016	7	9	37	53	97	75	43	1467.5
7/10/2016	2016	7	10	38	60	98	79	47	1514.5
7/11/2016	2016	7	11	39	54	95	74.5	42.5	1557
7/12/2016	2016	7	12	40	52	95	73.5	41.5	1598.5
7/13/2016	2016	7	13	41	57	96	76.5	44.5	1643
7/14/2016	2016	7	14	42	57	96	76.5	44.5	1687.5
7/15/2016	2016	7	15	43	57	100	78.5	46.5	1734
7/16/2016	2016	7	16	44	57	101	79	47	1781
7/17/2016	2016	7	17	45	57	100	78.5	46.5	1827.5
7/18/2016	2016	7	18	46	56	100	78	46	1873.5
7/19/2016	2016	7	19	47	55	100	77.5	45.5	1919
7/20/2016	2016	7	20	48	60	90	75	43	1962
7/21/2016	2016	7	21	49	50	89	69.5	37.5	1999.5
7/22/2016	2016	7	22	50	50	95	72.5	40.5	2040
7/23/2016	2016	7	23	51	57	97	77	45	2085
7/24/2016	2016	7	24	52	56	100	78	46	2131
7/25/2016	2016	7	25	53	56	100	78	46	2177
7/26/2016	2016	7	26	54	60	93	76.5	44.5	2221.5
7/27/2016	2016	7	27	55	54	88	71	39	2260.5
7/28/2016	2016	7	28	56	67	92	79.5	47.5	2308
7/29/2016	2016	7	29	57	53	93	73	41	2349
7/30/2016	2016	7	30	58	55	98	76.5	44.5	2393.5
7/31/2016	2016	7	31	59	59	95	77	45	2438.5
8/1/2016	2016	8	1	60	60	94	77	45	2483.5
8/2/2016	2016	8	2	61	58	93	75.5	43.5	2527
8/3/2016	2016	8	3	62	59	90	74.5	42.5	2569.5
8/4/2016	2016	8	4	63	57	90	73.5	41.5	2611
8/5/2016	2016	8	5	64	60	90	75	43	2654
8/6/2016	2016	8	6	65	52	79	65.5	33.5	2687.5
8/7/2016	2016	8	7	66	51	84	67.5	35.5	2723
8/8/2016	2016	8	8	67	53	88	70.5	38.5	2761.5
8/9/2016	2016	8	9	68	50	88	69	37	2798.5
8/10/2016	2016	8	10	69	60	90	75	43	2841.5
8/11/2016	2016	8	11	70	56	92	74	42	2883.5
8/12/2016	2016	8	12	71	50	87	68.5	36.5	2920
8/13/2016	2016	8	13	72	60	91	75.5	43.5	2963.5
8/14/2016	2016	8	14	73	49	83	66	34	2997.5
8/15/2016	2016	8	15	74	50	86	68	36	3033.5
8/16/2016	2016	8	16	75	50	95	72.5	40.5	3074
8/17/2016	2016	8	17	76	52	88	70	38	3112
8/18/2016	2016	8	18	77	52	87	69.5	37.5	3149.5
8/19/2016	2016	8	19	78	51	85	68	36	3185.5
8/20/2016	2016	8	20	79	51	85	68	36	3221.5
8/21/2016	2016	8	21	80	50	85	67.5	35.5	3257
8/22/2016	2016	8	22	81	51	82	66.5	34.5	3291.5
8/23/2016	2016	8	23	82	47	81	64	32	3323.5
8/24/2016	2016	8	24	83	46	78	62	30	3353.5
8/25/2016	2016	8	25	84	45	81	63	31	3384.5
8/26/2016	2016	8	26	85	47	83	65	33	3417.5
8/27/2016	2016	8	27	86	50	79	64.5	32.5	3450
8/28/2016	2016	8	28	87	45	80	62.5	30.5	3480.5
8/29/2016	2016	8	29	88	42	77	59.5	27.5	3508
8/30/2016	2016	8	30	89	46	83	64.5	32.5	3540.5
8/31/2016	2016	8	31	90	52	82	67	35	3575.5
9/1/2016	2016	9	1	91	53	84	68.5	36.5	3612
9/2/2016	2016	9	2	92	54	86	70	38	3650
9/3/2016	2016	9	3	93	51	85	68	36	3686
9/4/2016	2016	9	4	94	48	85	66.5	34.5	3720.5
9/5/2016	2016	9	5	95	44	89	66.5	34.5	3755
9/6/2016	2016	9	6	96	47	92	69.5	37.5	3792.5
9/7/2016	2016	9	7	97	50	86	68	36	3828.5
9/8/2016	2016	9	8	98	46	76	61	29	3857.5
9/9/2016	2016	9	9	99	39	90	64.5	32.5	3890
9/10/2016	2016	9	10	100	48	92	70	38	3928
9/11/2016	2016	9	11	101	53	80	66.5	34.5	3962.5
9/12/2016	2016	9	12	102	43	91	67	35	3997.5
9/13/2016	2016	9	13	103	43	85	64	32	4029.5
9/14/2016	2016	9	14	104	46	81	63.5	31.5	4061

9/15/2016	2016	9	15	105	40	81	60.5	28.5	4089.5
9/16/2016	2016	9	16	106	37	85	61	29	4118.5
9/17/2016	2016	9	17	107	37	81	59	27	4145.5
9/18/2016	2016	9	18	108	33	87	60	28	4173.5
9/19/2016	2016	9	19	109	33	87	60	28	4201.5
9/20/2016	2016	9	20	110	41	92	66.5	34.5	4236
9/21/2016	2016	9	21	111	53	88	70.5	38.5	4274.5
9/22/2016	2016	9	22	112	48	82	65	33	4307.5
9/23/2016	2016	9	23	113	52	87	69.5	37.5	4345
9/24/2016	2016	9	24	114	27	87	57	25	4370
9/25/2016	2016	9	25	115	31	72	51.5	19.5	4389.5
9/26/2016	2016	9	26	116	38	73	55.5	23.5	4413
9/27/2016	2016	9	27	117	40	71	55.5	23.5	4436.5
9/28/2016	2016	9	28	118	39	78	58.5	26.5	4463
9/29/2016	2016	9	29	119	45	74	59.5	27.5	4490.5
9/30/2016	2016	9	30	120	45	77	61	29	4519.5
10/1/2016	2016	10	1	121	40	78	59	27	4546.5
10/2/2016	2016	10	2	122	41	79	60	28	4574.5
10/3/2016	2016	10	3	123	45	79	62	30	4604.5
10/4/2016	2016	10	4	124	36	74	55	23	4627.5
10/5/2016	2016	10	5	125	32	72	52	20	4647.5
10/6/2016	2016	10	6	126	37	72	54.5	22.5	4670
10/7/2016	2016	10	7	127	29	75	52	20	4690
10/8/2016	2016	10	8	128	32	68	50	18	4708
10/9/2016	2016	10	9	129	41	69	55	23	4731
10/10/2016	2016	10	10	130	35	75	55	23	4754
10/11/2016	2016	10	11	131	36	80	58	26	4780
10/12/2016	2016	10	12	132	35	81	58	26	4806
10/13/2016	2016	10	13	133	31	78	54.5	22.5	4828.5
10/14/2016	2016	10	14	134	31	81	56	24	4852.5
10/15/2016	2016	10	15	135	33	86	59.5	27.5	4880
10/16/2016	2016	10	16	136	39	85	62	30	4910
10/17/2016	2016	10	17	137	46	80	63	31	4941
10/18/2016	2016	10	18	138	40	84	62	30	4971
10/19/2016	2016	10	19	139	34	81	57.5	25.5	4996.5
10/20/2016	2016	10	20	140	22	72	47	15	5011.5
10/21/2016	2016	10	21	141	24	67	45.5	13.5	5025
10/22/2016	2016	10	22	142	27	82	54.5	22.5	5047.5
10/23/2016	2016	10	23	143	34	83	58.5	26.5	5074
10/24/2016	2016	10	24	144	32	83	57.5	25.5	5099.5
10/25/2016	2016	10	25	145	34	76	55	23	5122.5
10/26/2016	2016	10	26	146	34	76	55	23	5145.5
10/27/2016	2016	10	27	147	32	78	55	23	5168.5
10/28/2016	2016	10	28	148	33	79	56	24	5192.5
10/29/2016	2016	10	29	149	36	79	57.5	25.5	5218
10/30/2016	2016	10	30	150	34	80	57	25	5243
10/31/2016	2016	10	31	151	41	78	59.5	27.5	5270.5
11/1/2016	2016	11	1	152	40	75	57.5	25.5	5296
11/2/2016	2016	11	2	153	32	69	50.5	18.5	5314.5
11/3/2016	2016	11	3	154	34	69	51.5	19.5	5334
11/4/2016	2016	11	4	155	45	68	56.5	24.5	5358.5
11/5/2016	2016	11	5	156	42	58	50	18	5376.5
11/6/2016	2016	11	6	157	34	62	48	16	5392.5
11/7/2016	2016	11	7	158	32	63	47.5	15.5	5408
11/8/2016	2016	11	8	159	29	69	49	17	5425
11/9/2016	2016	11	9	160	27	63	45	13	5438
11/10/2016	2016	11	10	161	23	63	43	11	5449
11/11/2016	2016	11	11	162	25	60	42.5	10.5	5459.5
11/12/2016	2016	11	12	163	24	61	42.5	10.5	5470
11/13/2016	2016	11	13	164	23	67	45	13	5483
11/14/2016	2016	11	14	165	24	67	45.5	13.5	5496.5
11/15/2016	2016	11	15	166	24	67	45.5	13.5	5510
11/16/2016	2016	11	16	167	27	75	51	19	5529
11/17/2016	2016	11	17	168	33	72	52.5	20.5	5549.5
11/18/2016	2016	11	18	169	15	52	33.5	1.5	5551
11/19/2016	2016	11	19	170	19	58	38.5	6.5	5557.5
11/20/2016	2016	11	20	171	23	58	40.5	8.5	5566
11/21/2016	2016	11	21	172	26	66	46	14	5580
11/22/2016	2016	11	22	173	33	56	44.5	12.5	5592.5
11/23/2016	2016	11	23	174	19	54	36.5	4.5	5597
11/24/2016	2016	11	24	175	22	56	39	7	5604
11/25/2016	2016	11	25	176	14	52	33	1	5605
11/26/2016	2016	11	26	177	14	52	33	1	5606
11/27/2016	2016	11	27	178	14	53	33.5	1.5	5607.5
11/28/2016	2016	11	28	179	14	48	31	-1	5606.5
11/29/2016	2016	11	29	180	14	37	25.5	-6.5	5600
11/30/2016	2016	11	30	181	3	33	18	-14	5586
12/1/2016	2016	12	1	182	8	38	23	-9	5577
12/2/2016	2016	12	2	183	13	48	30.5	-1.5	5575.5
12/3/2016	2016	12	3	184	19	46	32.5	0.5	5576
12/4/2016	2016	12	4	185	11	46	28.5	-3.5	5572.5
12/5/2016	2016	12	5	186	13	49	31	-1	5571.5
12/6/2016	2016	12	6	187	18	54	36	4	5575.5
12/7/2016	2016	12	7	188	36	50	43	11	5586.5
12/8/2016	2016	12	8	189	18	47	32.5	0.5	5587
12/9/2016	2016	12	9	190	15	44	29.5	-2.5	5584.5
12/10/2016	2016	12	10	191	17	63	40	8	5592.5
12/11/2016	2016	12	11	192	25	66	45.5	13.5	5606
12/12/2016	2016	12	12	193	20	60	40	8	5614
12/13/2016	2016	12	13	194	26	61	43.5	11.5	5625.5
12/14/2016	2016	12	14	195	28	61	44.5	12.5	5638
12/15/2016	2016	12	15	196	28	61	44.5	12.5	5650.5
12/16/2016	2016	12	16	197	27	63	45	13	5663.5

12/17/2016	2016	12	17	198	28	53	40.5	8.5	5672
12/18/2016	2016	12	18	199	9	40	24.5	-7.5	5664.5
12/19/2016	2016	12	19	200	8	41	24.5	-7.5	5657
12/20/2016	2016	12	20	201	9	52	30.5	-1.5	5655.5
12/21/2016	2016	12	21	202	15	55	35	3	5658.5
12/22/2016	2016	12	22	203	28	67	47.5	15.5	5674
12/23/2016	2016	12	23	204	33	39	36	4	5678
12/24/2016	2016	12	24	205	27	53	40	8	5686
12/25/2016	2016	12	25	206	23	48	35.5	3.5	5689.5
12/26/2016	2016	12	26	207	18	35	26.5	-5.5	5684
12/27/2016	2016	12	27	208	17	43	30	-2	5682
12/28/2016	2016	12	28	209	18	59	38.5	6.5	5688.5
12/29/2016	2016	12	29	210	22	53	37.5	5.5	5694
12/30/2016	2016	12	30	211	15	47	31	-1	5693
12/31/2016	2016	12	31	212	17	55	36	4	5697
1/1/2017	2017	1	1	213	30	49	39.5	7.5	5704.5
1/2/2017	2017	1	2	214	29	49	39	7	5711.5
1/3/2017	2017	1	3	215	23	44	33.5	1.5	5713
1/4/2017	2017	1	4	216	22	50	36	4	5717
1/5/2017	2017	1	5	217	25	56	40.5	8.5	5725.5
1/6/2017	2017	1	6	218	20	53	36.5	4.5	5730
1/7/2017	2017	1	7	219	5	34	19.5	-12.5	5717.5
1/8/2017	2017	1	8	220	5	41	23	-9	5708.5
1/9/2017	2017	1	9	221	26	64	45	13	5721.5
1/10/2017	2017	1	10	222	32	61	46.5	14.5	5736
1/11/2017	2017	1	11	223	34	61	47.5	15.5	5751.5
1/12/2017	2017	1	12	224	22	55	38.5	6.5	5758
1/13/2017	2017	1	13	225	24	60	42	10	5768
1/14/2017	2017	1	14	226	23	53	38	6	5774
1/15/2017	2017	1	15	227	24	56	40	8	5782
1/16/2017	2017	1	16	228	30	44	37	5	5787
1/17/2017	2017	1	17	229	31	46	38.5	6.5	5793.5
1/18/2017	2017	1	18	230	27	44	35.5	3.5	5797
1/19/2017	2017	1	19	231	23	50	36.5	4.5	5801.5
1/20/2017	2017	1	20	232	25	47	36	4	5805.5
1/21/2017	2017	1	21	233	26	41	33.5	1.5	5807
1/22/2017	2017	1	22	234	17	40	28.5	-3.5	5803.5
1/23/2017	2017	1	23	235	21	41	31	-1	5802.5
1/24/2017	2017	1	24	236	25	54	39.5	7.5	5810
1/25/2017	2017	1	25	237	12	34	23	-9	5801
1/26/2017	2017	1	26	238	9	36	22.5	-9.5	5791.5
1/27/2017	2017	1	27	239	8	33	20.5	-11.5	5780
1/28/2017	2017	1	28	240	4	32	18	-14	5766
1/29/2017	2017	1	29	241	5	43	24	-8	5758
1/30/2017	2017	1	30	242	14	53	33.5	1.5	5759.5
1/31/2017	2017	1	31	243	15	56	35.5	3.5	5763
2/1/2017	2017	2	1	244	17	64	40.5	8.5	5771.5
2/2/2017	2017	2	2	245	18	67	42.5	10.5	5782
2/3/2017	2017	2	3	246	20	65	42.5	10.5	5792.5
2/4/2017	2017	2	4	247	14	59	36.5	4.5	5797
2/5/2017	2017	2	5	248	15	62	38.5	6.5	5803.5
2/6/2017	2017	2	6	249	27	68	47.5	15.5	5819
2/7/2017	2017	2	7	250	31	62	46.5	14.5	5833.5
2/8/2017	2017	2	8	251	27	55	41	9	5842.5
2/9/2017	2017	2	9	252	22	62	42	10	5852.5
2/10/2017	2017	2	10	253	24	70	47	15	5867.5
2/11/2017	2017	2	11	254	24	74	49	17	5884.5
2/12/2017	2017	2	12	255	24	69	46.5	14.5	5899
2/13/2017	2017	2	13	256	25	46	35.5	3.5	5902.5
2/14/2017	2017	2	14	257	29	44	36.5	4.5	5907
2/15/2017	2017	2	15	258	19	47	33	1	5908
2/16/2017	2017	2	16	259	19	57	38	6	5914
2/17/2017	2017	2	17	260	24	63	43.5	11.5	5925.5
2/18/2017	2017	2	18	261	23	63	43	11	5936.5
2/19/2017	2017	2	19	262	31	54	42.5	10.5	5947
2/20/2017	2017	2	20	263	29	52	40.5	8.5	5955.5
2/21/2017	2017	2	21	264	25	63	44	12	5967.5
2/22/2017	2017	2	22	265	29	72	50.5	18.5	5986
2/23/2017	2017	2	23	266	38	62	50	18	6004
2/24/2017	2017	2	24	267	16	51	33.5	1.5	6005.5
2/25/2017	2017	2	25	268	8	48	28	-4	6001.5
2/26/2017	2017	2	26	269	9	52	30.5	-1.5	6000
2/27/2017	2017	2	27	270	20	48	34	2	6002
2/28/2017	2017	2	28	271	28	56	42	10	6012
3/1/2017	2017	3	1	272	19	49	34	2	6014
3/2/2017	2017	3	2	273	12	48	30	-2	6012
3/3/2017	2017	3	3	274	11	58	34.5	2.5	6014.5
3/4/2017	2017	3	4	275	21	60	40.5	8.5	6023
3/5/2017	2017	3	5	276	34	64	49	17	6040
3/6/2017	2017	3	6	277	36	63	49.5	17.5	6057.5
3/7/2017	2017	3	7	278	13	54	33.5	1.5	6059
3/8/2017	2017	3	8	279	12	65	38.5	6.5	6065.5
3/9/2017	2017	3	9	280	22	73	47.5	15.5	6081
3/10/2017	2017	3	10	281	23	76	49.5	17.5	6098.5
3/11/2017	2017	3	11	282	22	79	50.5	18.5	6117
3/12/2017	2017	3	12	283	22	75	48.5	16.5	6133.5
3/13/2017	2017	3	13	284	24	74	49	17	6150.5
3/14/2017	2017	3	14	285	25	75	50	18	6168.5
3/15/2017	2017	3	15	286	23	77	50	18	6186.5
3/16/2017	2017	3	16	287	24	82	53	21	6207.5
3/17/2017	2017	3	17	288	29	79	54	22	6229.5
3/18/2017	2017	3	18	289	28	79	53.5	21.5	6251
3/19/2017	2017	3	19	290	28	81	54.5	22.5	6273.5

3/20/2017	2017	3	20	291	27	80	53.5	21.5	6295
3/21/2017	2017	3	21	292	30	82	56	24	6319
3/22/2017	2017	3	22	293	30	78	54	22	6341
3/23/2017	2017	3	23	294	34	78	56	24	6365
3/24/2017	2017	3	24	295	32	60	46	14	6379
3/25/2017	2017	3	25	296	22	68	45	13	6392
3/26/2017	2017	3	26	297	23	72	47.5	15.5	6407.5
3/27/2017	2017	3	27	298	24	68	46	14	6421.5
3/28/2017	2017	3	28	299	29	66	47.5	15.5	6437
3/29/2017	2017	3	29	300	35	59	47	15	6452
3/30/2017	2017	3	30	301	24	64	44	12	6464
3/31/2017	2017	3	31	302	30	71	50.5	18.5	6482.5
4/1/2017	2017	4	1	303	27	55	41	9	6491.5
4/2/2017	2017	4	2	304	26	43	34.5	2.5	6494
4/3/2017	2017	4	3	305	30	63	46.5	14.5	6508.5
4/4/2017	2017	4	4	306	34	67	50.5	18.5	6527
4/5/2017	2017	4	5	307	22	58	40	8	6535
4/6/2017	2017	4	6	308	22	66	44	12	6547
4/7/2017	2017	4	7	309	29	74	51.5	19.5	6566.5
4/8/2017	2017	4	8	310	29	78	53.5	21.5	6588
4/9/2017	2017	4	9	311	30	74	52	20	6608
4/10/2017	2017	4	10	312	20	67	43.5	11.5	6619.5
4/11/2017	2017	4	11	313	21	65	43	11	6630.5
4/12/2017	2017	4	12	314	33	71	52	20	6650.5
4/13/2017	2017	4	13	315	30	81	55.5	23.5	6674
4/14/2017	2017	4	14	316	32	78	55	23	6697
4/15/2017	2017	4	15	317	32	80	56	24	6721
4/16/2017	2017	4	16	318	29	79	54	22	6743
4/17/2017	2017	4	17	319	29	81	55	23	6766
4/18/2017	2017	4	18	320	36	80	58	26	6792
4/19/2017	2017	4	19	321	41	84	62.5	30.5	6822.5
4/20/2017	2017	4	20	322	32	81	56.5	24.5	6847
4/21/2017	2017	4	21	323	37	77	57	25	6872
4/22/2017	2017	4	22	324	30	80	55	23	6895
4/23/2017	2017	4	23	325	30	78	54	22	6917
4/24/2017	2017	4	24	326	40	83	61.5	29.5	6946.5
4/25/2017	2017	4	25	327	43	78	60.5	28.5	6975
4/26/2017	2017	4	26	328	26	63	44.5	12.5	6987.5
4/27/2017	2017	4	27	329	40	70	55	23	7010.5
4/28/2017	2017	4	28	330	38	73	55.5	23.5	7034
4/29/2017	2017	4	29	331	23	43	33	1	7035
4/30/2017	2017	4	30	332	23	52	37.5	5.5	7040.5
6/1/2017	2017	6	1	1	41	79	60	28	28
6/2/2017	2017	6	2	2	47	79	63	31	59
6/3/2017	2017	6	3	3	41	79	60	28	87
6/4/2017	2017	6	4	4	41	87	64	32	119
6/5/2017	2017	6	5	5	46	94	70	38	157
6/6/2017	2017	6	6	6	57	93	75	43	200
6/7/2017	2017	6	7	7	58	86	72	40	240
6/8/2017	2017	6	8	8	55	94	74.5	42.5	282.5
6/9/2017	2017	6	9	9	51	94	72.5	40.5	323
6/10/2017	2017	6	10	10	51	95	73	41	364
6/11/2017	2017	6	11	11	42	92	67	35	399
6/12/2017	2017	6	12	12	47	90	68.5	36.5	435.5
6/13/2017	2017	6	13	13	42	88	65	33	468.5
6/14/2017	2017	6	14	14	35	84	59.5	27.5	496
6/15/2017	2017	6	15	15	39	93	66	34	530
6/16/2017	2017	6	16	16	41	96	68.5	36.5	566.5
6/17/2017	2017	6	17	17	41	98	69.5	37.5	604
6/18/2017	2017	6	18	18	41	100	70.5	38.5	642.5
6/19/2017	2017	6	19	19	53	101	77	45	687.5
6/20/2017	2017	6	20	20	60	101	80.5	48.5	736
6/21/2017	2017	6	21	21	57	104	80.5	48.5	784.5
6/22/2017	2017	6	22	22	56	103	79.5	47.5	832
6/23/2017	2017	6	23	23	56	103	79.5	47.5	879.5
6/24/2017	2017	6	24	24	56	103	79.5	47.5	927
6/25/2017	2017	6	25	25	56	103	79.5	47.5	974.5
6/26/2017	2017	6	26	26	54	100	77	45	1019.5
6/27/2017	2017	6	27	27	53	82	67.5	35.5	1055
6/28/2017	2017	6	28	28	53	80	66.5	34.5	1089.5
6/29/2017	2017	6	29	29	52	80	66	34	1123.5
6/30/2017	2017	6	30	30	53	83	68	36	1159.5
7/1/2017	2017	7	1	31	50	83	66.5	34.5	1194
7/2/2017	2017	7	2	32	50	80	65	33	1227
7/3/2017	2017	7	3	33	51	81	66	34	1261
7/4/2017	2017	7	4	34	48	84	66	34	1295
7/5/2017	2017	7	5	35	54	85	69.5	37.5	1332.5
7/6/2017	2017	7	6	36	54	87	70.5	38.5	1371
7/7/2017	2017	7	7	37	54	83	68.5	36.5	1407.5
7/8/2017	2017	7	8	38	51	80	65.5	33.5	1441
7/9/2017	2017	7	9	39	53	80	66.5	34.5	1475.5
7/10/2017	2017	7	10	40	50	82	66	34	1509.5
7/11/2017	2017	7	11	41	50	80	65	33	1542.5
7/12/2017	2017	7	12	42	51	74	62.5	30.5	1573
7/13/2017	2017	7	13	43	50	77	63.5	31.5	1604.5
7/14/2017	2017	7	14	44	52	74	63	31	1635.5
7/15/2017	2017	7	15	45	56	77	66.5	34.5	1670
7/16/2017	2017	7	16	46	50	80	65	33	1703
7/17/2017	2017	7	17	47	49	76	62.5	30.5	1733.5
7/18/2017	2017	7	18	48	50	77	63.5	31.5	1765
7/19/2017	2017	7	19	49	50	79	64.5	32.5	1797.5
7/20/2017	2017	7	20	50	51	71	61	29	1826.5
7/21/2017	2017	7	21	51	51	75	63	31	1857.5

7/22/2017	2017	7	22	52	49	79	64	32	1889.5
7/23/2017	2017	7	23	53	52	76	64	32	1921.5
7/24/2017	2017	7	24	54	53	73	63	31	1952.5
7/25/2017	2017	7	25	55	53	72	62.5	30.5	1983
7/26/2017	2017	7	26	56	53	77	65	33	2016
7/27/2017	2017	7	27	57	55	76	65.5	33.5	2049.5
7/28/2017	2017	7	28	58	53	71	62	30	2079.5
7/29/2017	2017	7	29	59	48	68	58	26	2105.5
7/30/2017	2017	7	30	60	51	69	60	28	2133.5
7/31/2017	2017	7	31	61	51	67	59	27	2160.5
8/1/2017	2017	8	1	62	52	74	63	31	2191.5
8/2/2017	2017	8	2	63	53	75	64	32	2223.5
8/3/2017	2017	8	3	64	51	79	65	33	2256.5
8/4/2017	2017	8	4	65	51	74	62.5	30.5	2287
8/5/2017	2017	8	5	66	49	73	61	29	2316
8/6/2017	2017	8	6	67	48	73	60.5	28.5	2344.5
8/7/2017	2017	8	7	68	47	76	61.5	29.5	2374
8/8/2017	2017	8	8	69	48	76	62	30	2404
8/9/2017	2017	8	9	70	49	79	64	32	2436
8/10/2017	2017	8	10	71	51	77	64	32	2468
8/11/2017	2017	8	11	72	51	64	57.5	25.5	2493.5
8/12/2017	2017	8	12	73	48	76	62	30	2523.5
8/13/2017	2017	8	13	74	50	74	62	30	2553.5
8/14/2017	2017	8	14	75	51	76	63.5	31.5	2585
8/15/2017	2017	8	15	76	46	71	58.5	26.5	2611.5
8/16/2017	2017	8	16	77	41	73	57	25	2636.5
8/17/2017	2017	8	17	78	46	77	61.5	29.5	2666
8/18/2017	2017	8	18	79	47	79	63	31	2697
8/19/2017	2017	8	19	80	48	80	64	32	2729
8/20/2017	2017	8	20	81	49	70	59.5	27.5	2756.5
8/21/2017	2017	8	21	82	47	67	57	25	2781.5
8/22/2017	2017	8	22	83	48	78	63	31	2812.5
8/23/2017	2017	8	23	84	48	77	62.5	30.5	2843
8/24/2017	2017	8	24	85	45	65	55	23	2866
8/25/2017	2017	8	25	86	42	75	58.5	26.5	2892.5
8/26/2017	2017	8	26	87	48	81	64.5	32.5	2925
8/27/2017	2017	8	27	88	51	81	66	34	2959
8/28/2017	2017	8	28	89	52	81	66.5	34.5	2993.5
8/29/2017	2017	8	29	90	47	83	65	33	3026.5
8/30/2017	2017	8	30	91	47	79	63	31	3057.5
8/31/2017	2017	8	31	92	49	75	62	30	3087.5
9/1/2017	2017	9	1	93	47	79	63	31	3118.5
9/2/2017	2017	9	2	94	48	79	63.5	31.5	3150
9/3/2017	2017	9	3	95	46	81	63.5	31.5	3181.5
9/4/2017	2017	9	4	96	51	82	66.5	34.5	3216
9/5/2017	2017	9	5	97	54	78	66	34	3250
9/6/2017	2017	9	6	98	53	80	66.5	34.5	3284.5
9/7/2017	2017	9	7	99	54	75	64.5	32.5	3317
9/8/2017	2017	9	8	100	46	77	61.5	29.5	3346.5
9/9/2017	2017	9	9	101	50	74	62	30	3376.5
9/10/2017	2017	9	10	102	45	74	59.5	27.5	3404
9/11/2017	2017	9	11	103	46	77	61.5	29.5	3433.5
9/12/2017	2017	9	12	104	47	78	62.5	30.5	3464
9/13/2017	2017	9	13	105	49	76	62.5	30.5	3494.5
9/14/2017	2017	9	14	106	47	69	58	26	3520.5
9/15/2017	2017	9	15	107	46	67	56.5	24.5	3545
9/16/2017	2017	9	16	108	42	69	55.5	23.5	3568.5
9/17/2017	2017	9	17	109	41	70	55.5	23.5	3592
9/18/2017	2017	9	18	110	37	71	54	22	3614
9/19/2017	2017	9	19	111	48	70	59	27	3641
9/20/2017	2017	9	20	112	46	72	59	27	3668
9/21/2017	2017	9	21	113	42	73	57.5	25.5	3693.5
9/22/2017	2017	9	22	114	46	65	55.5	23.5	3717
9/23/2017	2017	9	23	115	33	61	47	15	3732
9/24/2017	2017	9	24	116	27	59	43	11	3743
9/25/2017	2017	9	25	117	26	63	44.5	12.5	3755.5
9/26/2017	2017	9	26	118	32	64	48	16	3771.5
9/27/2017	2017	9	27	119	37	48	42.5	10.5	3782
9/28/2017	2017	9	28	120	38	56	47	15	3797
9/29/2017	2017	9	29	121	45	59	52	20	3817
9/30/2017	2017	9	30	122	43	63	53	21	3838
10/1/2017	2017	10	1	123	38	64	51	19	3857
10/2/2017	2017	10	2	124	40	65	52.5	20.5	3877.5
10/3/2017	2017	10	3	125	35	70	52.5	20.5	3898
10/4/2017	2017	10	4	126	46	72	59	27	3925
10/5/2017	2017	10	5	127	46	69	57.5	25.5	3950.5
10/6/2017	2017	10	6	128	31	62	46.5	14.5	3965
10/7/2017	2017	10	7	129	27	68	47.5	15.5	3980.5
10/8/2017	2017	10	8	130	36	67	51.5	19.5	4000
10/9/2017	2017	10	9	131	24	47	35.5	3.5	4003.5
10/10/2017	2017	10	10	132	23	56	39.5	7.5	4011
10/11/2017	2017	10	11	133	31	66	48.5	16.5	4027.5
10/12/2017	2017	10	12	134	43	66	54.5	22.5	4050
10/13/2017	2017	10	13	135	36	66	51	19	4069
10/14/2017	2017	10	14	136	26	64	45	13	4082
10/15/2017	2017	10	15	137	23	65	44	12	4094
10/16/2017	2017	10	16	138	36	69	52.5	20.5	4114.5
10/17/2017	2017	10	17	139	36	67	51.5	19.5	4134
10/18/2017	2017	10	18	140	39	67	53	21	4155
10/19/2017	2017	10	19	141	40	64	52	20	4175
10/20/2017	2017	10	20	142	40	62	51	19	4194
10/21/2017	2017	10	21	143	31	53	42	10	4204
10/22/2017	2017	10	22	144	27	63	45	13	4217

10/23/2017	2017	10	23	145	36	65	50.5	18.5	4235.5
10/24/2017	2017	10	24	146	33	63	48	16	4251.5
10/25/2017	2017	10	25	147	34	65	49.5	17.5	4269
10/26/2017	2017	10	26	148	35	63	49	17	4286
10/27/2017	2017	10	27	149	31	56	43.5	11.5	4297.5
10/28/2017	2017	10	28	150	30	55	42.5	10.5	4308
10/29/2017	2017	10	29	151	29	61	45	13	4321
10/30/2017	2017	10	30	152	35	57	46	14	4335
10/31/2017	2017	10	31	153	34	53	43.5	11.5	4346.5
11/1/2017	2017	11	1	154	35	55	45	13	4359.5
11/2/2017	2017	11	2	155	36	55	45.5	13.5	4373
11/3/2017	2017	11	3	156	36	57	46.5	14.5	4387.5
11/4/2017	2017	11	4	157	43	58	50.5	18.5	4406
11/5/2017	2017	11	5	158	39	54	46.5	14.5	4420.5
11/6/2017	2017	11	6	159	36	53	44.5	12.5	4433
11/7/2017	2017	11	7	160	37	51	44	12	4445
11/8/2017	2017	11	8	161	26	53	39.5	7.5	4452.5
11/9/2017	2017	11	9	162	28	58	43	11	4463.5
11/10/2017	2017	11	10	163	33	60	46.5	14.5	4478
11/11/2017	2017	11	11	164	30	57	43.5	11.5	4489.5
11/12/2017	2017	11	12	165	29	62	45.5	13.5	4503
11/13/2017	2017	11	13	166	36	61	48.5	16.5	4519.5
11/14/2017	2017	11	14	167	29	61	45	13	4532.5
11/15/2017	2017	11	15	168	29	60	44.5	12.5	4545
11/16/2017	2017	11	16	169	33	59	46	14	4559
11/17/2017	2017	11	17	170	33	52	42.5	10.5	4569.5
11/18/2017	2017	11	18	171	15	47	31	-1	4568.5
11/19/2017	2017	11	19	172	17	54	35.5	3.5	4572
11/20/2017	2017	11	20	173	24	53	38.5	6.5	4578.5
11/21/2017	2017	11	21	174	28	55	41.5	9.5	4588
11/22/2017	2017	11	22	175	28	60	44	12	4600
11/23/2017	2017	11	23	176	30	63	46.5	14.5	4614.5
11/24/2017	2017	11	24	177	35	63	49	17	4631.5
11/25/2017	2017	11	25	178	31	63	47	15	4646.5
11/26/2017	2017	11	26	179	33	65	49	17	4663.5
11/27/2017	2017	11	27	180	39	62	50.5	18.5	4682
11/28/2017	2017	11	28	181	27	49	38	6	4688
11/29/2017	2017	11	29	182	29	55	42	10	4698
11/30/2017	2017	11	30	183	36	50	43	11	4709
12/1/2017	2017	12	1	184	30	48	39	7	4716
12/2/2017	2017	12	2	185	29	51	40	8	4724
12/3/2017	2017	12	3	186	31	50	40.5	8.5	4732.5
12/4/2017	2017	12	4	187	17	42	29.5	-2.5	4730
12/5/2017	2017	12	5	188	14	37	25.5	-6.5	4723.5
12/6/2017	2017	12	6	189	9	42	25.5	-6.5	4717
12/7/2017	2017	12	7	190	3	27	15	-17	4700
12/8/2017	2017	12	8	191	18	42	30	-2	4698
12/9/2017	2017	12	9	192	17	52	34.5	2.5	4700.5
12/10/2017	2017	12	10	193	19	53	36	4	4704.5
12/11/2017	2017	12	11	194	19	54	36.5	4.5	4709
12/12/2017	2017	12	12	195	23	55	39	7	4716
12/13/2017	2017	12	13	196	24	51	37.5	5.5	4721.5
12/14/2017	2017	12	14	197	17	37	27	-5	4716.5
12/15/2017	2017	12	15	198	13	46	29.5	-2.5	4714
12/16/2017	2017	12	16	199	23	46	34.5	2.5	4716.5
12/17/2017	2017	12	17	200	20	44	32	0	4716.5
12/18/2017	2017	12	18	201	17	43	30	-2	4714.5
12/19/2017	2017	12	19	202	20	45	32.5	0.5	4715
12/20/2017	2017	12	20	203	26	47	36.5	4.5	4719.5
12/21/2017	2017	12	21	204	5	32	18.5	-13.5	4706
12/22/2017	2017	12	22	205	5	31	18	-14	4692
12/23/2017	2017	12	23	206	21	41	31	-1	4691
12/24/2017	2017	12	24	207	27	47	37	5	4696
12/25/2017	2017	12	25	208	32	50	41	9	4705
12/26/2017	2017	12	26	209	26	49	37.5	5.5	4710.5
12/27/2017	2017	12	27	210	22	53	37.5	5.5	4716
12/28/2017	2017	12	28	211	27	54	40.5	8.5	4724.5
12/29/2017	2017	12	29	212	26	55	40.5	8.5	4733
12/30/2017	2017	12	30	213	30	55	42.5	10.5	4743.5
12/31/2017	2017	12	31	214	25	47	36	4	4747.5
1/1/2018	2018	1	1	215	25	49	37	5	4752.5
1/2/2018	2018	1	2	216	18	43	30.5	-1.5	4751
1/3/2018	2018	1	3	217	20	50	35	3	4754
1/4/2018	2018	1	4	218	25	49	37	5	4759
1/5/2018	2018	1	5	219	25	54	39.5	7.5	4766.5
1/6/2018	2018	1	6	220	32	51	41.5	9.5	4776
1/7/2018	2018	1	7	221	23	43	33	1	4777
1/8/2018	2018	1	8	222	23	54	38.5	6.5	4783.5
1/9/2018	2018	1	9	223	29	54	41.5	9.5	4793
1/10/2018	2018	1	10	224	26	39	32.5	0.5	4793.5
1/11/2018	2018	1	11	225	17	36	26.5	-5.5	4788
1/12/2018	2018	1	12	226	19	45	32	0	4788
1/13/2018	2018	1	13	227	15	49	32	0	4788
1/14/2018	2018	1	14	228	20	53	36.5	4.5	4792.5
1/15/2018	2018	1	15	229	23	50	36.5	4.5	4797
1/16/2018	2018	1	16	230	20	44	32	0	4797
1/17/2018	2018	1	17	231	18	43	30.5	-1.5	4795.5
1/18/2018	2018	1	18	232	15	52	33.5	1.5	4797
1/19/2018	2018	1	19	233	27	53	40	8	4805
1/20/2018	2018	1	20	234	20	47	33.5	1.5	4806.5
1/21/2018	2018	1	21	235	8	20	14	-18	4788.5
1/22/2018	2018	1	22	236	5	34	19.5	-12.5	4776
1/23/2018	2018	1	23	237	6	38	22	-10	4766

1/24/2018	2018	1	24	238	9	49	29	-3	4763
1/25/2018	2018	1	25	239	20	47	33.5	1.5	4764.5
1/26/2018	2018	1	26	240	8	37	22.5	-9.5	4755
1/27/2018	2018	1	27	241	6	46	26	-6	4749
1/28/2018	2018	1	28	242	16	45	30.5	-1.5	4747.5
1/29/2018	2018	1	29	243	18	55	36.5	4.5	4752
1/30/2018	2018	1	30	244	24	54	39	7	4759
1/31/2018	2018	1	31	245	32	54	43	11	4770
2/1/2018	2018	2	1	246	29	58	43.5	11.5	4781.5
2/2/2018	2018	2	2	247	29	55	42	10	4791.5
2/3/2018	2018	2	3	248	29	51	40	8	4799.5
2/4/2018	2018	2	4	249	27	55	41	9	4808.5
2/5/2018	2018	2	5	250	30	54	42	10	4818.5
2/6/2018	2018	2	6	251	18	43	30.5	-1.5	4817
2/7/2018	2018	2	7	252	14	48	31	-1	4816
2/8/2018	2018	2	8	253	23	54	38.5	6.5	4822.5
2/9/2018	2018	2	9	254	25	54	39.5	7.5	4830
2/10/2018	2018	2	10	255	22	50	36	4	4834
2/11/2018	2018	2	11	256	7	40	23.5	-8.5	4825.5
2/12/2018	2018	2	12	257	28	44	36	4	4829.5
2/13/2018	2018	2	13	258	23	48	35.5	3.5	4833
2/14/2018	2018	2	14	259	28	45	36.5	4.5	4837.5
2/15/2018	2018	2	15	260	22	34	28	-4	4833.5
2/16/2018	2018	2	16	261	16	39	27.5	-4.5	4829
2/17/2018	2018	2	17	262	19	48	33.5	1.5	4830.5
2/18/2018	2018	2	18	263	26	48	37	5	4835.5
2/19/2018	2018	2	19	264	13	44	28.5	-3.5	4832
2/20/2018	2018	2	20	265	5	22	13.5	-18.5	4813.5
2/21/2018	2018	2	21	266	8	38	23	-9	4804.5
2/22/2018	2018	2	22	267	13	29	21	-11	4793.5
2/23/2018	2018	2	23	268	5	38	21.5	-10.5	4783
2/24/2018	2018	2	24	269	11	28	19.5	-12.5	4770.5
2/25/2018	2018	2	25	270	8	33	20.5	-11.5	4759
2/26/2018	2018	2	26	271	11	48	29.5	-2.5	4756.5
2/27/2018	2018	2	27	272	20	47	33.5	1.5	4758
2/28/2018	2018	2	28	273	19	34	26.5	-5.5	4752.5
3/1/2018	2018	3	1	274	14	47	30.5	-1.5	4751
3/2/2018	2018	3	2	275	22	53	37.5	5.5	4756.5
3/3/2018	2018	3	3	276	26	53	39.5	7.5	4764
3/4/2018	2018	3	4	277	19	47	33	1	4765
3/5/2018	2018	3	5	278	8	36	22	-10	4755
3/6/2018	2018	3	6	279	9	47	28	-4	4751
3/7/2018	2018	3	7	280	18	52	35	3	4754
3/8/2018	2018	3	8	281	27	54	40.5	8.5	4762.5
3/9/2018	2018	3	9	282	26	55	40.5	8.5	4771
3/10/2018	2018	3	10	283	30	51	40.5	8.5	4779.5
3/11/2018	2018	3	11	284	28	37	32.5	0.5	4780
3/12/2018	2018	3	12	285	28	45	36.5	4.5	4784.5
3/13/2018	2018	3	13	286	25	50	37.5	5.5	4790
3/14/2018	2018	3	14	287	29	58	43.5	11.5	4801.5
3/15/2018	2018	3	15	288	26	42	34	2	4803.5
3/16/2018	2018	3	16	289	24	45	34.5	2.5	4806
3/17/2018	2018	3	17	290	23	48	35.5	3.5	4809.5
3/18/2018	2018	3	18	291	17	33	25	-7	4802.5
3/19/2018	2018	3	19	292	13	38	25.5	-6.5	4796
3/20/2018	2018	3	20	293	17	50	33.5	1.5	4797.5
3/21/2018	2018	3	21	294	29	57	43	11	4808.5
3/22/2018	2018	3	22	295	31	62	46.5	14.5	4823
3/23/2018	2018	3	23	296	30	53	41.5	9.5	4832.5
3/24/2018	2018	3	24	297	28	57	42.5	10.5	4843
3/25/2018	2018	3	25	298	26	55	40.5	8.5	4851.5
3/26/2018	2018	3	26	299	26	49	37.5	5.5	4857
3/27/2018	2018	3	27	300	25	36	30.5	-1.5	4855.5
3/28/2018	2018	3	28	301	19	46	32.5	0.5	4856
3/29/2018	2018	3	29	302	26	51	38.5	6.5	4862.5
3/30/2018	2018	3	30	303	25	58	41.5	9.5	4872
3/31/2018	2018	3	31	304	31	63	47	15	4887
4/1/2018	2018	4	1	305	36	57	46.5	14.5	4901.5
4/2/2018	2018	4	2	306	36	59	47.5	15.5	4917
4/3/2018	2018	4	3	307	29	58	43.5	11.5	4928.5
4/4/2018	2018	4	4	308	29	61	45	13	4941.5
4/5/2018	2018	4	5	309	29	59	44	12	4953.5
4/6/2018	2018	4	6	310	36	61	48.5	16.5	4970
4/7/2018	2018	4	7	311	42	67	54.5	22.5	4992.5
4/8/2018	2018	4	8	312	33	62	47.5	15.5	5008
4/9/2018	2018	4	9	313	27	57	42	10	5018
4/10/2018	2018	4	10	314	26	68	47	15	5033
4/11/2018	2018	4	11	315	37	68	52.5	20.5	5053.5
4/12/2018	2018	4	12	316	27	62	44.5	12.5	5066
4/13/2018	2018	4	13	317	19	36	27.5	-4.5	5061.5
4/14/2018	2018	4	14	318	22	50	36	4	5065.5
4/15/2018	2018	4	15	319	26	63	44.5	12.5	5078
4/16/2018	2018	4	16	320	39	65	52	20	5098
4/17/2018	2018	4	17	321	25	55	40	8	5106
4/18/2018	2018	4	18	322	16	59	37.5	5.5	5111.5
4/19/2018	2018	4	19	323	30	64	47	15	5126.5
4/20/2018	2018	4	20	324	27	46	36.5	4.5	5131
4/21/2018	2018	4	21	325	27	55	41	9	5140
4/22/2018	2018	4	22	326	28	64	46	14	5154
4/23/2018	2018	4	23	327	33	69	51	19	5173
4/24/2018	2018	4	24	328	37	70	53.5	21.5	5194.5
4/25/2018	2018	4	25	329	33	69	51	19	5213.5
4/26/2018	2018	4	26	330	37	69	53	21	5234.5

4/27/2018	2018	4	27	331	40	70	55	23	5257.5
4/28/2018	2018	4	28	332	39	66	52.5	20.5	5278
4/29/2018	2018	4	29	333	38	70	54	22	5300
4/30/2018	2018	4	30	334	41	61	51	19	5319
5/1/2018	2018	5	1	335	36	60	48	16	5335
5/2/2018	2018	5	2	336	27	44	35.5	3.5	5338.5
5/3/2018	2018	5	3	337	27	50	38.5	6.5	5345
5/4/2018	2018	5	4	338	27	62	44.5	12.5	5357.5
5/5/2018	2018	5	5	339	34	71	52.5	20.5	5378
5/6/2018	2018	5	6	340	41	74	57.5	25.5	5403.5
5/7/2018	2018	5	7	341	42	74	58	26	5429.5
5/8/2018	2018	5	8	342	44	77	60.5	28.5	5458
5/9/2018	2018	5	9	343	42	81	61.5	29.5	5487.5
5/10/2018	2018	5	10	344	45	78	61.5	29.5	5517
5/11/2018	2018	5	11	345	51	74	62.5	30.5	5547.5
5/12/2018	2018	5	12	346	41	73	57	25	5572.5
5/13/2018	2018	5	13	347	35	69	52	20	5592.5
5/14/2018	2018	5	14	348	39	69	54	22	5614.5
5/15/2018	2018	5	15	349	36	70	53	21	5635.5
5/16/2018	2018	5	16	350	35	75	55	23	5658.5
5/17/2018	2018	5	17	351	36	74	55	23	5681.5
5/18/2018	2018	5	18	352	37	68	52.5	20.5	5702
5/19/2018	2018	5	19	353	36	72	54	22	5724
5/20/2018	2018	5	20	354	42	72	57	25	5749
5/21/2018	2018	5	21	355	39	71	55	23	5772
5/22/2018	2018	5	22	356	40	73	56.5	24.5	5796.5
5/23/2018	2018	5	23	357	35	74	54.5	22.5	5819
5/24/2018	2018	5	24	358	39	76	57.5	25.5	5844.5
5/25/2018	2018	5	25	359	46	78	62	30	5874.5
5/26/2018	2018	5	26	360	43	72	57.5	25.5	5900
5/27/2018	2018	5	27	361	33	74	53.5	21.5	5921.5
5/28/2018	2018	5	28	362	34	71	52.5	20.5	5942
5/29/2018	2018	5	29	363	38	74	56	24	5966
5/30/2018	2018	5	30	364	45	75	60	28	5994
5/31/2018	2018	5	31	365	40	80	60	28	6022
6/1/2018	2018	6	1	1	44	77	60.5	28.5	28.5
6/2/2018	2018	6	2	2	42	82	62	30	58.5
6/3/2018	2018	6	3	3	49	81	65	33	91.5
6/4/2018	2018	6	4	4	43	84	63.5	31.5	123
6/5/2018	2018	6	5	5	51	82	66.5	34.5	157.5
6/6/2018	2018	6	6	6	48	81	64.5	32.5	190
6/7/2018	2018	6	7	7	47	82	64.5	32.5	222.5
6/8/2018	2018	6	8	8	45	82	63.5	31.5	254
6/9/2018	2018	6	9	9	54	81	67.5	35.5	289.5
6/10/2018	2018	6	10	10	51	81	66	34	323.5
6/11/2018	2018	6	11	11	47	83	65	33	356.5
6/12/2018	2018	6	12	12	46	88	67	35	391.5
6/13/2018	2018	6	13	13	58	86	72	40	431.5
6/14/2018	2018	6	14	14	53	83	68	36	467.5
6/15/2018	2018	6	15	15	51	77	64	32	499.5
6/16/2018	2018	6	16	16	49	62	55.5	23.5	523
6/17/2018	2018	6	17	17	47	70	58.5	26.5	549.5
6/18/2018	2018	6	18	18	44	76	60	28	577.5
6/19/2018	2018	6	19	19	48	78	63	31	608.5
6/20/2018	2018	6	20	20	44	83	63.5	31.5	640
6/21/2018	2018	6	21	21	46	87	66.5	34.5	674.5
6/22/2018	2018	6	22	22	51	85	68	36	710.5
6/23/2018	2018	6	23	23	46	85	65.5	33.5	744
6/24/2018	2018	6	24	24	50	82	66	34	778
6/25/2018	2018	6	25	25	47	85	66	34	812
6/26/2018	2018	6	26	26	49	88	68.5	36.5	848.5
6/27/2018	2018	6	27	27	55	90	72.5	40.5	889
6/28/2018	2018	6	28	28	58	86	72	40	929
6/29/2018	2018	6	29	29	54	81	67.5	35.5	964.5
6/30/2018	2018	6	30	30	55	77	66	34	998.5
7/1/2018	2018	7	1	31	50	83	66.5	34.5	1033
7/2/2018	2018	7	2	32	48	83	65.5	33.5	1066.5
7/3/2018	2018	7	3	33	54	82	68	36	1102.5
7/4/2018	2018	7	4	34	53	82	67.5	35.5	1138
7/5/2018	2018	7	5	35	57	81	69	37	1175
7/6/2018	2018	7	6	36	54	75	64.5	32.5	1207.5
7/7/2018	2018	7	7	37	50	84	67	35	1242.5
7/8/2018	2018	7	8	38	50	85	67.5	35.5	1278
7/9/2018	2018	7	9	39	51	78	64.5	32.5	1310.5
7/10/2018	2018	7	10	40	50	80	65	33	1343.5
7/11/2018	2018	7	11	41	49	74	61.5	29.5	1373
7/12/2018	2018	7	12	42	51	69	60	28	1401
7/13/2018	2018	7	13	43	52	74	63	31	1432
7/14/2018	2018	7	14	44	50	74	62	30	1462
7/15/2018	2018	7	15	45	51	77	64	32	1494
7/16/2018	2018	7	16	46	51	72	61.5	29.5	1523.5
7/17/2018	2018	7	17	47	49	70	59.5	27.5	1551
7/18/2018	2018	7	18	48	52	78	65	33	1584
7/19/2018	2018	7	19	49	53	83	68	36	1620
7/20/2018	2018	7	20	50	52	84	68	36	1656
7/21/2018	2018	7	21	51	49	86	67.5	35.5	1691.5
7/22/2018	2018	7	22	52	53	87	70	38	1729.5
7/23/2018	2018	7	23	53	56	86	71	39	1768.5
7/24/2018	2018	7	24	54	54	81	67.5	35.5	1804
7/25/2018	2018	7	25	55	52	83	67.5	35.5	1839.5
7/26/2018	2018	7	26	56	55	83	69	37	1876.5
7/27/2018	2018	7	27	57	51	76	63.5	31.5	1908
7/28/2018	2018	7	28	58	49	79	64	32	1940

7/29/2018	2018	7	29	59	51	83	67	35	1975
7/30/2018	2018	7	30	60	53	84	68.5	36.5	2011.5
7/31/2018	2018	7	31	61	51	83	67	35	2046.5
8/1/2018	2018	8	1	62	60	83	71.5	39.5	2086
8/2/2018	2018	8	2	63	58	82	70	38	2124
8/3/2018	2018	8	3	64	52	77	64.5	32.5	2156.5
8/4/2018	2018	8	4	65	52	83	67.5	35.5	2192
8/5/2018	2018	8	5	66	52	84	68	36	2228
8/6/2018	2018	8	6	67	51	86	68.5	36.5	2264.5
8/7/2018	2018	8	7	68	53	86	69.5	37.5	2302
8/8/2018	2018	8	8	69	56	83	69.5	37.5	2339.5
8/9/2018	2018	8	9	70	52	80	66	34	2373.5
8/10/2018	2018	8	10	71	48	79	63.5	31.5	2405
8/11/2018	2018	8	11	72	46	75	60.5	28.5	2433.5
8/12/2018	2018	8	12	73	49	79	64	32	2465.5
8/13/2018	2018	8	13	74	51	84	67.5	35.5	2501
8/14/2018	2018	8	14	75	52	81	66.5	34.5	2535.5
8/15/2018	2018	8	15	76	52	77	64.5	32.5	2568
8/16/2018	2018	8	16	77	53	75	64	32	2600
8/17/2018	2018	8	17	78	53	76	64.5	32.5	2632.5
8/18/2018	2018	8	18	79	53	78	65.5	33.5	2666
8/19/2018	2018	8	19	80	47	80	63.5	31.5	2697.5
8/20/2018	2018	8	20	81	46	82	64	32	2729.5
8/21/2018	2018	8	21	82	52	76	64	32	2761.5
8/22/2018	2018	8	22	83	51	70	60.5	28.5	2790
8/23/2018	2018	8	23	84	49	70	59.5	27.5	2817.5
8/24/2018	2018	8	24	85	49	73	61	29	2846.5
8/25/2018	2018	8	25	86	47	71	59	27	2873.5
8/26/2018	2018	8	26	87	47	74	60.5	28.5	2902
8/27/2018	2018	8	27	88	48	71	59.5	27.5	2929.5
8/28/2018	2018	8	28	89	43	76	59.5	27.5	2957
8/29/2018	2018	8	29	90	45	79	62	30	2987
8/30/2018	2018	8	30	91	50	79	64.5	32.5	3019.5
8/31/2018	2018	8	31	92	51	78	64.5	32.5	3052
9/1/2018	2018	9	1	93	44	60	52	20	3072
9/2/2018	2018	9	2	94	42	69	55.5	23.5	3095.5
9/3/2018	2018	9	3	95	42	66	54	22	3117.5
9/4/2018	2018	9	4	96	43	69	56	24	3141.5
9/5/2018	2018	9	5	97	42	71	56.5	24.5	3166
9/6/2018	2018	9	6	98	43	66	54.5	22.5	3188.5
9/7/2018	2018	9	7	99	44	71	57.5	25.5	3214
9/8/2018	2018	9	8	100	45	75	60	28	3242
9/9/2018	2018	9	9	101	48	78	63	31	3273
9/10/2018	2018	9	10	102	47	75	61	29	3302
9/11/2018	2018	9	11	103	48	76	62	30	3332
9/12/2018	2018	9	12	104	44	76	60	28	3360
9/13/2018	2018	9	13	105	43	75	59	27	3387
9/14/2018	2018	9	14	106	45	76	60.5	28.5	3415.5
9/15/2018	2018	9	15	107	47	79	63	31	3446.5
9/16/2018	2018	9	16	108	51	77	64	32	3478.5
9/17/2018	2018	9	17	109	50	79	64.5	32.5	3511
9/18/2018	2018	9	18	110	49	79	64	32	3543
9/19/2018	2018	9	19	111	48	75	61.5	29.5	3572.5
9/20/2018	2018	9	20	112	40	67	53.5	21.5	3594
9/21/2018	2018	9	21	113	37	70	53.5	21.5	3615.5
9/22/2018	2018	9	22	114	41	72	56.5	24.5	3640
9/23/2018	2018	9	23	115	45	72	58.5	26.5	3666.5
9/24/2018	2018	9	24	116	46	71	58.5	26.5	3693
9/25/2018	2018	9	25	117	45	72	58.5	26.5	3719.5
9/26/2018	2018	9	26	118	38	69	53.5	21.5	3741
9/27/2018	2018	9	27	119	37	73	55	23	3764
9/28/2018	2018	9	28	120	42	76	59	27	3791
9/29/2018	2018	9	29	121	44	72	58	26	3817
9/30/2018	2018	9	30	122	42	72	57	25	3842
10/1/2018	2018	10	1	123	50	63	56.5	24.5	3866.5
10/2/2018	2018	10	2	124	46	63	54.5	22.5	3889
10/3/2018	2018	10	3	125	46	64	55	23	3912
10/4/2018	2018	10	4	126	36	63	49.5	17.5	3929.5
10/5/2018	2018	10	5	127	34	60	47	15	3944.5
10/6/2018	2018	10	6	128	33	63	48	16	3960.5
10/7/2018	2018	10	7	129	33	52	42.5	10.5	3971
10/8/2018	2018	10	8	130	31	42	36.5	4.5	3975.5
10/9/2018	2018	10	9	131	32	42	37	5	3980.5
10/10/2018	2018	10	10	132	31	48	39.5	7.5	3988
10/11/2018	2018	10	11	133	31	54	42.5	10.5	3998.5
10/12/2018	2018	10	12	134	33	55	44	12	4010.5
10/13/2018	2018	10	13	135	38	57	47.5	15.5	4026
10/14/2018	2018	10	14	136	27	50	38.5	6.5	4032.5
10/15/2018	2018	10	15	137	25	36	30.5	-1.5	4031
10/16/2018	2018	10	16	138	27	36	31.5	-0.5	4030.5
10/17/2018	2018	10	17	139	28	37	32.5	0.5	4031
10/18/2018	2018	10	18	140	32	52	42	10	4041
10/19/2018	2018	10	19	141	30	54	42	10	4051
10/20/2018	2018	10	20	142	40	58	49	17	4068
10/21/2018	2018	10	21	143	38	60	49	17	4085
10/22/2018	2018	10	22	144	38	59	48.5	16.5	4101.5
10/23/2018	2018	10	23	145	39	50	44.5	12.5	4114
10/24/2018	2018	10	24	146	36	53	44.5	12.5	4126.5
10/25/2018	2018	10	25	147	30	53	41.5	9.5	4136
10/26/2018	2018	10	26	148	30	56	43	11	4147
10/27/2018	2018	10	27	149	29	63	46	14	4161
10/28/2018	2018	10	28	150	32	68	50	18	4179
10/29/2018	2018	10	29	151	42	62	52	20	4199

10/30/2018	2018	10	30	152	32	52	42	10	4209
10/31/2018	2018	10	31	153	26	42	34	2	4211
11/1/2018	2018	11	1	154	28	45	36.5	4.5	4215.5
11/2/2018	2018	11	2	155	27	53	40	8	4223.5
11/3/2018	2018	11	3	156	26	49	37.5	5.5	4229
11/4/2018	2018	11	4	157	26	51	38.5	6.5	4235.5
11/5/2018	2018	11	5	158	36	53	44.5	12.5	4248
11/6/2018	2018	11	6	159	30	54	42	10	4258
11/7/2018	2018	11	7	160	28	53	40.5	8.5	4266.5
11/8/2018	2018	11	8	161	15	48	31.5	-0.5	4266
11/9/2018	2018	11	9	162	10	45	27.5	-4.5	4261.5
11/10/2018	2018	11	10	163	25	49	37	5	4266.5
11/11/2018	2018	11	11	164	16	42	29	-3	4263.5
11/12/2018	2018	11	12	165	7	23	15	-17	4246.5
11/13/2018	2018	11	13	166	6	39	22.5	-9.5	4237
11/14/2018	2018	11	14	167	16	47	31.5	-0.5	4236.5
11/15/2018	2018	11	15	168	20	53	36.5	4.5	4241
11/16/2018	2018	11	16	169	23	53	38	6	4247
11/17/2018	2018	11	17	170	29	50	39.5	7.5	4254.5
11/18/2018	2018	11	18	171	20	46	33	1	4255.5
11/19/2018	2018	11	19	172	16	49	32.5	0.5	4256
11/20/2018	2018	11	20	173	19	50	34.5	2.5	4258.5
11/21/2018	2018	11	21	174	22	53	37.5	5.5	4264
11/22/2018	2018	11	22	175	28	42	35	3	4267
11/23/2018	2018	11	23	176	25	44	34.5	2.5	4269.5
11/24/2018	2018	11	24	177	21	46	33.5	1.5	4271
11/25/2018	2018	11	25	178	13	38	25.5	-6.5	4264.5
11/26/2018	2018	11	26	179	16	46	31	-1	4263.5
11/27/2018	2018	11	27	180	20	52	36	4	4267.5
11/28/2018	2018	11	28	181	32	50	41	9	4276.5
11/29/2018	2018	11	29	182	28	45	36.5	4.5	4281
11/30/2018	2018	11	30	183	26	35	30.5	-1.5	4279.5
12/1/2018	2018	12	1	184	19	33	26	-6	4273.5
12/2/2018	2018	12	2	185	8	28	18	-14	4259.5
12/3/2018	2018	12	3	186	1	30	15.5	-16.5	4243
12/4/2018	2018	12	4	187	4	35	19.5	-12.5	4230.5
12/5/2018	2018	12	5	188	17	47	32	0	4230.5
12/6/2018	2018	12	6	189	26	43	34.5	2.5	4233
12/7/2018	2018	12	7	190	29	39	34	2	4235
12/8/2018	2018	12	8	191	19	40	29.5	-2.5	4232.5
12/9/2018	2018	12	9	192	13	39	26	-6	4226.5
12/10/2018	2018	12	10	193	9	51	30	-2	4224.5
12/11/2018	2018	12	11	194	25	49	37	5	4229.5
12/12/2018	2018	12	12	195	18	42	30	-2	4227.5
12/13/2018	2018	12	13	196	14	36	25	-7	4220.5
12/14/2018	2018	12	14	197	13	48	30.5	-1.5	4219
12/15/2018	2018	12	15	198	24	50	37	5	4224
12/16/2018	2018	12	16	199	23	52	37.5	5.5	4229.5
12/17/2018	2018	12	17	200	30	40	35	3	4232.5
12/18/2018	2018	12	18	201	25	43	34	2	4234.5
12/19/2018	2018	12	19	202	25	45	35	3	4237.5
12/20/2018	2018	12	20	203	22	51	36.5	4.5	4242
12/21/2018	2018	12	21	204	31	50	40.5	8.5	4250.5
12/22/2018	2018	12	22	205	17	44	30.5	-1.5	4249
12/23/2018	2018	12	23	206	16	45	30.5	-1.5	4247.5
12/24/2018	2018	12	24	207	26	45	35.5	3.5	4251
12/25/2018	2018	12	25	208	25	45	35	3	4254
12/26/2018	2018	12	26	209	20	31	25.5	-6.5	4247.5
12/27/2018	2018	12	27	210	17	24	20.5	-11.5	4236
12/28/2018	2018	12	28	211	-4	20	8	-24	4212
12/29/2018	2018	12	29	212	-5	22	8.5	-23.5	4188.5
12/30/2018	2018	12	30	213	-4	30	13	-19	4169.5
12/31/2018	2018	12	31	214	15	21	18	-14	4155.5
1/1/2019	2019	1	1	215	6	21	13.5	-18.5	4137
1/2/2019	2019	1	2	216	0	27	13.5	-18.5	4118.5
1/3/2019	2019	1	3	217	2	38	20	-12	4106.5
1/4/2019	2019	1	4	218	15	52	33.5	1.5	4108
1/5/2019	2019	1	5	219	20	50	35	3	4111
1/6/2019	2019	1	6	220	23	36	29.5	-2.5	4108.5
1/7/2019	2019	1	7	221	19	35	27	-5	4103.5
1/8/2019	2019	1	8	222	17	49	33	1	4104.5
1/9/2019	2019	1	9	223	22	49	35.5	3.5	4108
1/10/2019	2019	1	10	224	27	46	36.5	4.5	4112.5
1/11/2019	2019	1	11	225	13	33	23	-9	4103.5
1/12/2019	2019	1	12	226	10	35	22.5	-9.5	4094
1/13/2019	2019	1	13	227	24	33	28.5	-3.5	4090.5
1/14/2019	2019	1	14	228	20	37	28.5	-3.5	4087
1/15/2019	2019	1	15	229	19	42	30.5	-1.5	4085.5
1/16/2019	2019	1	16	230	29	36	32.5	0.5	4086
1/17/2019	2019	1	17	231	20	47	33.5	1.5	4087.5
1/18/2019	2019	1	18	232	14	32	23	-9	4078.5
1/19/2019	2019	1	19	233	10	40	25	-7	4071.5
1/20/2019	2019	1	20	234	18	49	33.5	1.5	4073
1/21/2019	2019	1	21	235	17	44	30.5	-1.5	4071.5
1/22/2019	2019	1	22	236	4	26	15	-17	4054.5
1/23/2019	2019	1	23	237	2	35	18.5	-13.5	4041
1/24/2019	2019	1	24	238	13	35	24	-8	4033
1/25/2019	2019	1	25	239	9	39	24	-8	4025
1/26/2019	2019	1	26	240	8	40	24	-8	4017
1/27/2019	2019	1	27	241	15	47	31	-1	4016
1/28/2019	2019	1	28	242	15	45	30	-2	4014
1/29/2019	2019	1	29	243	17	41	29	-3	4011
1/30/2019	2019	1	30	244	10	46	28	-4	4007

1/31/2019	2019	1	31	245	20	46	33	1	4008
2/1/2019	2019	2	1	246	22	48	35	3	4011
2/2/2019	2019	2	2	247	21	44	32.5	0.5	4011.5
2/3/2019	2019	2	3	248	31	44	37.5	5.5	4017
2/4/2019	2019	2	4	249	32	46	39	7	4024
2/5/2019	2019	2	5	250	27	41	34	2	4026
2/6/2019	2019	2	6	251	10	28	19	-13	4013
2/7/2019	2019	2	7	252	-2	24	11	-21	3992
2/8/2019	2019	2	8	253	2	41	21.5	-10.5	3981.5
2/9/2019	2019	2	9	254	23	42	32.5	0.5	3982
2/10/2019	2019	2	10	255	22	41	31.5	-0.5	3981.5
2/11/2019	2019	2	11	256	4	24	14	-18	3963.5
2/12/2019	2019	2	12	257	3	44	23.5	-8.5	3955
2/13/2019	2019	2	13	258	22	47	34.5	2.5	3957.5
2/14/2019	2019	2	14	259	33	39	36	4	3961.5
2/15/2019	2019	2	15	260	31	44	37.5	5.5	3967
2/16/2019	2019	2	16	261	16	32	24	-8	3959
2/17/2019	2019	2	17	262	16	25	20.5	-11.5	3947.5
2/18/2019	2019	2	18	263	8	27	17.5	-14.5	3933
2/19/2019	2019	2	19	264	10	22	16	-16	3917
2/20/2019	2019	2	20	265	9	26	17.5	-14.5	3902.5
2/21/2019	2019	2	21	266	17	33	25	-7	3895.5
2/22/2019	2019	2	22	267	16	25	20.5	-11.5	3884
2/23/2019	2019	2	23	268	5	30	17.5	-14.5	3869.5
2/24/2019	2019	2	24	269	2	45	23.5	-8.5	3861
2/25/2019	2019	2	25	270	17	44	30.5	-1.5	3859.5
2/26/2019	2019	2	26	271	23	48	35.5	3.5	3863
2/27/2019	2019	2	27	272	24	49	36.5	4.5	3867.5
2/28/2019	2019	2	28	273	24	49	36.5	4.5	3872
3/1/2019	2019	3	1	274	31	49	40	8	3880
3/2/2019	2019	3	2	275	33	46	39.5	7.5	3887.5
3/3/2019	2019	3	3	276	32	46	39	7	3894.5
3/4/2019	2019	3	4	277	25	46	35.5	3.5	3898
3/5/2019	2019	3	5	278	24	54	39	7	3905
3/6/2019	2019	3	6	279	29	54	41.5	9.5	3914.5
3/7/2019	2019	3	7	280	36	52	44	12	3926.5
3/8/2019	2019	3	8	281	20	49	34.5	2.5	3929
3/9/2019	2019	3	9	282	17	40	28.5	-3.5	3925.5
3/10/2019	2019	3	10	283	17	49	33	1	3926.5
3/11/2019	2019	3	11	284	33	44	38.5	6.5	3933
3/12/2019	2019	3	12	285	25	41	33	1	3934
3/13/2019	2019	3	13	286	17	28	22.5	-9.5	3924.5
3/14/2019	2019	3	14	287	11	28	19.5	-12.5	3912
3/15/2019	2019	3	15	288	11	40	25.5	-6.5	3905.5
3/16/2019	2019	3	16	289	20	46	33	1	3906.5
3/17/2019	2019	3	17	290	22	50	36	4	3910.5
3/18/2019	2019	3	18	291	24	50	37	5	3915.5
3/19/2019	2019	3	19	292	29	50	39.5	7.5	3923
3/20/2019	2019	3	20	293	27	53	40	8	3931
3/21/2019	2019	3	21	294	27	49	38	6	3937
3/22/2019	2019	3	22	295	24	42	33	1	3938
3/23/2019	2019	3	23	296	25	48	36.5	4.5	3942.5
3/24/2019	2019	3	24	297	27	51	39	7	3949.5
3/25/2019	2019	3	25	298	24	58	41	9	3958.5
3/26/2019	2019	3	26	299	31	63	47	15	3973.5
3/27/2019	2019	3	27	300	35	60	47.5	15.5	3989
3/28/2019	2019	3	28	301	31	61	46	14	4003
3/29/2019	2019	3	29	302	26	51	38.5	6.5	4009.5
3/30/2019	2019	3	30	303	19	48	33.5	1.5	4011
3/31/2019	2019	3	31	304	18	39	28.5	-3.5	4007.5
4/1/2019	2019	4	1	305	16	50	33	1	4008.5
4/2/2019	2019	4	2	306	29	54	41.5	9.5	4018
4/3/2019	2019	4	3	307	29	48	38.5	6.5	4024.5
4/4/2019	2019	4	4	308	28	57	42.5	10.5	4035
4/5/2019	2019	4	5	309	29	54	41.5	9.5	4044.5
4/6/2019	2019	4	6	310	29	54	41.5	9.5	4054
4/7/2019	2019	4	7	311	29	61	45	13	4067
4/8/2019	2019	4	8	312	33	65	49	17	4084
4/9/2019	2019	4	9	313	38	66	52	20	4104
4/10/2019	2019	4	10	314	25	47	36	4	4108
4/11/2019	2019	4	11	315	24	41	32.5	0.5	4108.5
4/12/2019	2019	4	12	316	24	38	31	-1	4107.5
4/13/2019	2019	4	13	317	23	45	34	2	4109.5
4/14/2019	2019	4	14	318	26	58	42	10	4119.5
4/15/2019	2019	4	15	319	34	60	47	15	4134.5
4/16/2019	2019	4	16	320	33	53	43	11	4145.5
4/17/2019	2019	4	17	321	32	47	39.5	7.5	4153
4/18/2019	2019	4	18	322	32	61	46.5	14.5	4167.5
4/19/2019	2019	4	19	323	30	67	48.5	16.5	4184
4/20/2019	2019	4	20	324	36	67	51.5	19.5	4203.5
4/21/2019	2019	4	21	325	36	60	48	16	4219.5
4/22/2019	2019	4	22	326	29	54	41.5	9.5	4229
4/23/2019	2019	4	23	327	30	53	41.5	9.5	4238.5
4/24/2019	2019	4	24	328	30	61	45.5	13.5	4252
4/25/2019	2019	4	25	329	38	68	53	21	4273
4/26/2019	2019	4	26	330	37	69	53	21	4294
4/27/2019	2019	4	27	331	38	68	53	21	4315
4/28/2019	2019	4	28	332	36	66	51	19	4334
4/29/2019	2019	4	29	333	36	63	49.5	17.5	4351.5
4/30/2019	2019	4	30	334	33	51	42	10	4361.5
5/1/2019	2019	5	1	335	34	58	46	14	4375.5
5/2/2019	2019	5	2	336	30	61	45.5	13.5	4389
5/3/2019	2019	5	3	337	28	62	45	13	4402

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5/5/2019	2019	5	5	339	38	67	52.5	20.5	4439
5/6/2019	2019	5	6	340	37	62	49.5	17.5	4456.5
5/7/2019	2019	5	7	341	34	59	46.5	14.5	4471
5/8/2019	2019	5	8	342	32	50	41	9	4480
5/9/2019	2019	5	9	343	31	54	42.5	10.5	4490.5
5/10/2019	2019	5	10	344	34	42	38	6	4496.5
5/11/2019	2019	5	11	345	34	53	43.5	11.5	4508
5/12/2019	2019	5	12	346	31	58	44.5	12.5	4520.5
5/13/2019	2019	5	13	347	34	66	50	18	4538.5
5/14/2019	2019	5	14	348	39	67	53	21	4559.5
5/15/2019	2019	5	15	349	39	70	54.5	22.5	4582
5/16/2019	2019	5	16	350	42	71	56.5	24.5	4606.5
5/17/2019	2019	5	17	351	32	57	44.5	12.5	4619
5/18/2019	2019	5	18	352	29	54	41.5	9.5	4628.5
5/19/2019	2019	5	19	353	33	57	45	13	4641.5
5/20/2019	2019	5	20	354	27	44	35.5	3.5	4645
5/21/2019	2019	5	21	355	27	46	36.5	4.5	4649.5
5/22/2019	2019	5	22	356	31	58	44.5	12.5	4662
5/23/2019	2019	5	23	357	27	48	37.5	5.5	4667.5
5/24/2019	2019	5	24	358	26	63	44.5	12.5	4680
5/25/2019	2019	5	25	359	30	68	49	17	4697
5/26/2019	2019	5	26	360	39	68	53.5	21.5	4718.5
5/27/2019	2019	5	27	361	33	60	46.5	14.5	4733
5/28/2019	2019	5	28	362	28	57	42.5	10.5	4743.5
5/29/2019	2019	5	29	363	31	61	46	14	4757.5
5/30/2019	2019	5	30	364	32	62	47	15	4772.5
5/31/2019	2019	5	31	365	36	71	53.5	21.5	4794
6/1/2019	2019	6	1	1	39	75	57	25	25
6/2/2019	2019	6	2	2	42	74	58	26	51
6/3/2019	2019	6	3	3	38	74	56	24	75
6/4/2019	2019	6	4	4	41	74	57.5	25.5	100.5
6/5/2019	2019	6	5	5	41	66	53.5	21.5	122
6/6/2019	2019	6	6	6	40	74	57	25	147
6/7/2019	2019	6	7	7	47	75	61	29	176
6/8/2019	2019	6	8	8	42	73	57.5	25.5	201.5
6/9/2019	2019	6	9	9	42	76	59	27	228.5
6/10/2019	2019	6	10	10	46	71	58.5	26.5	255
6/11/2019	2019	6	11	11	46	78	62	30	285
6/12/2019	2019	6	12	12	43	80	61.5	29.5	314.5
6/13/2019	2019	6	13	13	49	81	65	33	347.5
6/14/2019	2019	6	14	14	50	76	63	31	378.5
6/15/2019	2019	6	15	15	47	75	61	29	407.5
6/16/2019	2019	6	16	16	46	75	60.5	28.5	436
6/17/2019	2019	6	17	17	40	72	56	24	460
6/18/2019	2019	6	18	18	38	74	56	24	484
6/19/2019	2019	6	19	19	44	77	60.5	28.5	512.5
6/20/2019	2019	6	20	20	52	77	64.5	32.5	545
6/21/2019	2019	6	21	21	46	74	60	28	573
6/22/2019	2019	6	22	22	40	71	55.5	23.5	596.5
6/23/2019	2019	6	23	23	33	68	50.5	18.5	615
6/24/2019	2019	6	24	24	34	74	54	22	637
6/25/2019	2019	6	25	25	44	78	61	29	666
6/26/2019	2019	6	26	26	43	80	61.5	29.5	695.5
6/27/2019	2019	6	27	27	47	82	64.5	32.5	728
6/28/2019	2019	6	28	28	47	82	64.5	32.5	760.5
6/29/2019	2019	6	29	29	47	83	65	33	793.5
6/30/2019	2019	6	30	30	49	82	65.5	33.5	827
7/1/2019	2019	7	1	31	47	80	63.5	31.5	858.5
7/2/2019	2019	7	2	32	52	80	66	34	892.5
7/3/2019	2019	7	3	33	54	79	66.5	34.5	927
7/4/2019	2019	7	4	34	51	79	65	33	960
7/5/2019	2019	7	5	35	52	79	65.5	33.5	993.5
7/6/2019	2019	7	6	36	55	67	61	29	1022.5
7/7/2019	2019	7	7	37	51	68	59.5	27.5	1050
7/8/2019	2019	7	8	38	48	75	61.5	29.5	1079.5
7/9/2019	2019	7	9	39	45	79	62	30	1109.5
7/10/2019	2019	7	10	40	46	84	65	33	1142.5
7/11/2019	2019	7	11	41	57	84	70.5	38.5	1181
7/12/2019	2019	7	12	42	54	83	68.5	36.5	1217.5
7/13/2019	2019	7	13	43	53	80	66.5	34.5	1252
7/14/2019	2019	7	14	44	51	80	65.5	33.5	1285.5
7/15/2019	2019	7	15	45	52	82	67	35	1320.5
7/16/2019	2019	7	16	46	55	83	69	37	1357.5
7/17/2019	2019	7	17	47	52	83	67.5	35.5	1393
7/18/2019	2019	7	18	48	55	84	69.5	37.5	1430.5
7/19/2019	2019	7	19	49	53	83	68	36	1466.5
7/20/2019	2019	7	20	50	58	85	71.5	39.5	1506
7/21/2019	2019	7	21	51	58	85	71.5	39.5	1545.5
7/22/2019	2019	7	22	52	54	82	68	36	1581.5
7/23/2019	2019	7	23	53	55	77	66	34	1615.5
7/24/2019	2019	7	24	54	53	75	64	32	1647.5
7/25/2019	2019	7	25	55	52	81	66.5	34.5	1682
7/26/2019	2019	7	26	56	50	82	66	34	1716
7/27/2019	2019	7	27	57	52	83	67.5	35.5	1751.5
7/28/2019	2019	7	28	58	53	82	67.5	35.5	1787
7/29/2019	2019	7	29	59	53	81	67	35	1822
7/30/2019	2019	7	30	60	54	82	68	36	1858
7/31/2019	2019	7	31	61	53	80	66.5	34.5	1892.5
8/1/2019	2019	8	1	62	52	79	65.5	33.5	1926
8/2/2019	2019	8	2	63	50	74	62	30	1956
8/3/2019	2019	8	3	64	52	77	64.5	32.5	1988.5
8/4/2019	2019	8	4	65	52	76	64	32	2020.5

8/5/2019	2019	8	5	66	50	81	65.5	33.5	2054
8/6/2019	2019	8	6	67	53	81	67	35	2089
8/7/2019	2019	8	7	68	52	74	63	31	2120
8/8/2019	2019	8	8	69	50	79	64.5	32.5	2152.5
8/9/2019	2019	8	9	70	48	69	58.5	26.5	2179
8/10/2019	2019	8	10	71	46	69	57.5	25.5	2204.5
8/11/2019	2019	8	11	72	50	65	57.5	25.5	2230
8/12/2019	2019	8	12	73	50	76	63	31	2261
8/13/2019	2019	8	13	74	49	80	64.5	32.5	2293.5
8/14/2019	2019	8	14	75	49	80	64.5	32.5	2326
8/15/2019	2019	8	15	76	52	82	67	35	2361
8/16/2019	2019	8	16	77	54	81	67.5	35.5	2396.5
8/17/2019	2019	8	17	78	51	78	64.5	32.5	2429
8/18/2019	2019	8	18	79	53	81	67	35	2464
8/19/2019	2019	8	19	80	50	83	66.5	34.5	2498.5
8/20/2019	2019	8	20	81	53	84	68.5	36.5	2535
8/21/2019	2019	8	21	82	54	78	66	34	2569
8/22/2019	2019	8	22	83	52	81	66.5	34.5	2603.5
8/23/2019	2019	8	23	84	51	77	64	32	2635.5
8/24/2019	2019	8	24	85	51	80	65.5	33.5	2669
8/25/2019	2019	8	25	86	51	83	67	35	2704
8/26/2019	2019	8	26	87	53	85	69	37	2741
8/27/2019	2019	8	27	88	50	86	68	36	2777
8/28/2019	2019	8	28	89	50	84	67	35	2812
8/29/2019	2019	8	29	90	53	80	66.5	34.5	2846.5
8/30/2019	2019	8	30	91	51	84	67.5	35.5	2882
8/31/2019	2019	8	31	92	53	86	69.5	37.5	2919.5
9/1/2019	2019	9	1	93	52	80	66	34	2953.5
9/2/2019	2019	9	2	94	50	82	66	34	2987.5
9/3/2019	2019	9	3	95	49	84	66.5	34.5	3022
9/4/2019	2019	9	4	96	54	81	67.5	35.5	3057.5
9/5/2019	2019	9	5	97	50	81	65.5	33.5	3091
9/6/2019	2019	9	6	98	56	84	70	38	3129
9/7/2019	2019	9	7	99	50	80	65	33	3162
9/8/2019	2019	9	8	100	47	71	59	27	3189
9/9/2019	2019	9	9	101	48	72	60	28	3217
9/10/2019	2019	9	10	102	45	71	58	26	3243
9/11/2019	2019	9	11	103	45	70	57.5	25.5	3268.5
9/12/2019	2019	9	12	104	36	72	54	22	3290.5
9/13/2019	2019	9	13	105	40	77	58.5	26.5	3317
9/14/2019	2019	9	14	106	48	76	62	30	3347
9/15/2019	2019	9	15	107	47	57	52	20	3367
9/16/2019	2019	9	16	108	46	67	56.5	24.5	3391.5
9/17/2019	2019	9	17	109	46	68	57	25	3416.5
9/18/2019	2019	9	18	110	43	68	55.5	23.5	3440
9/19/2019	2019	9	19	111	42	71	56.5	24.5	3464.5
9/20/2019	2019	9	20	112	43	68	55.5	23.5	3488
9/21/2019	2019	9	21	113	38	67	52.5	20.5	3508.5
9/22/2019	2019	9	22	114	32	68	50	18	3526.5
9/23/2019	2019	9	23	115	39	53	46	14	3540.5
9/24/2019	2019	9	24	116	36	66	51	19	3559.5
9/25/2019	2019	9	25	117	38	69	53.5	21.5	3581
9/26/2019	2019	9	26	118	45	67	56	24	3605
9/27/2019	2019	9	27	119	43	61	52	20	3625
9/28/2019	2019	9	28	120	42	69	55.5	23.5	3648.5
9/29/2019	2019	9	29	121	48	69	58.5	26.5	3675
9/30/2019	2019	9	30	122	44	73	58.5	26.5	3701.5
10/1/2019	2019	10	1	123	40	69	54.5	22.5	3724
10/2/2019	2019	10	2	124	36	64	50	18	3742
10/3/2019	2019	10	3	125	36	70	53	21	3763
10/4/2019	2019	10	4	126	47	64	55.5	23.5	3786.5
10/5/2019	2019	10	5	127	39	66	52.5	20.5	3807
10/6/2019	2019	10	6	128	35	66	50.5	18.5	3825.5
10/7/2019	2019	10	7	129	36	68	52	20	3845.5
10/8/2019	2019	10	8	130	38	67	52.5	20.5	3866
10/9/2019	2019	10	9	131	38	63	50.5	18.5	3884.5
10/10/2019	2019	10	10	132	19	55	37	5	3889.5
10/11/2019	2019	10	11	133	14	54	34	2	3891.5
10/12/2019	2019	10	12	134	31	62	46.5	14.5	3906
10/13/2019	2019	10	13	135	31	63	47	15	3921
10/14/2019	2019	10	14	136	31	62	46.5	14.5	3935.5
10/15/2019	2019	10	15	137	30	71	50.5	18.5	3954
10/16/2019	2019	10	16	138	29	69	49	17	3971
10/17/2019	2019	10	17	139	35	63	49	17	3988
10/18/2019	2019	10	18	140	29	55	42	10	3998
10/19/2019	2019	10	19	141	26	57	41.5	9.5	4007.5
10/20/2019	2019	10	20	142	25	50	37.5	5.5	4013
10/21/2019	2019	10	21	143	27	52	39.5	7.5	4020.5
10/22/2019	2019	10	22	144	25	60	42.5	10.5	4031
10/23/2019	2019	10	23	145	31	59	45	13	4044
10/24/2019	2019	10	24	146	19	41	30	-2	4042
10/25/2019	2019	10	25	147	18	56	37	5	4047
10/26/2019	2019	10	26	148	28	62	45	13	4060
10/27/2019	2019	10	27	149	41	60	50.5	18.5	4078.5
10/28/2019	2019	10	28	150	23	42	32.5	0.5	4079
10/29/2019	2019	10	29	151	25	48	36.5	4.5	4083.5
10/30/2019	2019	10	30	152	7	28	17.5	-14.5	4069
10/31/2019	2019	10	31	153	7	50	28.5	-3.5	4065.5
11/1/2019	2019	11	1	154	24	58	41	9	4074.5
11/2/2019	2019	11	2	155	24	59	41.5	9.5	4084
11/3/2019	2019	11	3	156	30	61	45.5	13.5	4097.5
11/4/2019	2019	11	4	157	32	58	45	13	4110.5
11/5/2019	2019	11	5	158	29	58	43.5	11.5	4122

11/6/2019	2019	11	6	159	33	46	39.5	7.5	4129.5
11/7/2019	2019	11	7	160	29	50	39.5	7.5	4137
11/8/2019	2019	11	8	161	25	53	39	7	4144
11/9/2019	2019	11	9	162	23	62	42.5	10.5	4154.5
11/10/2019	2019	11	10	163	33	57	45	13	4167.5
11/11/2019	2019	11	11	164	23	57	40	8	4175.5
11/12/2019	2019	11	12	165	20	52	36	4	4179.5
11/13/2019	2019	11	13	166	29	58	43.5	11.5	4191
11/14/2019	2019	11	14	167	26	58	42	10	4201
11/15/2019	2019	11	15	168	32	58	45	13	4214
11/16/2019	2019	11	16	169	28	58	43	11	4225
11/17/2019	2019	11	17	170	25	56	40.5	8.5	4233.5
11/18/2019	2019	11	18	171	33	60	46.5	14.5	4248
11/19/2019	2019	11	19	172	33	57	45	13	4261
11/20/2019	2019	11	20	173	34	42	38	6	4267
11/21/2019	2019	11	21	174	25	37	31	-1	4266
11/22/2019	2019	11	22	175	21	34	27.5	-4.5	4261.5
11/23/2019	2019	11	23	176	18	41	29.5	-2.5	4259
11/24/2019	2019	11	24	177	17	44	30.5	-1.5	4257.5
11/25/2019	2019	11	25	178	20	45	32.5	0.5	4258
11/26/2019	2019	11	26	179	6	20	13	-19	4239
11/27/2019	2019	11	27	180	14	37	25.5	-6.5	4232.5
11/28/2019	2019	11	28	181	25	38	31.5	-0.5	4232
11/29/2019	2019	11	29	182	17	35	26	-6	4226
11/30/2019	2019	11	30	183	6	23	14.5	-17.5	4208.5
12/1/2019	2019	12	1	184	6	42	24	-8	4200.5
12/2/2019	2019	12	2	185	21	50	35.5	3.5	4204
12/3/2019	2019	12	3	186	24	48	36	4	4208
12/4/2019	2019	12	4	187	33	43	38	6	4214
12/5/2019	2019	12	5	188	22	41	31.5	-0.5	4213.5
12/6/2019	2019	12	6	189	22	45	33.5	1.5	4215
12/7/2019	2019	12	7	190	28	49	38.5	6.5	4221.5
12/8/2019	2019	12	8	191	31	34	32.5	0.5	4222
12/9/2019	2019	12	9	192	16	35	25.5	-6.5	4215.5
12/10/2019	2019	12	10	193	13	41	27	-5	4210.5
12/11/2019	2019	12	11	194	15	47	31	-1	4209.5
12/12/2019	2019	12	12	195	24	44	34	2	4211.5
12/13/2019	2019	12	13	196	31	47	39	7	4218.5
12/14/2019	2019	12	14	197	32	44	38	6	4224.5
12/15/2019	2019	12	15	198	18	37	27.5	-4.5	4220
12/16/2019	2019	12	16	199	6	24	15	-17	4203
12/17/2019	2019	12	17	200	3	29	16	-16	4187
12/18/2019	2019	12	18	201	9	42	25.5	-6.5	4180.5
12/19/2019	2019	12	19	202	16	36	26	-6	4174.5
12/20/2019	2019	12	20	203	14	40	27	-5	4169.5
12/21/2019	2019	12	21	204	18	51	34.5	2.5	4172
12/22/2019	2019	12	22	205	25	53	39	7	4179
12/23/2019	2019	12	23	206	28	47	37.5	5.5	4184.5
12/24/2019	2019	12	24	207	27	40	33.5	1.5	4186
12/25/2019	2019	12	25	208	22	31	26.5	-5.5	4180.5
12/26/2019	2019	12	26	209	13	36	24.5	-7.5	4173
12/27/2019	2019	12	27	210	21	30	25.5	-6.5	4166.5
12/28/2019	2019	12	28	211	9	25	17	-15	4151.5
12/29/2019	2019	12	29	212	3	21	12	-20	4131.5
12/30/2019	2019	12	30	213	3	33	18	-14	4117.5
12/31/2019	2019	12	31	214	9	39	24	-8	4109.5
1/1/2020	2020	1	1	215	16	35	25.5	-6.5	4103
1/2/2020	2020	1	2	216	10	28	19	-13	4090
1/3/2020	2020	1	3	217	9	40	24.5	-7.5	4082.5
1/4/2020	2020	1	4	218	17	49	33	1	4083.5
1/5/2020	2020	1	5	219	22	50	36	4	4087.5
1/6/2020	2020	1	6	220	14	36	25	-7	4080.5
1/7/2020	2020	1	7	221	13	46	29.5	-2.5	4078
1/8/2020	2020	1	8	222	22	43	32.5	0.5	4078.5
1/9/2020	2020	1	9	223	20	31	25.5	-6.5	4072
1/10/2020	2020	1	10	224	2	26	14	-18	4054
1/11/2020	2020	1	11	225	3	38	20.5	-11.5	4042.5
1/12/2020	2020	1	12	226	11	36	23.5	-8.5	4034
1/13/2020	2020	1	13	227	25	39	32	0	4034
1/14/2020	2020	1	14	228	26	45	35.5	3.5	4037.5
1/15/2020	2020	1	15	229	24	48	36	4	4041.5
1/16/2020	2020	1	16	230	30	37	33.5	1.5	4043
1/17/2020	2020	1	17	231	10	38	24	-8	4035
1/18/2020	2020	1	18	232	8	48	28	-4	4031
1/19/2020	2020	1	19	233	15	44	29.5	-2.5	4028.5
1/20/2020	2020	1	20	234	24	47	35.5	3.5	4032
1/21/2020	2020	1	21	235	30	37	33.5	1.5	4033.5
1/22/2020	2020	1	22	236	24	36	30	-2	4031.5
1/23/2020	2020	1	23	237	17	40	28.5	-3.5	4028
1/24/2020	2020	1	24	238	17	45	31	-1	4027
1/25/2020	2020	1	25	239	20	45	32.5	0.5	4027.5
1/26/2020	2020	1	26	240	22	47	34.5	2.5	4030
1/27/2020	2020	1	27	241	20	33	26.5	-5.5	4024.5
1/28/2020	2020	1	28	242	14	41	27.5	-4.5	4020
1/29/2020	2020	1	29	243	14	33	23.5	-8.5	4011.5
1/30/2020	2020	1	30	244	11	39	25	-7	4004.5
1/31/2020	2020	1	31	245	9	40	24.5	-7.5	3997
2/1/2020	2020	2	1	246	21	52	36.5	4.5	4001.5
2/2/2020	2020	2	2	247	22	55	38.5	6.5	4008
2/3/2020	2020	2	3	248	19	44	31.5	-0.5	4007.5
2/4/2020	2020	2	4	249	-5	21	8	-24	3983.5
2/5/2020	2020	2	5	250	-7	22	7.5	-24.5	3959
2/6/2020	2020	2	6	251	11	36	23.5	-8.5	3950.5

2/7/2020	2020	2	7	252	28	48	38	6	3956.5
2/8/2020	2020	2	8	253	24	50	37	5	3961.5
2/9/2020	2020	2	9	254	25	44	34.5	2.5	3964
2/10/2020	2020	2	10	255	26	36	31	-1	3963
2/11/2020	2020	2	11	256	21	31	26	-6	3957
2/12/2020	2020	2	12	257	10	33	21.5	-10.5	3946.5
2/13/2020	2020	2	13	258	9	39	24	-8	3938.5
2/14/2020	2020	2	14	259	13	45	29	-3	3935.5
2/15/2020	2020	2	15	260	23	44	33.5	1.5	3937
2/16/2020	2020	2	16	261	30	49	39.5	7.5	3944.5
2/17/2020	2020	2	17	262	26	49	37.5	5.5	3950
2/18/2020	2020	2	18	263	20	47	33.5	1.5	3951.5
2/19/2020	2020	2	19	264	23	46	34.5	2.5	3954
2/20/2020	2020	2	20	265	17	48	32.5	0.5	3954.5
2/21/2020	2020	2	21	266	27	49	38	6	3960.5
2/22/2020	2020	2	22	267	31	38	34.5	2.5	3963
2/23/2020	2020	2	23	268	21	31	26	-6	3957
2/24/2020	2020	2	24	269	21	41	31	-1	3956
2/25/2020	2020	2	25	270	6	27	16.5	-15.5	3940.5
2/26/2020	2020	2	26	271	1	36	18.5	-13.5	3927
2/27/2020	2020	2	27	272	18	46	32	0	3927
2/28/2020	2020	2	28	273	16	51	33.5	1.5	3928.5
2/29/2020	2020	2	29	274	24	48	36	4	3932.5
3/1/2020	2020	3	1	275	27	45	36	4	3936.5
3/2/2020	2020	3	2	276	20	45	32.5	0.5	3937
3/3/2020	2020	3	3	277	20	48	34	2	3939
3/4/2020	2020	3	4	278	21	51	36	4	3943
3/5/2020	2020	3	5	279	23	56	39.5	7.5	3950.5
3/6/2020	2020	3	6	280	31	51	41	9	3959.5
3/7/2020	2020	3	7	281	29	55	42	10	3969.5
3/8/2020	2020	3	8	282	31	45	38	6	3975.5
3/9/2020	2020	3	9	283	29	49	39	7	3982.5
3/10/2020	2020	3	10	284	28	46	37	5	3987.5
3/11/2020	2020	3	11	285	35	47	41	9	3996.5
3/12/2020	2020	3	12	286	36	51	43.5	11.5	4008
3/13/2020	2020	3	13	287	29	43	36	4	4012
3/14/2020	2020	3	14	288	27	47	37	5	4017
3/15/2020	2020	3	15	289	27	53	40	8	4025
3/16/2020	2020	3	16	290	27	56	41.5	9.5	4034.5
3/17/2020	2020	3	17	291	31	53	42	10	4044.5
3/18/2020	2020	3	18	292	26	46	36	4	4048.5
3/19/2020	2020	3	19	293	18	35	26.5	-5.5	4043
3/20/2020	2020	3	20	294	14	44	29	-3	4040
3/21/2020	2020	3	21	295	26	50	38	6	4046
3/22/2020	2020	3	22	296	27	46	36.5	4.5	4050.5
3/23/2020	2020	3	23	297	30	49	39.5	7.5	4058
3/24/2020	2020	3	24	298	27	52	39.5	7.5	4065.5
3/25/2020	2020	3	25	299	33	54	43.5	11.5	4077
3/26/2020	2020	3	26	300	32	52	42	10	4087
3/27/2020	2020	3	27	301	20	37	28.5	-3.5	4083.5
3/28/2020	2020	3	28	302	15	38	26.5	-5.5	4078
3/29/2020	2020	3	29	303	22	50	36	4	4082
3/30/2020	2020	3	30	304	26	47	36.5	4.5	4086.5
3/31/2020	2020	3	31	305	25	57	41	9	4095.5
4/1/2020	2020	4	1	306	37	57	47	15	4110.5
4/2/2020	2020	4	2	307	35	56	45.5	13.5	4124
4/3/2020	2020	4	3	308	27	54	40.5	8.5	4132.5
4/4/2020	2020	4	4	309	28	56	42	10	4142.5
4/5/2020	2020	4	5	310	29	57	43	11	4153.5
4/6/2020	2020	4	6	311	29	57	43	11	4164.5
4/7/2020	2020	4	7	312	29	58	43.5	11.5	4176
4/8/2020	2020	4	8	313	29	61	45	13	4189
4/9/2020	2020	4	9	314	32	58	45	13	4202
4/10/2020	2020	4	10	315	26	55	40.5	8.5	4210.5
4/11/2020	2020	4	11	316	25	55	40	8	4218.5
4/12/2020	2020	4	12	317	29	50	39.5	7.5	4226
4/13/2020	2020	4	13	318	19	37	28	-4	4222
4/14/2020	2020	4	14	319	9	37	23	-9	4213
4/15/2020	2020	4	15	320	14	47	30.5	-1.5	4211.5
4/16/2020	2020	4	16	321	28	54	41	9	4220.5
4/17/2020	2020	4	17	322	29	55	42	10	4230.5
4/18/2020	2020	4	18	323	31	51	41	9	4239.5
4/19/2020	2020	4	19	324	29	54	41.5	9.5	4249
4/20/2020	2020	4	20	325	35	57	46	14	4263
4/21/2020	2020	4	21	326	30	56	43	11	4274
4/22/2020	2020	4	22	327	33	58	45.5	13.5	4287.5
4/23/2020	2020	4	23	328	31	61	46	14	4301.5
4/24/2020	2020	4	24	329	33	63	48	16	4317.5
4/25/2020	2020	4	25	330	29	64	46.5	14.5	4332
4/26/2020	2020	4	26	331	38	71	54.5	22.5	4354.5
4/27/2020	2020	4	27	332	41	71	56	24	4378.5
4/28/2020	2020	4	28	333	44	71	57.5	25.5	4404
4/29/2020	2020	4	29	334	38	74	56	24	4428
4/30/2020	2020	4	30	335	44	74	59	27	4455
5/1/2020	2020	5	1	336	42	73	57.5	25.5	4480.5
5/2/2020	2020	5	2	337	44	71	57.5	25.5	4506
5/3/2020	2020	5	3	338	41	71	56	24	4530
5/4/2020	2020	5	4	339	38	69	53.5	21.5	4551.5
5/5/2020	2020	5	5	340	34	72	53	21	4572.5
5/6/2020	2020	5	6	341	36	76	56	24	4596.5
5/7/2020	2020	5	7	342	39	74	56.5	24.5	4621
5/8/2020	2020	5	8	343	34	70	52	20	4641
5/9/2020	2020	5	9	344	37	72	54.5	22.5	4663.5

5/10/2020	2020	5	10	345	40	72	56	24	4687.5
5/11/2020	2020	5	11	346	44	66	55	23	4710.5
5/12/2020	2020	5	12	347	36	66	51	19	4729.5
5/13/2020	2020	5	13	348	38	65	51.5	19.5	4749
5/14/2020	2020	5	14	349	38	65	51.5	19.5	4768.5
5/15/2020	2020	5	15	350	37	67	52	20	4788.5
5/16/2020	2020	5	16	351	37	73	55	23	4811.5
5/17/2020	2020	5	17	352	42	75	58.5	26.5	4838
5/18/2020	2020	5	18	353	43	78	60.5	28.5	4866.5
5/19/2020	2020	5	19	354	42	74	58	26	4892.5
5/20/2020	2020	5	20	355	33	62	47.5	15.5	4908
5/21/2020	2020	5	21	356	29	64	46.5	14.5	4922.5
5/22/2020	2020	5	22	357	32	69	50.5	18.5	4941
5/23/2020	2020	5	23	358	35	67	51	19	4960
5/24/2020	2020	5	24	359	35	64	49.5	17.5	4977.5
5/25/2020	2020	5	25	360	32	64	48	16	4993.5
5/26/2020	2020	5	26	361	32	71	51.5	19.5	5013
5/27/2020	2020	5	27	362	44	77	60.5	28.5	5041.5
5/28/2020	2020	5	28	363	45	80	62.5	30.5	5072
5/29/2020	2020	5	29	364	51	79	65	33	5105
5/30/2020	2020	5	30	365	49	80	64.5	32.5	5137.5
5/31/2020	2020	5	31	366	51	77	64	32	5169.5
6/1/2020	2020	6	1	1	47	72	59.5	27.5	27.5
6/2/2020	2020	6	2	2	47	79	63	31	58.5
6/3/2020	2020	6	3	3	47	79	63	31	89.5
6/4/2020	2020	6	4	4	49	82	65.5	33.5	123
6/5/2020	2020	6	5	5	52	83	67.5	35.5	158.5
6/6/2020	2020	6	6	6	48	75	61.5	29.5	188
6/7/2020	2020	6	7	7	45	73	59	27	215
6/8/2020	2020	6	8	8	33	67	50	18	233
6/9/2020	2020	6	9	9	30	63	46.5	14.5	247.5
6/10/2020	2020	6	10	10	32	74	53	21	268.5
6/11/2020	2020	6	11	11	40	81	60.5	28.5	297
6/12/2020	2020	6	12	12	53	80	66.5	34.5	331.5
6/13/2020	2020	6	13	13	52	79	65.5	33.5	365
6/14/2020	2020	6	14	14	48	78	63	31	396
6/15/2020	2020	6	15	15	44	79	61.5	29.5	425.5
6/16/2020	2020	6	16	16	51	77	64	32	457.5
6/17/2020	2020	6	17	17	48	77	62.5	30.5	488
6/18/2020	2020	6	18	18	44	75	59.5	27.5	515.5
6/19/2020	2020	6	19	19	44	75	59.5	27.5	543
6/20/2020	2020	6	20	20	41	77	59	27	570
6/21/2020	2020	6	21	21	46	81	63.5	31.5	601.5
6/22/2020	2020	6	22	22	50	84	67	35	636.5
6/23/2020	2020	6	23	23	49	85	67	35	671.5
6/24/2020	2020	6	24	24	52	83	67.5	35.5	707
6/25/2020	2020	6	25	25	56	82	69	37	744
6/26/2020	2020	6	26	26	53	77	65	33	777
6/27/2020	2020	6	27	27	44	81	62.5	30.5	807.5
6/28/2020	2020	6	28	28	55	77	66	34	841.5
6/29/2020	2020	6	29	29	53	76	64.5	32.5	874
6/30/2020	2020	6	30	30	44	71	57.5	25.5	899.5
7/1/2020	2020	7	1	31	40	75	57.5	25.5	925
7/2/2020	2020	7	2	32	45	76	60.5	28.5	953.5
7/3/2020	2020	7	3	33	51	76	63.5	31.5	985
7/4/2020	2020	7	4	34	47	81	64	32	1017
7/5/2020	2020	7	5	35	49	84	66.5	34.5	1051.5
7/6/2020	2020	7	6	36	54	84	69	37	1088.5
7/7/2020	2020	7	7	37	53	82	67.5	35.5	1124
7/8/2020	2020	7	8	38	51	83	67	35	1159
7/9/2020	2020	7	9	39	50	84	67	35	1194
7/10/2020	2020	7	10	40	55	88	71.5	39.5	1233.5
7/11/2020	2020	7	11	41	53	90	71.5	39.5	1273
7/12/2020	2020	7	12	42	58	86	72	40	1313
7/13/2020	2020	7	13	43	49	86	67.5	35.5	1348.5
7/14/2020	2020	7	14	44	55	82	68.5	36.5	1385
7/15/2020	2020	7	15	45	52	80	66	34	1419
7/16/2020	2020	7	16	46	51	77	64	32	1451
7/17/2020	2020	7	17	47	50	75	62.5	30.5	1481.5
7/18/2020	2020	7	18	48	47	78	62.5	30.5	1512
7/19/2020	2020	7	19	49	50	83	66.5	34.5	1546.5
7/20/2020	2020	7	20	50	51	84	67.5	35.5	1582
7/21/2020	2020	7	21	51	53	81	67	35	1617
7/22/2020	2020	7	22	52	50	67	58.5	26.5	1643.5
7/23/2020	2020	7	23	53	48	67	57.5	25.5	1669
7/24/2020	2020	7	24	54	49	64	56.5	24.5	1693.5
7/25/2020	2020	7	25	55	51	65	58	26	1719.5
7/26/2020	2020	7	26	56	49	74	61.5	29.5	1749
7/27/2020	2020	7	27	57	50	74	62	30	1779
7/28/2020	2020	7	28	58	50	76	63	31	1810
7/29/2020	2020	7	29	59	48	82	65	33	1843
7/30/2020	2020	7	30	60	48	84	66	34	1877
7/31/2020	2020	7	31	61	52	83	67.5	35.5	1912.5
8/1/2020	2020	8	1	62	53	81	67	35	1947.5
8/2/2020	2020	8	2	63	53	81	67	35	1982.5
8/3/2020	2020	8	3	64	54	83	68.5	36.5	2019
8/4/2020	2020	8	4	65	56	82	69	37	2056
8/5/2020	2020	8	5	66	52	72	62	30	2086
8/6/2020	2020	8	6	67	47	79	63	31	2117
8/7/2020	2020	8	7	68	47	75	61	29	2146
8/8/2020	2020	8	8	69	52	79	65.5	33.5	2179.5
8/9/2020	2020	8	9	70	49	81	65	33	2212.5
8/10/2020	2020	8	10	71	53	83	68	36	2248.5

8/11/2020	2020	8	11	72	51	81	66	34	2282.5
8/12/2020	2020	8	12	73	52	83	67.5	35.5	2318
8/13/2020	2020	8	13	74	53	82	67.5	35.5	2353.5
8/14/2020	2020	8	14	75	53	85	69	37	2390.5
8/15/2020	2020	8	15	76	52	91	71.5	39.5	2430
8/16/2020	2020	8	16	77	56	85	70.5	38.5	2468.5
8/17/2020	2020	8	17	78	51	82	66.5	34.5	2503
8/18/2020	2020	8	18	79	56	83	69.5	37.5	2540.5
8/19/2020	2020	8	19	80	55	85	70	38	2578.5
8/20/2020	2020	8	20	81	57	86	71.5	39.5	2618
8/21/2020	2020	8	21	82	58	86	72	40	2658
8/22/2020	2020	8	22	83	53	85	69	37	2695
8/23/2020	2020	8	23	84	53	84	68.5	36.5	2731.5
8/24/2020	2020	8	24	85	54	83	68.5	36.5	2768
8/25/2020	2020	8	25	86	51	82	66.5	34.5	2802.5
8/26/2020	2020	8	26	87	52	78	65	33	2835.5
8/27/2020	2020	8	27	88	52	80	66	34	2869.5
8/28/2020	2020	8	28	89	47	84	65.5	33.5	2903
8/29/2020	2020	8	29	90	47	78	62.5	30.5	2933.5
8/30/2020	2020	8	30	91	53	74	63.5	31.5	2965
8/31/2020	2020	8	31	92	51	73	62	30	2995
9/1/2020	2020	9	1	93	42	70	56	24	3019
9/2/2020	2020	9	2	94	40	78	59	27	3046
9/3/2020	2020	9	3	95	44	82	63	31	3077
9/4/2020	2020	9	4	96	53	84	68.5	36.5	3113.5
9/5/2020	2020	9	5	97	54	83	68.5	36.5	3150
9/6/2020	2020	9	6	98	53	85	69	37	3187
9/7/2020	2020	9	7	99	50	85	67.5	35.5	3222.5
9/8/2020	2020	9	8	100	37	74	55.5	23.5	3246
9/9/2020	2020	9	9	101	34	50	42	10	3256
9/10/2020	2020	9	10	102	33	56	44.5	12.5	3268.5
9/11/2020	2020	9	11	103	32	64	48	16	3284.5
9/12/2020	2020	9	12	104	33	65	49	17	3301.5
9/13/2020	2020	9	13	105	44	69	56.5	24.5	3326
9/14/2020	2020	9	14	106	44	70	57	25	3351
9/15/2020	2020	9	15	107	42	73	57.5	25.5	3376.5
9/16/2020	2020	9	16	108	40	76	58	26	3402.5
9/17/2020	2020	9	17	109	47	74	60.5	28.5	3431
9/18/2020	2020	9	18	110	43	73	58	26	3457
9/19/2020	2020	9	19	111	46	74	60	28	3485
9/20/2020	2020	9	20	112	47	72	59.5	27.5	3512.5
9/21/2020	2020	9	21	113	46	74	60	28	3540.5
9/22/2020	2020	9	22	114	45	73	59	27	3567.5
9/23/2020	2020	9	23	115	44	71	57.5	25.5	3593
9/24/2020	2020	9	24	116	42	76	59	27	3620
9/25/2020	2020	9	25	117	46	77	61.5	29.5	3649.5
9/26/2020	2020	9	26	118	51	76	63.5	31.5	3681
9/27/2020	2020	9	27	119	42	74	58	26	3707
9/28/2020	2020	9	28	120	34	66	50	18	3725
9/29/2020	2020	9	29	121	31	73	52	20	3745
9/30/2020	2020	9	30	122	38	76	57	25	3770
10/1/2020	2020	10	1	123	37	75	56	24	3794
10/2/2020	2020	10	2	124	38	74	56	24	3818
10/3/2020	2020	10	3	125	38	73	55.5	23.5	3841.5
10/4/2020	2020	10	4	126	40	74	57	25	3866.5
10/5/2020	2020	10	5	127	39	75	57	25	3891.5
10/6/2020	2020	10	6	128	37	76	56.5	24.5	3916
10/7/2020	2020	10	7	129	40	76	58	26	3942
10/8/2020	2020	10	8	130	42	73	57.5	25.5	3967.5
10/9/2020	2020	10	9	131	41	71	56	24	3991.5
10/10/2020	2020	10	10	132	39	70	54.5	22.5	4014
10/11/2020	2020	10	11	133	35	64	49.5	17.5	4031.5
10/12/2020	2020	10	12	134	31	69	50	18	4049.5
10/13/2020	2020	10	13	135	37	72	54.5	22.5	4072
10/14/2020	2020	10	14	136	42	73	57.5	25.5	4097.5
10/15/2020	2020	10	15	137	35	77	56	24	4121.5
10/16/2020	2020	10	16	138	30	70	50	18	4139.5
10/17/2020	2020	10	17	139	38	69	53.5	21.5	4161
10/18/2020	2020	10	18	140	40	69	54.5	22.5	4183.5
10/19/2020	2020	10	19	141	40	69	54.5	22.5	4206
10/20/2020	2020	10	20	142	38	71	54.5	22.5	4228.5
10/21/2020	2020	10	21	143	37	68	52.5	20.5	4249
10/22/2020	2020	10	22	144	39	64	51.5	19.5	4268.5
10/23/2020	2020	10	23	145	36	63	49.5	17.5	4286
10/24/2020	2020	10	24	146	45	63	54	22	4308
10/25/2020	2020	10	25	147	33	59	46	14	4322
10/26/2020	2020	10	26	148	15	39	27	-5	4317
10/27/2020	2020	10	27	149	15	24	19.5	-12.5	4304.5
10/28/2020	2020	10	28	150	14	41	27.5	-4.5	4300
10/29/2020	2020	10	29	151	25	53	39	7	4307
10/30/2020	2020	10	30	152	29	60	44.5	12.5	4319.5
10/31/2020	2020	10	31	153	32	60	46	14	4333.5
11/1/2020	2020	11	1	154	34	63	48.5	16.5	4350
11/2/2020	2020	11	2	155	36	65	50.5	18.5	4368.5
11/3/2020	2020	11	3	156	38	67	52.5	20.5	4389
11/4/2020	2020	11	4	157	34	61	47.5	15.5	4404.5
11/5/2020	2020	11	5	158	32	63	47.5	15.5	4420
11/6/2020	2020	11	6	159	42	63	52.5	20.5	4440.5
11/7/2020	2020	11	7	160	31	55	43	11	4451.5
11/8/2020	2020	11	8	161	27	44	35.5	3.5	4455
11/9/2020	2020	11	9	162	18	31	24.5	-7.5	4447.5
11/10/2020	2020	11	10	163	14	33	23.5	-8.5	4439
11/11/2020	2020	11	11	164	13	44	28.5	-3.5	4435.5

11/12/2020	2020	11	12	165	21	46	33.5	1.5	4437
11/13/2020	2020	11	13	166	28	49	38.5	6.5	4443.5
11/14/2020	2020	11	14	167	20	44	32	0	4443.5
11/15/2020	2020	11	15	168	21	53	37	5	4448.5
11/16/2020	2020	11	16	169	29	61	45	13	4461.5
11/17/2020	2020	11	17	170	33	62	47.5	15.5	4477
11/18/2020	2020	11	18	171	37	62	49.5	17.5	4494.5
11/19/2020	2020	11	19	172	40	60	50	18	4512.5
11/20/2020	2020	11	20	173	39	57	48	16	4528.5
11/21/2020	2020	11	21	174	31	58	44.5	12.5	4541
11/22/2020	2020	11	22	175	29	54	41.5	9.5	4550.5
11/23/2020	2020	11	23	176	34	54	44	12	4562.5
11/24/2020	2020	11	24	177	21	38	29.5	-2.5	4560
11/25/2020	2020	11	25	178	19	44	31.5	-0.5	4559.5
11/26/2020	2020	11	26	179	22	42	32	0	4559.5
11/27/2020	2020	11	27	180	22	30	26	-6	4553.5
11/28/2020	2020	11	28	181	15	40	27.5	-4.5	4549
11/29/2020	2020	11	29	182	19	46	32.5	0.5	4549.5
11/30/2020	2020	11	30	183	16	45	30.5	-1.5	4548
12/1/2020	2020	12	1	184	17	38	27.5	-4.5	4543.5
12/2/2020	2020	12	2	185	8	33	20.5	-11.5	4532
12/3/2020	2020	12	3	186	6	34	20	-12	4520
12/4/2020	2020	12	4	187	11	44	27.5	-4.5	4515.5
12/5/2020	2020	12	5	188	19	46	32.5	0.5	4516
12/6/2020	2020	12	6	189	20	48	34	2	4518
12/7/2020	2020	12	7	190	18	52	35	3	4521
12/8/2020	2020	12	8	191	23	54	38.5	6.5	4527.5
12/9/2020	2020	12	9	192	22	54	38	6	4533.5
12/10/2020	2020	12	10	193	26	38	32	0	4533.5
12/11/2020	2020	12	11	194	16	34	25	-7	4526.5
12/12/2020	2020	12	12	195	9	30	19.5	-12.5	4514
12/13/2020	2020	12	13	196	3	33	18	-14	4500
12/14/2020	2020	12	14	197	17	41	29	-3	4497
12/15/2020	2020	12	15	198	6	28	17	-15	4482
12/16/2020	2020	12	16	199	10	38	24	-8	4474
12/17/2020	2020	12	17	200	13	44	28.5	-3.5	4470.5
12/18/2020	2020	12	18	201	12	35	23.5	-8.5	4462
12/19/2020	2020	12	19	202	10	40	25	-7	4455
12/20/2020	2020	12	20	203	16	45	30.5	-1.5	4453.5
12/21/2020	2020	12	21	204	22	49	35.5	3.5	4457
12/22/2020	2020	12	22	205	25	43	34	2	4459
12/23/2020	2020	12	23	206	6	26	16	-16	4443
12/24/2020	2020	12	24	207	4	35	19.5	-12.5	4430.5
12/25/2020	2020	12	25	208	13	45	29	-3	4427.5
12/26/2020	2020	12	26	209	21	46	33.5	1.5	4429
12/27/2020	2020	12	27	210	23	44	33.5	1.5	4430.5
12/28/2020	2020	12	28	211	27	47	37	5	4435.5
12/29/2020	2020	12	29	212	10	28	19	-13	4422.5
12/30/2020	2020	12	30	213	6	30	18	-14	4408.5
12/31/2020	2020	12	31	214	6	38	22	-10	4398.5
1/1/2021	2021	1	1	215	13	37	25	-7	4391.5
1/2/2021	2021	1	2	216	16	35	25.5	-6.5	4385
1/3/2021	2021	1	3	217	17	42	29.5	-2.5	4382.5
1/4/2021	2021	1	4	218	17	50	33.5	1.5	4384
1/5/2021	2021	1	5	219	17	43	30	-2	4382
1/6/2021	2021	1	6	220	13	44	28.5	-3.5	4378.5
1/7/2021	2021	1	7	221	18	47	32.5	0.5	4379
1/8/2021	2021	1	8	222	17	47	32	0	4379
1/9/2021	2021	1	9	223	16	36	26	-6	4373
1/10/2021	2021	1	10	224	10	31	20.5	-11.5	4361.5
1/11/2021	2021	1	11	225	6	33	19.5	-12.5	4349
1/12/2021	2021	1	12	226	5	43	24	-8	4341
1/13/2021	2021	1	13	227	17	49	33	1	4342
1/14/2021	2021	1	14	228	26	44	35	3	4345
1/15/2021	2021	1	15	229	21	47	34	2	4347
1/16/2021	2021	1	16	230	21	42	31.5	-0.5	4346.5
1/17/2021	2021	1	17	231	21	49	35	3	4349.5
1/18/2021	2021	1	18	232	26	47	36.5	4.5	4354
1/19/2021	2021	1	19	233	19	27	23	-9	4345
1/20/2021	2021	1	20	234	22	42	32	0	4345
1/21/2021	2021	1	21	235	21	43	32	0	4345
1/22/2021	2021	1	22	236	27	39	33	1	4346
1/23/2021	2021	1	23	237	22	39	30.5	-1.5	4344.5
1/24/2021	2021	1	24	238	19	37	28	-4	4340.5
1/25/2021	2021	1	25	239	6	25	15.5	-16.5	4324
1/26/2021	2021	1	26	240	7	18	12.5	-19.5	4304.5
1/27/2021	2021	1	27	241	-2	33	15.5	-16.5	4288
1/28/2021	2021	1	28	242	19	47	33	1	4289
1/29/2021	2021	1	29	243	20	47	33.5	1.5	4290.5
1/30/2021	2021	1	30	244	11	36	23.5	-8.5	4282
1/31/2021	2021	1	31	245	8	46	27	-5	4277
2/1/2021	2021	2	1	246	22	51	36.5	4.5	4281.5
2/2/2021	2021	2	2	247	31	51	41	9	4290.5
2/3/2021	2021	2	3	248	33	47	40	8	4298.5
2/4/2021	2021	2	4	249	20	38	29	-3	4295.5
2/5/2021	2021	2	5	250	20	39	29.5	-2.5	4293
2/6/2021	2021	2	6	251	15	42	28.5	-3.5	4289.5
2/7/2021	2021	2	7	252	27	49	38	6	4295.5
2/8/2021	2021	2	8	253	26	49	37.5	5.5	4301
2/9/2021	2021	2	9	254	28	48	38	6	4307
2/10/2021	2021	2	10	255	25	45	35	3	4310
2/11/2021	2021	2	11	256	23	46	34.5	2.5	4312.5
2/12/2021	2021	2	12	257	25	44	34.5	2.5	4315

2/13/2021	2021	2	13	258	24	42	33	1	4316
2/14/2021	2021	2	14	259	15	28	21.5	-10.5	4305.5
2/15/2021	2021	2	15	260	15	30	22.5	-9.5	4296
2/16/2021	2021	2	16	261	11	29	20	-12	4284
2/17/2021	2021	2	17	262	7	29	18	-14	4270
2/18/2021	2021	2	18	263	4	30	17	-15	4255
2/19/2021	2021	2	19	264	8	44	26	-6	4249
2/20/2021	2021	2	20	265	23	49	36	4	4253
2/21/2021	2021	2	21	266	16	35	25.5	-6.5	4246.5
2/22/2021	2021	2	22	267	15	46	30.5	-1.5	4245
2/23/2021	2021	2	23	268	21	49	35	3	4248
2/24/2021	2021	2	24	269	22	47	34.5	2.5	4250.5
2/25/2021	2021	2	25	270	18	44	31	-1	4249.5
2/26/2021	2021	2	26	271	23	44	33.5	1.5	4251
2/27/2021	2021	2	27	272	13	40	26.5	-5.5	4245.5
2/28/2021	2021	2	28	273	6	29	17.5	-14.5	4231
3/1/2021	2021	3	1	274	4	42	23	-9	4222
3/2/2021	2021	3	2	275	14	50	32	0	4222
3/3/2021	2021	3	3	276	21	54	37.5	5.5	4227.5
3/4/2021	2021	3	4	277	24	37	30.5	-1.5	4226
3/5/2021	2021	3	5	278	22	50	36	4	4230
3/6/2021	2021	3	6	279	29	51	40	8	4238
3/7/2021	2021	3	7	280	24	57	40.5	8.5	4246.5
3/8/2021	2021	3	8	281	33	64	48.5	16.5	4263
3/9/2021	2021	3	9	282	28	43	35.5	3.5	4266.5
3/10/2021	2021	3	10	283	21	41	31	-1	4265.5
3/11/2021	2021	3	11	284	18	49	33.5	1.5	4267
3/12/2021	2021	3	12	285	20	48	34	2	4269
3/13/2021	2021	3	13	286	18	30	24	-8	4261
3/14/2021	2021	3	14	287	17	28	22.5	-9.5	4251.5
3/15/2021	2021	3	15	288	22	42	32	0	4251.5
3/16/2021	2021	3	16	289	20	38	29	-3	4248.5
3/17/2021	2021	3	17	290	22	46	34	2	4250.5
3/18/2021	2021	3	18	291	19	54	36.5	4.5	4255
3/19/2021	2021	3	19	292	26	58	42	10	4265
3/20/2021	2021	3	20	293	30	58	44	12	4277
3/21/2021	2021	3	21	294	31	52	41.5	9.5	4286.5
3/22/2021	2021	3	22	295	20	44	32	0	4286.5
3/23/2021	2021	3	23	296	23	36	29.5	-2.5	4284
3/24/2021	2021	3	24	297	17	29	23	-9	4275
3/25/2021	2021	3	25	298	22	40	31	-1	4274
3/26/2021	2021	3	26	299	17	39	28	-4	4270
3/27/2021	2021	3	27	300	17	43	30	-2	4268
3/28/2021	2021	3	28	301	19	57	38	6	4274
3/29/2021	2021	3	29	302	31	61	46	14	4288
3/30/2021	2021	3	30	303	22	52	37	5	4293
3/31/2021	2021	3	31	304	15	51	33	1	4294
4/1/2021	2021	4	1	305	26	59	42.5	10.5	4304.5
4/2/2021	2021	4	2	306	32	63	47.5	15.5	4320
4/3/2021	2021	4	3	307	32	66	49	17	4337
4/4/2021	2021	4	4	308	38	68	53	21	4358
4/5/2021	2021	4	5	309	36	65	50.5	18.5	4376.5
4/6/2021	2021	4	6	310	31	58	44.5	12.5	4389
4/7/2021	2021	4	7	311	25	58	41.5	9.5	4398.5
4/8/2021	2021	4	8	312	36	63	49.5	17.5	4416
4/9/2021	2021	4	9	313	29	60	44.5	12.5	4428.5
4/10/2021	2021	4	10	314	26	62	44	12	4440.5
4/11/2021	2021	4	11	315	32	62	47	15	4455.5
4/12/2021	2021	4	12	316	37	63	50	18	4473.5
4/13/2021	2021	4	13	317	36	57	46.5	14.5	4488
4/14/2021	2021	4	14	318	37	62	49.5	17.5	4505.5
4/15/2021	2021	4	15	319	26	62	44	12	4517.5
4/16/2021	2021	4	16	320	22	50	36	4	4521.5
4/17/2021	2021	4	17	321	23	44	33.5	1.5	4523
4/18/2021	2021	4	18	322	26	39	32.5	0.5	4523.5
4/19/2021	2021	4	19	323	22	54	38	6	4529.5
4/20/2021	2021	4	20	324	28	59	43.5	11.5	4541
4/21/2021	2021	4	21	325	30	60	45	13	4554
4/22/2021	2021	4	22	326	29	54	41.5	9.5	4563.5
4/23/2021	2021	4	23	327	28	51	39.5	7.5	4571
4/24/2021	2021	4	24	328	34	61	47.5	15.5	4586.5
4/25/2021	2021	4	25	329	42	66	54	22	4608.5
4/26/2021	2021	4	26	330	31	58	44.5	12.5	4621
4/27/2021	2021	4	27	331	27	48	37.5	5.5	4626.5
4/28/2021	2021	4	28	332	27	46	36.5	4.5	4631
4/29/2021	2021	4	29	333	28	59	43.5	11.5	4642.5
4/30/2021	2021	4	30	334	33	66	49.5	17.5	4660
5/1/2021	2021	5	1	335	42	72	57	25	4685
5/2/2021	2021	5	2	336	40	67	53.5	21.5	4706.5
5/3/2021	2021	5	3	337	31	57	44	12	4718.5
5/4/2021	2021	5	4	338	30	63	46.5	14.5	4733
5/5/2021	2021	5	5	339	40	71	55.5	23.5	4756.5
5/6/2021	2021	5	6	340	38	74	56	24	4780.5
5/7/2021	2021	5	7	341	42	73	57.5	25.5	4806
5/8/2021	2021	5	8	342	38	65	51.5	19.5	4825.5
5/9/2021	2021	5	9	343	36	63	49.5	17.5	4843
5/10/2021	2021	5	10	344	37	65	51	19	4862
5/11/2021	2021	5	11	345	30	64	47	15	4877
5/12/2021	2021	5	12	346	33	68	50.5	18.5	4895.5
5/13/2021	2021	5	13	347	34	73	53.5	21.5	4917
5/14/2021	2021	5	14	348	43	73	58	26	4943
5/15/2021	2021	5	15	349	41	72	56.5	24.5	4967.5
5/16/2021	2021	5	16	350	37	71	54	22	4989.5

5/17/2021	2021	5	17	351	32	64	48	16	5005.5
5/18/2021	2021	5	18	352	38	56	47	15	5020.5
5/19/2021	2021	5	19	353	38	70	54	22	5042.5
5/20/2021	2021	5	20	354	41	73	57	25	5067.5
5/21/2021	2021	5	21	355	42	58	50	18	5085.5
5/22/2021	2021	5	22	356	37	71	54	22	5107.5
5/23/2021	2021	5	23	357	27	61	44	12	5119.5
5/24/2021	2021	5	24	358	30	68	49	17	5136.5
5/25/2021	2021	5	25	359	32	72	52	20	5156.5
5/26/2021	2021	5	26	360	40	73	56.5	24.5	5181
5/27/2021	2021	5	27	361	37	73	55	23	5204
5/28/2021	2021	5	28	362	40	77	58.5	26.5	5230.5
5/29/2021	2021	5	29	363	47	76	61.5	29.5	5260
5/30/2021	2021	5	30	364	40	76	58	26	5286
5/31/2021	2021	5	31	365	44	68	56	24	5310
6/1/2021	2021	6	1	1	40	72	56	24	24
6/2/2021	2021	6	2	2	45	74	59.5	27.5	51.5
6/3/2021	2021	6	3	3	45	77	61	29	80.5
6/4/2021	2021	6	4	4	42	81	61.5	29.5	110
6/5/2021	2021	6	5	5	50	83	66.5	34.5	144.5
6/6/2021	2021	6	6	6	53	82	67.5	35.5	180
6/7/2021	2021	6	7	7	49	80	64.5	32.5	212.5
6/8/2021	2021	6	8	8	49	79	64	32	244.5
6/9/2021	2021	6	9	9	45	81	63	31	275.5
6/10/2021	2021	6	10	10	46	82	64	32	307.5
6/11/2021	2021	6	11	11	43	83	63	31	338.5
6/12/2021	2021	6	12	12	44	88	66	34	372.5
6/13/2021	2021	6	13	13	49	90	69.5	37.5	410
6/14/2021	2021	6	14	14	52	93	72.5	40.5	450.5
6/15/2021	2021	6	15	15	58	89	73.5	41.5	492
6/16/2021	2021	6	16	16	58	91	74.5	42.5	534.5
6/17/2021	2021	6	17	17	55	91	73	41	575.5
6/18/2021	2021	6	18	18	53	88	70.5	38.5	614
6/19/2021	2021	6	19	19	55	88	71.5	39.5	653.5
6/20/2021	2021	6	20	20	57	86	71.5	39.5	693
6/21/2021	2021	6	21	21	59	88	73.5	41.5	734.5
6/22/2021	2021	6	22	22	56	85	70.5	38.5	773
6/23/2021	2021	6	23	23	48	78	63	31	804
6/24/2021	2021	6	24	24	47	77	62	30	834
6/25/2021	2021	6	25	25	49	77	63	31	865
6/26/2021	2021	6	26	26	45	74	59.5	27.5	892.5
6/27/2021	2021	6	27	27	49	67	58	26	918.5
6/28/2021	2021	6	28	28	47	63	55	23	941.5
6/29/2021	2021	6	29	29	47	62	54.5	22.5	964
6/30/2021	2021	6	30	30	49	67	58	26	990
7/1/2021	2021	7	1	31	49	74	61.5	29.5	1019.5
7/2/2021	2021	7	2	32	52	76	64	32	1051.5
7/3/2021	2021	7	3	33	49	76	62.5	30.5	1082
7/4/2021	2021	7	4	34	52	82	67	35	1117
7/5/2021	2021	7	5	35	52	83	67.5	35.5	1152.5
7/6/2021	2021	7	6	36	50	82	66	34	1186.5
7/7/2021	2021	7	7	37	56	80	68	36	1222.5
7/8/2021	2021	7	8	38	54	85	69.5	37.5	1260
7/9/2021	2021	7	9	39	59	88	73.5	41.5	1301.5
7/10/2021	2021	7	10	40	57	92	74.5	42.5	1344
7/11/2021	2021	7	11	41	60	88	74	42	1386
7/12/2021	2021	7	12	42	57	81	69	37	1423
7/13/2021	2021	7	13	43	52	83	67.5	35.5	1458.5
7/14/2021	2021	7	14	44	52	72	62	30	1488.5
7/15/2021	2021	7	15	45	51	75	63	31	1519.5
7/16/2021	2021	7	16	46	52	79	65.5	33.5	1553
7/17/2021	2021	7	17	47	51	76	63.5	31.5	1584.5
7/18/2021	2021	7	18	48	52	77	64.5	32.5	1617
7/19/2021	2021	7	19	49	52	78	65	33	1650
7/20/2021	2021	7	20	50	54	81	67.5	35.5	1685.5
7/21/2021	2021	7	21	51	51	82	66.5	34.5	1720
7/22/2021	2021	7	22	52	54	77	65.5	33.5	1753.5
7/23/2021	2021	7	23	53	50	75	62.5	30.5	1784
7/24/2021	2021	7	24	54	48	66	57	25	1809
7/25/2021	2021	7	25	55	49	69	59	27	1836
7/26/2021	2021	7	26	56	49	74	61.5	29.5	1865.5
7/27/2021	2021	7	27	57	51	71	61	29	1894.5
7/28/2021	2021	7	28	58	52	74	63	31	1925.5
7/29/2021	2021	7	29	59	51	77	64	32	1957.5
7/30/2021	2021	7	30	60	50	76	63	31	1988.5
7/31/2021	2021	7	31	61	49	77	63	31	2019.5
8/1/2021	2021	8	1	62	49	74	61.5	29.5	2049
8/2/2021	2021	8	2	63	49	70	59.5	27.5	2076.5
8/3/2021	2021	8	3	64	49	76	62.5	30.5	2107
8/4/2021	2021	8	4	65	47	79	63	31	2138
8/5/2021	2021	8	5	66	51	81	66	34	2172
8/6/2021	2021	8	6	67	56	81	68.5	36.5	2208.5
8/7/2021	2021	8	7	68	48	78	63	31	2239.5
8/8/2021	2021	8	8	69	47	81	64	32	2271.5
8/9/2021	2021	8	9	70	51	79	65	33	2304.5
8/10/2021	2021	8	10	71	52	76	64	32	2336.5
8/11/2021	2021	8	11	72	50	74	62	30	2366.5
8/12/2021	2021	8	12	73	51	77	64	32	2398.5
8/13/2021	2021	8	13	74	48	76	62	30	2428.5
8/14/2021	2021	8	14	75	49	69	59	27	2455.5
8/15/2021	2021	8	15	76	48	78	63	31	2486.5
8/16/2021	2021	8	16	77	48	74	61	29	2515.5
8/17/2021	2021	8	17	78	46	76	61	29	2544.5

8/18/2021	2021	8	18	79	52	71	61.5	29.5	2574
8/19/2021	2021	8	19	80	51	69	60	28	2602
8/20/2021	2021	8	20	81	45	70	57.5	25.5	2627.5
8/21/2021	2021	8	21	82	45	75	60	28	2655.5
8/22/2021	2021	8	22	83	46	78	62	30	2685.5
8/23/2021	2021	8	23	84	48	77	62.5	30.5	2716
8/24/2021	2021	8	24	85	46	78	62	30	2746
8/25/2021	2021	8	25	86	48	83	65.5	33.5	2779.5
8/26/2021	2021	8	26	87	52	82	67	35	2814.5
8/27/2021	2021	8	27	88	53	82	67.5	35.5	2850
8/28/2021	2021	8	28	89	51	78	64.5	32.5	2882.5
8/29/2021	2021	8	29	90	48	80	64	32	2914.5
8/30/2021	2021	8	30	91	49	78	63.5	31.5	2946
8/31/2021	2021	8	31	92	49	78	63.5	31.5	2977.5
9/1/2021	2021	9	1	93	52	62	57	25	3002.5
9/2/2021	2021	9	2	94	47	66	56.5	24.5	3027
9/3/2021	2021	9	3	95	46	76	61	29	3056
9/4/2021	2021	9	4	96	50	75	62.5	30.5	3086.5
9/5/2021	2021	9	5	97	45	77	61	29	3115.5
9/6/2021	2021	9	6	98	46	80	63	31	3146.5
9/7/2021	2021	9	7	99	46	82	64	32	3178.5
9/8/2021	2021	9	8	100	51	82	66.5	34.5	3213
9/9/2021	2021	9	9	101	56	82	69	37	3250
9/10/2021	2021	9	10	102	57	82	69.5	37.5	3287.5
9/11/2021	2021	9	11	103	51	80	65.5	33.5	3321
9/12/2021	2021	9	12	104	47	81	64	32	3353
9/13/2021	2021	9	13	105	49	80	64.5	32.5	3385.5
9/14/2021	2021	9	14	106	51	79	65	33	3418.5
9/15/2021	2021	9	15	107	47	79	63	31	3449.5
9/16/2021	2021	9	16	108	47	74	60.5	28.5	3478
9/17/2021	2021	9	17	109	46	77	61.5	29.5	3507.5
9/18/2021	2021	9	18	110	48	76	62	30	3537.5
9/19/2021	2021	9	19	111	47	72	59.5	27.5	3565
9/20/2021	2021	9	20	112	39	71	55	23	3588
9/21/2021	2021	9	21	113	33	72	52.5	20.5	3608.5
9/22/2021	2021	9	22	114	41	74	57.5	25.5	3634
9/23/2021	2021	9	23	115	43	72	57.5	25.5	3659.5
9/24/2021	2021	9	24	116	42	71	56.5	24.5	3684
9/25/2021	2021	9	25	117	43	68	55.5	23.5	3707.5
9/26/2021	2021	9	26	118	41	61	51	19	3726.5
9/27/2021	2021	9	27	119	41	53	47	15	3741.5
9/28/2021	2021	9	28	120	42	56	49	17	3758.5
9/29/2021	2021	9	29	121	37	59	48	16	3774.5
9/30/2021	2021	9	30	122	36	46	41	9	3783.5
10/1/2021	2021	10	1	123	34	44	39	7	3790.5
10/2/2021	2021	10	2	124	31	57	44	12	3802.5
10/3/2021	2021	10	3	125	38	62	50	18	3820.5
10/4/2021	2021	10	4	126	40	65	52.5	20.5	3841
10/5/2021	2021	10	5	127	43	65	54	22	3863
10/6/2021	2021	10	6	128	40	60	50	18	3881
10/7/2021	2021	10	7	129	38	64	51	19	3900
10/8/2021	2021	10	8	130	42	67	54.5	22.5	3922.5
10/9/2021	2021	10	9	131	34	59	46.5	14.5	3937
10/10/2021	2021	10	10	132	31	52	41.5	9.5	3946.5
10/11/2021	2021	10	11	133	28	59	43.5	11.5	3958
10/12/2021	2021	10	12	134	24	43	33.5	1.5	3959.5
10/13/2021	2021	10	13	135	20	45	32.5	0.5	3960
10/14/2021	2021	10	14	136	27	48	37.5	5.5	3965.5
10/15/2021	2021	10	15	137	20	49	34.5	2.5	3968
10/16/2021	2021	10	16	138	26	63	44.5	12.5	3980.5
10/17/2021	2021	10	17	139	35	62	48.5	16.5	3997
10/18/2021	2021	10	18	140	33	60	46.5	14.5	4011.5
10/19/2021	2021	10	19	141	26	51	38.5	6.5	4018
10/20/2021	2021	10	20	142	26	59	42.5	10.5	4028.5
10/21/2021	2021	10	21	143	29	62	45.5	13.5	4042
10/22/2021	2021	10	22	144	32	63	47.5	15.5	4057.5
10/23/2021	2021	10	23	145	38	56	47	15	4072.5
10/24/2021	2021	10	24	146	33	58	45.5	13.5	4086
10/25/2021	2021	10	25	147	39	67	53	21	4107
10/26/2021	2021	10	26	148	27	49	38	6	4113
10/27/2021	2021	10	27	149	25	47	36	4	4117
10/28/2021	2021	10	28	150	27	54	40.5	8.5	4125.5
10/29/2021	2021	10	29	151	28	64	46	14	4139.5
10/30/2021	2021	10	30	152	35	63	49	17	4156.5
10/31/2021	2021	10	31	153	34	59	46.5	14.5	4171
11/1/2021	2021	11	1	154	34	56	45	13	4184
11/2/2021	2021	11	2	155	31	55	43	11	4195
11/3/2021	2021	11	3	156	27	56	41.5	9.5	4204.5
11/4/2021	2021	11	4	157	28	59	43.5	11.5	4216
11/5/2021	2021	11	5	158	32	63	47.5	15.5	4231.5
11/6/2021	2021	11	6	159	34	63	48.5	16.5	4248
11/7/2021	2021	11	7	160	37	61	49	17	4265
11/8/2021	2021	11	8	161	34	60	47	15	4280
11/9/2021	2021	11	9	162	33	54	43.5	11.5	4291.5
11/10/2021	2021	11	10	163	31	49	40	8	4299.5
11/11/2021	2021	11	11	164	24	51	37.5	5.5	4305
11/12/2021	2021	11	12	165	26	55	40.5	8.5	4313.5
11/13/2021	2021	11	13	166	27	58	42.5	10.5	4324
11/14/2021	2021	11	14	167	27	59	43	11	4335
11/15/2021	2021	11	15	168	33	63	48	16	4351
11/16/2021	2021	11	16	169	34	53	43.5	11.5	4362.5
11/17/2021	2021	11	17	170	24	53	38.5	6.5	4369
11/18/2021	2021	11	18	171	22	53	37.5	5.5	4374.5

11/19/2021	2021	11	19	172	27	53	40	8	4382.5
11/20/2021	2021	11	20	173	28	52	40	8	4390.5
11/21/2021	2021	11	21	174	24	47	35.5	3.5	4394
11/22/2021	2021	11	22	175	19	58	38.5	6.5	4400.5
11/23/2021	2021	11	23	176	33	49	41	9	4409.5
11/24/2021	2021	11	24	177	19	39	29	-3	4406.5
11/25/2021	2021	11	25	178	16	40	28	-4	4402.5
11/26/2021	2021	11	26	179	17	50	33.5	1.5	4404
11/27/2021	2021	11	27	180	25	50	37.5	5.5	4409.5
11/28/2021	2021	11	28	181	25	53	39	7	4416.5
11/29/2021	2021	11	29	182	27	58	42.5	10.5	4427
11/30/2021	2021	11	30	183	25	54	39.5	7.5	4434.5
12/1/2021	2021	12	1	184	25	58	41.5	9.5	4444
12/2/2021	2021	12	2	185	29	54	41.5	9.5	4453.5
12/3/2021	2021	12	3	186	28	53	40.5	8.5	4462
12/4/2021	2021	12	4	187	26	53	39.5	7.5	4469.5
12/5/2021	2021	12	5	188	26	53	39.5	7.5	4477
12/6/2021	2021	12	6	189	25	49	37	5	4482
12/7/2021	2021	12	7	190	26	42	34	2	4484
12/8/2021	2021	12	8	191	25	41	33	1	4485
12/9/2021	2021	12	9	192	32	44	38	6	4491
12/10/2021	2021	12	10	193	6	32	19	-13	4478
12/11/2021	2021	12	11	194	2	37	19.5	-12.5	4465.5
12/12/2021	2021	12	12	195	18	49	33.5	1.5	4467
12/13/2021	2021	12	13	196	24	46	35	3	4470
12/14/2021	2021	12	14	197	33	45	39	7	4477
12/15/2021	2021	12	15	198	17	39	28	-4	4473
12/16/2021	2021	12	16	199	15	44	29.5	-2.5	4470.5
12/17/2021	2021	12	17	200	8	36	22	-10	4460.5
12/18/2021	2021	12	18	201	5	34	19.5	-12.5	4448
12/19/2021	2021	12	19	202	9	42	25.5	-6.5	4441.5
12/20/2021	2021	12	20	203	19	48	33.5	1.5	4443
12/21/2021	2021	12	21	204	27	45	36	4	4447
12/22/2021	2021	12	22	205	26	50	38	6	4453
12/23/2021	2021	12	23	206	35	47	41	9	4462
12/24/2021	2021	12	24	207	30	39	34.5	2.5	4464.5
12/25/2021	2021	12	25	208	31	35	33	1	4465.5
12/26/2021	2021	12	26	209	23	35	29	-3	4462.5
12/27/2021	2021	12	27	210	23	33	28	-4	4458.5
12/28/2021	2021	12	28	211	21	27	24	-8	4450.5
12/29/2021	2021	12	29	212	21	25	23	-9	4441.5
12/30/2021	2021	12	30	213	22	30	26	-6	4435.5
12/31/2021	2021	12	31	214	25	34	29.5	-2.5	4433
1/1/2022	2022	1	1	215	-2	29	13.5	-18.5	4414.5
1/2/2022	2022	1	2	216	-5	35	15	-17	4397.5
1/3/2022	2022	1	3	217	10	44	27	-5	4392.5
1/4/2022	2022	1	4	218	22	42	32	0	4392.5
1/5/2022	2022	1	5	219	23	43	33	1	4393.5
1/6/2022	2022	1	6	220	28	48	38	6	4399.5
1/7/2022	2022	1	7	221	26	48	37	5	4404.5
1/8/2022	2022	1	8	222	20	39	29.5	-2.5	4402
1/9/2022	2022	1	9	223	11	38	24.5	-7.5	4394.5
1/10/2022	2022	1	10	224	10	41	25.5	-6.5	4388
1/11/2022	2022	1	11	225	11	46	28.5	-3.5	4384.5
1/12/2022	2022	1	12	226	14	49	31.5	-0.5	4384
1/13/2022	2022	1	13	227	22	54	38	6	4390
1/14/2022	2022	1	14	228	22	44	33	1	4391
1/15/2022	2022	1	15	229	14	44	29	-3	4388
1/16/2022	2022	1	16	230	17	49	33	1	4389
1/17/2022	2022	1	17	231	16	47	31.5	-0.5	4388.5
1/18/2022	2022	1	18	232	27	40	33.5	1.5	4390
1/19/2022	2022	1	19	233	17	37	27	-5	4385
1/20/2022	2022	1	20	234	13	37	25	-7	4378
1/21/2022	2022	1	21	235	15	41	28	-4	4374
1/22/2022	2022	1	22	236	19	37	28	-4	4370
1/23/2022	2022	1	23	237	16	42	29	-3	4367
1/24/2022	2022	1	24	238	18	44	31	-1	4366
1/25/2022	2022	1	25	239	20	41	30.5	-1.5	4364.5
1/26/2022	2022	1	26	240	8	33	20.5	-11.5	4353
1/27/2022	2022	1	27	241	6	37	21.5	-10.5	4342.5
1/28/2022	2022	1	28	242	6	38	22	-10	4332.5
1/29/2022	2022	1	29	243	10	47	28.5	-3.5	4329
1/30/2022	2022	1	30	244	21	38	29.5	-2.5	4326.5
1/31/2022	2022	1	31	245	17	46	31.5	-0.5	4326
2/1/2022	2022	2	1	246	24	42	33	1	4327
2/2/2022	2022	2	2	247	0	28	14	-18	4309
2/3/2022	2022	2	3	248	-8	20	6	-26	4283
2/4/2022	2022	2	4	249	-4	36	16	-16	4267
2/5/2022	2022	2	5	250	5	44	24.5	-7.5	4259.5
2/6/2022	2022	2	6	251	8	33	20.5	-11.5	4248
2/7/2022	2022	2	7	252	8	39	23.5	-8.5	4239.5
2/8/2022	2022	2	8	253	12	44	28	-4	4235.5
2/9/2022	2022	2	9	254	15	47	31	-1	4234.5
2/10/2022	2022	2	10	255	15	49	32	0	4234.5
2/11/2022	2022	2	11	256	22	50	36	4	4238.5
2/12/2022	2022	2	12	257	19	44	31.5	-0.5	4238
2/13/2022	2022	2	13	258	17	50	33.5	1.5	4239.5
2/14/2022	2022	2	14	259	20	51	35.5	3.5	4243
2/15/2022	2022	2	15	260	26	50	38	6	4249
2/16/2022	2022	2	16	261	21	41	31	-1	4248
2/17/2022	2022	2	17	262	10	27	18.5	-13.5	4234.5
2/18/2022	2022	2	18	263	9	41	25	-7	4227.5
2/19/2022	2022	2	19	264	10	48	29	-3	4224.5

2/20/2022	2022	2	20	265	22	50	36	4	4228.5
2/21/2022	2022	2	21	266	26	41	33.5	1.5	4230
2/22/2022	2022	2	22	267	24	40	32	0	4230
2/23/2022	2022	2	23	268	13	39	26	-6	4224
2/24/2022	2022	2	24	269	6	26	16	-16	4208
2/25/2022	2022	2	25	270	3	40	21.5	-10.5	4197.5
2/26/2022	2022	2	26	271	5	38	21.5	-10.5	4187
2/27/2022	2022	2	27	272	5	45	25	-7	4180
2/28/2022	2022	2	28	273	21	53	37	5	4185
3/1/2022	2022	3	1	274	19	57	38	6	4191
3/2/2022	2022	3	2	275	23	59	41	9	4200
3/3/2022	2022	3	3	276	28	59	43.5	11.5	4211.5
3/4/2022	2022	3	4	277	26	53	39.5	7.5	4219
3/5/2022	2022	3	5	278	25	41	33	1	4220
3/6/2022	2022	3	6	279	16	29	22.5	-9.5	4210.5
3/7/2022	2022	3	7	280	14	34	24	-8	4202.5
3/8/2022	2022	3	8	281	3	33	18	-14	4188.5
3/9/2022	2022	3	9	282	11	40	25.5	-6.5	4182
3/10/2022	2022	3	10	283	16	43	29.5	-2.5	4179.5
3/11/2022	2022	3	11	284	3	31	17	-15	4164.5
3/12/2022	2022	3	12	285	9	47	28	-4	4160.5
3/13/2022	2022	3	13	286	20	50	35	3	4163.5
3/14/2022	2022	3	14	287	21	46	33.5	1.5	4165
3/15/2022	2022	3	15	288	20	57	38.5	6.5	4171.5
3/16/2022	2022	3	16	289	28	54	41	9	4180.5
3/17/2022	2022	3	17	290	20	41	30.5	-1.5	4179
3/18/2022	2022	3	18	291	16	49	32.5	0.5	4179.5
3/19/2022	2022	3	19	292	20	53	36.5	4.5	4184
3/20/2022	2022	3	20	293	26	55	40.5	8.5	4192.5
3/21/2022	2022	3	21	294	26	40	33	1	4193.5
3/22/2022	2022	3	22	295	22	43	32.5	0.5	4194
3/23/2022	2022	3	23	296	16	44	30	-2	4192
3/24/2022	2022	3	24	297	27	57	42	10	4202
3/25/2022	2022	3	25	298	29	61	45	13	4215
3/26/2022	2022	3	26	299	31	65	48	16	4231
3/27/2022	2022	3	27	300	35	65	50	18	4249
3/28/2022	2022	3	28	301	37	55	46	14	4263
3/29/2022	2022	3	29	302	28	37	32.5	0.5	4263.5
3/30/2022	2022	3	30	303	29	44	36.5	4.5	4268
3/31/2022	2022	3	31	304	29	50	39.5	7.5	4275.5
4/1/2022	2022	4	1	305	29	52	40.5	8.5	4284
4/2/2022	2022	4	2	306	30	59	44.5	12.5	4296.5
4/3/2022	2022	4	3	307	31	57	44	12	4308.5
4/4/2022	2022	4	4	308	30	57	43.5	11.5	4320
4/5/2022	2022	4	5	309	35	63	49	17	4337
4/6/2022	2022	4	6	310	26	52	39	7	4344
4/7/2022	2022	4	7	311	22	54	38	6	4350
4/8/2022	2022	4	8	312	24	63	43.5	11.5	4361.5
4/9/2022	2022	4	9	313	31	65	48	16	4377.5
4/10/2022	2022	4	10	314	31	58	44.5	12.5	4390
4/11/2022	2022	4	11	315	32	58	45	13	4403
4/12/2022	2022	4	12	316	22	42	32	0	4403
4/13/2022	2022	4	13	317	14	42	28	-4	4399
4/14/2022	2022	4	14	318	22	54	38	6	4405
4/15/2022	2022	4	15	319	36	60	48	16	4421
4/16/2022	2022	4	16	320	36	63	49.5	17.5	4438.5
4/17/2022	2022	4	17	321	33	64	48.5	16.5	4455
4/18/2022	2022	4	18	322	32	69	50.5	18.5	4473.5
4/19/2022	2022	4	19	323	38	65	51.5	19.5	4493
4/20/2022	2022	4	20	324	43	71	57	25	4518
4/21/2022	2022	4	21	325	38	69	53.5	21.5	4539.5
4/22/2022	2022	4	22	326	30	65	47.5	15.5	4555
4/23/2022	2022	4	23	327	25	50	37.5	5.5	4560.5
4/24/2022	2022	4	24	328	22	52	37	5	4565.5
4/25/2022	2022	4	25	329	22	59	40.5	8.5	4574
4/26/2022	2022	4	26	330	33	66	49.5	17.5	4591.5
4/27/2022	2022	4	27	331	39	68	53.5	21.5	4613
4/28/2022	2022	4	28	332	35	65	50	18	4631
4/29/2022	2022	4	29	333	33	63	48	16	4647
4/30/2022	2022	4	30	334	27	65	46	14	4661
5/1/2022	2022	5	1	335	35	67	51	19	4680
5/2/2022	2022	5	2	336	38	63	50.5	18.5	4698.5
5/3/2022	2022	5	3	337	34	66	50	18	4716.5
5/4/2022	2022	5	4	338	26	54	40	8	4724.5
5/5/2022	2022	5	5	339	27	64	45.5	13.5	4738
5/6/2022	2022	5	6	340	39	71	55	23	4761
5/7/2022	2022	5	7	341	49	72	60.5	28.5	4789.5
5/8/2022	2022	5	8	342	46	67	56.5	24.5	4814
5/9/2022	2022	5	9	343	42		42	10	4824
5/10/2022	2022	5	10	344	42	72	57	25	4849
5/11/2022	2022	5	11	345	40	71	55.5	23.5	4872.5
5/12/2022	2022	5	12	346	31	63	47	15	4887.5
5/13/2022	2022	5	13	347	30	69	49.5	17.5	4905
5/14/2022	2022	5	14	348	34	76	55	23	4928
5/15/2022	2022	5	15	349	40	80	60	28	4956
5/16/2022	2022	5	16	350	48	78	63	31	4987
5/17/2022	2022	5	17	351	42	75	58.5	26.5	5013.5
5/18/2022	2022	5	18	352	48	76	62	30	5043.5
5/19/2022	2022	5	19	353	47	76	61.5	29.5	5073
5/20/2022	2022	5	20	354	45	69	57	25	5098
5/21/2022	2022	5	21	355	45	69	57	25	5123
5/22/2022	2022	5	22	356	39	71	55	23	5146
5/23/2022	2022	5	23	357	35	64	49.5	17.5	5163.5

5/24/2022	2022	5	24	358	34	61	47.5	15.5	5179
5/25/2022	2022	5	25	359	36	70	53	21	5200
5/26/2022	2022	5	26	360	41	78	59.5	27.5	5227.5
5/27/2022	2022	5	27	361	45	79	62	30	5257.5
5/28/2022	2022	5	28	362	46	75	60.5	28.5	5286
5/29/2022	2022	5	29	363	46	69	57.5	25.5	5311.5
5/30/2022	2022	5	30	364	42	65	53.5	21.5	5333
5/31/2022	2022	5	31	365	32	70	51	19	5352
6/1/2022	2022	6	1	1	36	74	55	23	23
6/2/2022	2022	6	2	2	39	76	57.5	25.5	48.5
6/3/2022	2022	6	3	3	41	76	58.5	26.5	75
6/4/2022	2022	6	4	4	43	74	58.5	26.5	101.5
6/5/2022	2022	6	5	5	50	76	63	31	132.5
6/6/2022	2022	6	6	6	50	80	65	33	165.5
6/7/2022	2022	6	7	7	53	81	67	35	200.5
6/8/2022	2022	6	8	8	50	84	67	35	235.5
6/9/2022	2022	6	9	9	56	83	69.5	37.5	273
6/10/2022	2022	6	10	10	51	87	69	37	310
6/11/2022	2022	6	11	11	54	86	70	38	348
6/12/2022	2022	6	12	12	54	82	68	36	384
6/13/2022	2022	6	13	13	53	80	66.5	34.5	418.5
6/14/2022	2022	6	14	14	54	77	65.5	33.5	452
6/15/2022	2022	6	15	15	47	82	64.5	32.5	484.5
6/16/2022	2022	6	16	16	47	86	66.5	34.5	519
6/17/2022	2022	6	17	17	53	82	67.5	35.5	554.5
6/18/2022	2022	6	18	18	48	74	61	29	583.5
6/19/2022	2022	6	19	19	47	68	57.5	25.5	609
6/20/2022	2022	6	20	20	46	72	59	27	636
6/21/2022	2022	6	21	21	49	74	61.5	29.5	665.5
6/22/2022	2022	6	22	22	50	66	58	26	691.5
6/23/2022	2022	6	23	23	47	75	61	29	720.5
6/24/2022	2022	6	24	24	52	74	63	31	751.5
6/25/2022	2022	6	25	25	51	69	60	28	779.5
6/26/2022	2022	6	26	26	49	65	57	25	804.5
6/27/2022	2022	6	27	27	45	63	54	22	826.5
6/28/2022	2022	6	28	28	44	74	59	27	853.5
6/29/2022	2022	6	29	29	50	77	63.5	31.5	885
6/30/2022	2022	6	30	30	51	74	62.5	30.5	915.5
7/1/2022	2022	7	1	31	51	73	62	30	945.5
7/2/2022	2022	7	2	32	48	73	60.5	28.5	974
7/3/2022	2022	7	3	33	51	73	62	30	1004
7/4/2022	2022	7	4	34	50	74	62	30	1034
7/5/2022	2022	7	5	35	49	73	61	29	1063
7/6/2022	2022	7	6	36	48	76	62	30	1093
7/7/2022	2022	7	7	37	47	78	62.5	30.5	1123.5
7/8/2022	2022	7	8	38	48	83	65.5	33.5	1157
7/9/2022	2022	7	9	39	51	80	65.5	33.5	1190.5
7/10/2022	2022	7	10	40	50	81	65.5	33.5	1224
7/11/2022	2022	7	11	41	51	80	65.5	33.5	1257.5
7/12/2022	2022	7	12	42	56	77	66.5	34.5	1292
7/13/2022	2022	7	13	43	54	78	66	34	1326
7/14/2022	2022	7	14	44	51	80	65.5	33.5	1359.5
7/15/2022	2022	7	15	45	52	81	66.5	34.5	1394
7/16/2022	2022	7	16	46	52	83	67.5	35.5	1429.5
7/17/2022	2022	7	17	47	53	84	68.5	36.5	1466
7/18/2022	2022	7	18	48	52	83	67.5	35.5	1501.5
7/19/2022	2022	7	19	49	51	84	67.5	35.5	1537
7/20/2022	2022	7	20	50	57	84	70.5	38.5	1575.5
7/21/2022	2022	7	21	51	54	87	70.5	38.5	1614
7/22/2022	2022	7	22	52	55	85	70	38	1652
7/23/2022	2022	7	23	53	53	84	68.5	36.5	1688.5
7/24/2022	2022	7	24	54	53	81	67	35	1723.5
7/25/2022	2022	7	25	55	51	77	64	32	1755.5
7/26/2022	2022	7	26	56	51	74	62.5	30.5	1786
7/27/2022	2022	7	27	57	49	77	63	31	1817
7/28/2022	2022	7	28	58	48	72	60	28	1845
7/29/2022	2022	7	29	59	50	72	61	29	1874
7/30/2022	2022	7	30	60	50	71	60.5	28.5	1902.5
7/31/2022	2022	7	31	61	48	73	60.5	28.5	1931
8/1/2022	2022	8	1	62	55	78	66.5	34.5	1965.5
8/2/2022	2022	8	2	63	53	80	66.5	34.5	2000
8/3/2022	2022	8	3	64	52	81	66.5	34.5	2034.5
8/4/2022	2022	8	4	65	54	77	65.5	33.5	2068
8/5/2022	2022	8	5	66	53	79	66	34	2102
8/6/2022	2022	8	6	67	53	79	66	34	2136
8/7/2022	2022	8	7	68	54	72	63	31	2167
8/8/2022	2022	8	8	69	54	72	63	31	2198
8/9/2022	2022	8	9	70	50	78	64	32	2230
8/10/2022	2022	8	10	71	50	77	63.5	31.5	2261.5
8/11/2022	2022	8	11	72	50	71	60.5	28.5	2290
8/12/2022	2022	8	12	73	48	76	62	30	2320
8/13/2022	2022	8	13	74	49	76	62.5	30.5	2350.5
8/14/2022	2022	8	14	75	48	74	61	29	2379.5
8/15/2022	2022	8	15	76	49	75	62	30	2409.5
8/16/2022	2022	8	16	77	47	74	60.5	28.5	2438
8/17/2022	2022	8	17	78	49	73	61	29	2467
8/18/2022	2022	8	18	79	50	69	59.5	27.5	2494.5
8/19/2022	2022	8	19	80	51	62	56.5	24.5	2519
8/20/2022	2022	8	20	81	48	56	52	20	2539
8/21/2022	2022	8	21	82	44	69	56.5	24.5	2563.5
8/22/2022	2022	8	22	83	48	73	60.5	28.5	2592
8/23/2022	2022	8	23	84	47	70	58.5	26.5	2618.5
8/24/2022	2022	8	24	85	49	70	59.5	27.5	2646

8/25/2022	2022	8	25	86	51	69	60	28	2674
8/26/2022	2022	8	26	87	50	70	60	28	2702
8/27/2022	2022	8	27	88	50	70	60	28	2730
8/28/2022	2022	8	28	89	47	73	60	28	2758
8/29/2022	2022	8	29	90	46	76	61	29	2787
8/30/2022	2022	8	30	91	54	75	64.5	32.5	2819.5
8/31/2022	2022	8	31	92	51	75	63	31	2850.5
9/1/2022	2022	9	1	93	51	76	63.5	31.5	2882
9/2/2022	2022	9	2	94	51	81	66	34	2916
9/3/2022	2022	9	3	95	48	75	61.5	29.5	2945.5
9/4/2022	2022	9	4	96	49	74	61.5	29.5	2975
9/5/2022	2022	9	5	97	48	82	65	33	3008
9/6/2022	2022	9	6	98	50	80	65	33	3041
9/7/2022	2022	9	7	99	49	80	64.5	32.5	3073.5
9/8/2022	2022	9	8	100	54	79	66.5	34.5	3108
9/9/2022	2022	9	9	101	50	76	63	31	3139
9/10/2022	2022	9	10	102	48	73	60.5	28.5	3167.5
9/11/2022	2022	9	11	103	44	71	57.5	25.5	3193
9/12/2022	2022	9	12	104	44	70	57	25	3218
9/13/2022	2022	9	13	105	46	65	55.5	23.5	3241.5
9/14/2022	2022	9	14	106	44	64	54	22	3263.5
9/15/2022	2022	9	15	107	42	66	54	22	3285.5
9/16/2022	2022	9	16	108	43	70	56.5	24.5	3310
9/17/2022	2022	9	17	109	42	72	57	25	3335
9/18/2022	2022	9	18	110	43	72	57.5	25.5	3360.5
9/19/2022	2022	9	19	111	47	72	59.5	27.5	3388
9/20/2022	2022	9	20	112	51	73	62	30	3418
9/21/2022	2022	9	21	113	49	67	58	26	3444
9/22/2022	2022	9	22	114	48	71	59.5	27.5	3471.5
9/23/2022	2022	9	23	115	45	67	56	24	3495.5
9/24/2022	2022	9	24	116	38	68	53	21	3516.5
9/25/2022	2022	9	25	117	37	69	53	21	3537.5
9/26/2022	2022	9	26	118	44	69	56.5	24.5	3562
9/27/2022	2022	9	27	119	42	71	56.5	24.5	3586.5
9/28/2022	2022	9	28	120	43	68	55.5	23.5	3610
9/29/2022	2022	9	29	121	41	68	54.5	22.5	3632.5
9/30/2022	2022	9	30	122	41	69	55	23	3655.5
10/1/2022	2022	10	1	123	40	71	55.5	23.5	3679
10/2/2022	2022	10	2	124	44	63	53.5	21.5	3700.5
10/3/2022	2022	10	3	125	41	57	49	17	3717.5
10/4/2022	2022	10	4	126	40	52	46	14	3731.5
10/5/2022	2022	10	5	127	40	57	48.5	16.5	3748
10/6/2022	2022	10	6	128	42	51	46.5	14.5	3762.5
10/7/2022	2022	10	7	129	40	53	46.5	14.5	3777
10/8/2022	2022	10	8	130	40	48	44	12	3789
10/9/2022	2022	10	9	131	36	55	45.5	13.5	3802.5
10/10/2022	2022	10	10	132	35	58	46.5	14.5	3817
10/11/2022	2022	10	11	133	36	60	48	16	3833
10/12/2022	2022	10	12	134	35	64	49.5	17.5	3850.5
10/13/2022	2022	10	13	135	32	66	49	17	3867.5
10/14/2022	2022	10	14	136	33	65	49	17	3884.5
10/15/2022	2022	10	15	137	36	65	50.5	18.5	3903
10/16/2022	2022	10	16	138	36	44	40	8	3911
10/17/2022	2022	10	17	139	31	41	36	4	3915
10/18/2022	2022	10	18	140	31	55	43	11	3926
10/19/2022	2022	10	19	141	31	61	46	14	3940
10/20/2022	2022	10	20	142	29	63	46	14	3954
10/21/2022	2022	10	21	143	35	59	47	15	3969
10/22/2022	2022	10	22	144	43	58	50.5	18.5	3987.5
10/23/2022	2022	10	23	145	23	46	34.5	2.5	3990
10/24/2022	2022	10	24	146	21	33	27	-5	3985
10/25/2022	2022	10	25	147	20	51	35.5	3.5	3988.5
10/26/2022	2022	10	26	148	28	50	39	7	3995.5
10/27/2022	2022	10	27	149	22	35	28.5	-3.5	3992
10/28/2022	2022	10	28	150	20	51	35.5	3.5	3995.5
10/29/2022	2022	10	29	151	26	54	40	8	4003.5
10/30/2022	2022	10	30	152	26	51	38.5	6.5	4010
10/31/2022	2022	10	31	153	24	54	39	7	4017
11/1/2022	2022	11	1	154	28	54	41	9	4026
11/2/2022	2022	11	2	155	32	53	42.5	10.5	4036.5
11/3/2022	2022	11	3	156	19	39	29	-3	4033.5
11/4/2022	2022	11	4	157	20	29	24.5	-7.5	4026
11/5/2022	2022	11	5	158	18	45	31.5	-0.5	4025.5
11/6/2022	2022	11	6	159	30	53	41.5	9.5	4035
11/7/2022	2022	11	7	160	30	57	43.5	11.5	4046.5
11/8/2022	2022	11	8	161	37	58	47.5	15.5	4062
11/9/2022	2022	11	9	162	26	54	40	8	4070
11/10/2022	2022	11	10	163	16	37	26.5	-5.5	4064.5
11/11/2022	2022	11	11	164	14	36	25	-7	4057.5
11/12/2022	2022	11	12	165	17	47	32	0	4057.5
11/13/2022	2022	11	13	166	23	49	36	4	4061.5
11/14/2022	2022	11	14	167	18	36	27	-5	4056.5
11/15/2022	2022	11	15	168	11	37	24	-8	4048.5
11/16/2022	2022	11	16	169	7	33	20	-12	4036.5
11/17/2022	2022	11	17	170	15	44	29.5	-2.5	4034
11/18/2022	2022	11	18	171	20	40	30	-2	4032
11/19/2022	2022	11	19	172	16	40	28	-4	4028
11/20/2022	2022	11	20	173	15	43	29	-3	4025
11/21/2022	2022	11	21	174	14	50	32	0	4025
11/22/2022	2022	11	22	175	20	48	34	2	4027
11/23/2022	2022	11	23	176	21	44	32.5	0.5	4027.5
11/24/2022	2022	11	24	177	17	35	26	-6	4021.5
11/25/2022	2022	11	25	178	15	42	28.5	-3.5	4018

11/26/2022	2022	11	26	179	21	46	33.5	1.5	4019.5
11/27/2022	2022	11	27	180	22	41	31.5	-0.5	4019
11/28/2022	2022	11	28	181	25	39	32	0	4019
11/29/2022	2022	11	29	182	25	37	31	-1	4018
11/30/2022	2022	11	30	183	18	48	33	1	4019
12/1/2022	2022	12	1	184	27	50	38.5	6.5	4025.5
12/2/2022	2022	12	2	185	29	41	35	3	4028.5
12/3/2022	2022	12	3	186	31	47	39	7	4035.5
12/4/2022	2022	12	4	187	36	43	39.5	7.5	4043
12/5/2022	2022	12	5	188	34	42	38	6	4049
12/6/2022	2022	12	6	189	29	38	33.5	1.5	4050.5
12/7/2022	2022	12	7	190	28	40	34	2	4052.5
12/8/2022	2022	12	8	191	19	39	29	-3	4049.5
12/9/2022	2022	12	9	192	23	43	33	1	4050.5
12/10/2022	2022	12	10	193	19	47	33	1	4051.5
12/11/2022	2022	12	11	194	26	49	37.5	5.5	4057
12/12/2022	2022	12	12	195	15	34	24.5	-7.5	4049.5
12/13/2022	2022	12	13	196	13	20	16.5	-15.5	4034
12/14/2022	2022	12	14	197	8	27	17.5	-14.5	4019.5
12/15/2022	2022	12	15	198	9	29	19	-13	4006.5
12/16/2022	2022	12	16	199	-1	22	10.5	-21.5	3985
12/17/2022	2022	12	17	200	1	37	19	-13	3972
12/18/2022	2022	12	18	201	14	36	25	-7	3965
12/19/2022	2022	12	19	202	13	36	24.5	-7.5	3957.5
12/20/2022	2022	12	20	203	13	42	27.5	-4.5	3953
12/21/2022	2022	12	21	204	18	41	29.5	-2.5	3950.5
12/22/2022	2022	12	22	205	24	44	34	2	3952.5
12/23/2022	2022	12	23	206	23	43	33	1	3953.5
12/24/2022	2022	12	24	207	21	40	30.5	-1.5	3952
12/25/2022	2022	12	25	208	20	47	33.5	1.5	3953.5
12/26/2022	2022	12	26	209	25	50	37.5	5.5	3959
12/27/2022	2022	12	27	210	33	48	40.5	8.5	3967.5
12/28/2022	2022	12	28	211	22	37	29.5	-2.5	3965
12/29/2022	2022	12	29	212	21	29	25	-7	3958
12/30/2022	2022	12	30	213	26	31	28.5	-3.5	3954.5
12/31/2022	2022	12	31	214	30	34	32	0	3954.5
1/1/2023	2023	1	1	215	23	40	31.5	-0.5	3954
1/2/2023	2023	1	2	216	20	26	23	-9	3945
1/3/2023	2023	1	3	217	19	25	22	-10	3935
1/4/2023	2023	1	4	218	15	29	22	-10	3925
1/5/2023	2023	1	5	219	18	39	28.5	-3.5	3921.5
1/6/2023	2023	1	6	220	12	33	22.5	-9.5	3912
1/7/2023	2023	1	7	221	8	43	25.5	-6.5	3905.5
1/8/2023	2023	1	8	222	20	44	32	0	3905.5
1/9/2023	2023	1	9	223	20	47	33.5	1.5	3907
1/10/2023	2023	1	10	224	31	44	37.5	5.5	3912.5
1/11/2023	2023	1	11	225	12	34	23	-9	3903.5
1/12/2023	2023	1	12	226	9	44	26.5	-5.5	3898
1/13/2023	2023	1	13	227	17	53	35	3	3901
1/14/2023	2023	1	14	228	27	47	37	5	3906
1/15/2023	2023	1	15	229	23	31	27	-5	3901
1/16/2023	2023	1	16	230	22	32	27	-5	3896
1/17/2023	2023	1	17	231	18	29	23.5	-8.5	3887.5
1/18/2023	2023	1	18	232	9	24	16.5	-15.5	3872
1/19/2023	2023	1	19	233	6	35	20.5	-11.5	3860.5
1/20/2023	2023	1	20	234	15	23	19	-13	3847.5
1/21/2023	2023	1	21	235	9	27	18	-14	3833.5
1/22/2023	2023	1	22	236	7	37	22	-10	3823.5
1/23/2023	2023	1	23	237	11	30	20.5	-11.5	3812
1/24/2023	2023	1	24	238	4	29	16.5	-15.5	3796.5
1/25/2023	2023	1	25	239	0	27	13.5	-18.5	3778
1/26/2023	2023	1	26	240	-3	29	13	-19	3759
1/27/2023	2023	1	27	241	6	40	23	-9	3750
1/28/2023	2023	1	28	242	15	36	25.5	-6.5	3743.5
1/29/2023	2023	1	29	243	23	40	31.5	-0.5	3743
1/30/2023	2023	1	30	244	13	38	25.5	-6.5	3736.5
1/31/2023	2023	1	31	245	9	37	23	-9	3727.5
2/1/2023	2023	2	1	246	5	38	21.5	-10.5	3717
2/2/2023	2023	2	2	247	7	38	22.5	-9.5	3707.5
2/3/2023	2023	2	3	248	11	46	28.5	-3.5	3704
2/4/2023	2023	2	4	249	21	49	35	3	3707
2/5/2023	2023	2	5	250	23	51	37	5	3712
2/6/2023	2023	2	6	251	11	33	22	-10	3702
2/7/2023	2023	2	7	252	9	31	20	-12	3690
2/8/2023	2023	2	8	253	8	38	23	-9	3681
2/9/2023	2023	2	9	254	2	27	14.5	-17.5	3663.5
2/10/2023	2023	2	10	255	-1	45	22	-10	3653.5
2/11/2023	2023	2	11	256	16	48	32	0	3653.5
2/12/2023	2023	2	12	257	20	50	35	3	3656.5
2/13/2023	2023	2	13	258	20	45	32.5	0.5	3657
2/14/2023	2023	2	14	259	17	24	20.5	-11.5	3645.5
2/15/2023	2023	2	15	260	4	17	10.5	-21.5	3624
2/16/2023	2023	2	16	261	-4	22	9	-23	3601
2/17/2023	2023	2	17	262	-5	40	17.5	-14.5	3586.5
2/18/2023	2023	2	18	263	22	43	32.5	0.5	3587
2/19/2023	2023	2	19	264	27	41	34	2	3589
2/20/2023	2023	2	20	265	25	45	35	3	3592
2/21/2023	2023	2	21	266	25	45	35	3	3595
2/22/2023	2023	2	22	267	14	30	22	-10	3585
2/23/2023	2023	2	23	268	12	28	20	-12	3573
2/24/2023	2023	2	24	269	18	40	29	-3	3570
2/25/2023	2023	2	25	270	27	50	38.5	6.5	3576.5
2/26/2023	2023	2	26	271	17	36	26.5	-5.5	3571

2/27/2023	2023	2	27	272	13	36	24.5	-7.5	3563.5
2/28/2023	2023	2	28	273	20	38	29	-3	3560.5
3/1/2023	2023	3	1	274	16	33	24.5	-7.5	3553
3/2/2023	2023	3	2	275	18	30	24	-8	3545
3/3/2023	2023	3	3	276	16	40	28	-4	3541
3/4/2023	2023	3	4	277	11	48	29.5	-2.5	3538.5
3/5/2023	2023	3	5	278	28	46	37	5	3543.5
3/6/2023	2023	3	6	279	31	51	41	9	3552.5
3/7/2023	2023	3	7	280	33	49	41	9	3561.5
3/8/2023	2023	3	8	281	32	53	42.5	10.5	3572
3/9/2023	2023	3	9	282	20	47	33.5	1.5	3573.5
3/10/2023	2023	3	10	283	30	51	40.5	8.5	3582
3/11/2023	2023	3	11	284	33	46	39.5	7.5	3589.5
3/12/2023	2023	3	12	285	29	46	37.5	5.5	3595
3/13/2023	2023	3	13	286	23	46	34.5	2.5	3597.5
3/14/2023	2023	3	14	287	22	50	36	4	3601.5
3/15/2023	2023	3	15	288	32	40	36	4	3605.5
3/16/2023	2023	3	16	289	26	37	31.5	-0.5	3605
3/17/2023	2023	3	17	290	15	36	25.5	-6.5	3598.5
3/18/2023	2023	3	18	291	13	37	25	-7	3591.5
3/19/2023	2023	3	19	292	15	40	27.5	-4.5	3587
3/20/2023	2023	3	20	293	27	32	29.5	-2.5	3584.5
3/21/2023	2023	3	21	294	28	36	32	0	3584.5
3/22/2023	2023	3	22	295	27	41	34	2	3586.5
3/23/2023	2023	3	23	296	20	39	29.5	-2.5	3584
3/24/2023	2023	3	24	297	19	34	26.5	-5.5	3578.5
3/25/2023	2023	3	25	298	11	35	23	-9	3569.5
3/26/2023	2023	3	26	299	17	35	26	-6	3563.5
3/27/2023	2023	3	27	300	7	37	22	-10	3553.5
3/28/2023	2023	3	28	301	8	51	29.5	-2.5	3551
3/29/2023	2023	3	29	302	27	57	42	10	3561
3/30/2023	2023	3	30	303	21	49	35	3	3564
3/31/2023	2023	3	31	304	19	39	29	-3	3561
4/1/2023	2023	4	1	305	17	55	36	4	3565
4/2/2023	2023	4	2	306	26	54	40	8	3573
4/3/2023	2023	4	3	307	33	54	43.5	11.5	3584.5
4/4/2023	2023	4	4	308	12	33	22.5	-9.5	3575
4/5/2023	2023	4	5	309	4	35	19.5	-12.5	3562.5
4/6/2023	2023	4	6	310	9	51	30	-2	3560.5
4/7/2023	2023	4	7	311	27	55	41	9	3569.5
4/8/2023	2023	4	8	312	29	56	42.5	10.5	3580
4/9/2023	2023	4	9	313	27	59	43	11	3591
4/10/2023	2023	4	10	314	28	64	46	14	3605
4/11/2023	2023	4	11	315	38	68	53	21	3626
4/12/2023	2023	4	12	316	36	66	51	19	3645
4/13/2023	2023	4	13	317	35	56	45.5	13.5	3658.5
4/14/2023	2023	4	14	318	32	48	40	8	3666.5
4/15/2023	2023	4	15	319	26	51	38.5	6.5	3673
4/16/2023	2023	4	16	320	25	60	42.5	10.5	3683.5
4/17/2023	2023	4	17	321	33	62	47.5	15.5	3699
4/18/2023	2023	4	18	322	33	57	45	13	3712
4/19/2023	2023	4	19	323	27	55	41	9	3721
4/20/2023	2023	4	20	324	20	48	34	2	3723
4/21/2023	2023	4	21	325	21	55	38	6	3729
4/22/2023	2023	4	22	326	30	55	42.5	10.5	3739.5
4/23/2023	2023	4	23	327	27	57	42	10	3749.5
4/24/2023	2023	4	24	328	32	58	45	13	3762.5
4/25/2023	2023	4	25	329	26	55	40.5	8.5	3771
4/26/2023	2023	4	26	330	27	54	40.5	8.5	3779.5
4/27/2023	2023	4	27	331	29	63	46	14	3793.5
4/28/2023	2023	4	28	332	32	55	43.5	11.5	3805
4/29/2023	2023	4	29	333	30	66	48	16	3821
4/30/2023	2023	4	30	334	37	72	54.5	22.5	3843.5
5/1/2023	2023	5	1	335	37	72	54.5	22.5	3866
5/2/2023	2023	5	2	336	37	63	50	18	3884
5/3/2023	2023	5	3	337	36	66	51	19	3903
5/4/2023	2023	5	4	338	34	61	47.5	15.5	3918.5
5/5/2023	2023	5	5	339	28	57	42.5	10.5	3929
5/6/2023	2023	5	6	340	33	61	47	15	3944
5/7/2023	2023	5	7	341	38	62	50	18	3962
5/8/2023	2023	5	8	342	36	68	52	20	3982
5/9/2023	2023	5	9	343	32	68	50	18	4000
5/10/2023	2023	5	10	344	33	61	47	15	4015
5/11/2023	2023	5	11	345	32	61	46.5	14.5	4029.5
5/12/2023	2023	5	12	346	33	66	49.5	17.5	4047
5/13/2023	2023	5	13	347	41	65	53	21	4068
5/14/2023	2023	5	14	348	38	63	50.5	18.5	4086.5
5/15/2023	2023	5	15	349	41	61	51	19	4105.5
5/16/2023	2023	5	16	350	38	66	52	20	4125.5
5/17/2023	2023	5	17	351	42	64	53	21	4146.5
5/18/2023	2023	5	18	352	41	60	50.5	18.5	4165
5/19/2023	2023	5	19	353	40	58	49	17	4182
5/20/2023	2023	5	20	354	37	63	50	18	4200
5/21/2023	2023	5	21	355	38	63	50.5	18.5	4218.5
5/22/2023	2023	5	22	356	38	66	52	20	4238.5
5/23/2023	2023	5	23	357	39	70	54.5	22.5	4261
5/24/2023	2023	5	24	358	40	71	55.5	23.5	4284.5
5/25/2023	2023	5	25	359	39	72	55.5	23.5	4308
5/26/2023	2023	5	26	360	38	72	55	23	4331
5/27/2023	2023	5	27	361	36	68	52	20	4351
5/28/2023	2023	5	28	362	35	69	52	20	4371
5/29/2023	2023	5	29	363	39	71	55	23	4394
5/30/2023	2023	5	30	364	40	73	56.5	24.5	4418.5

5/31/2023	2023	5	31	365	39	71	55	23	4441.5
6/1/2023	2023	6	1	1	36	64	50	18	18
6/2/2023	2023	6	2	2	41	63	52	20	38
6/3/2023	2023	6	3	3	38	67	52.5	20.5	58.5
6/4/2023	2023	6	4	4	38	70	54	22	80.5
6/5/2023	2023	6	5	5	40	70	55	23	103.5
6/6/2023	2023	6	6	6	43	70	56.5	24.5	128
6/7/2023	2023	6	7	7	46	68	57	25	153
6/8/2023	2023	6	8	8	39	69	54	22	175
6/9/2023	2023	6	9	9	41	68	54.5	22.5	197.5
6/10/2023	2023	6	10	10	40	72	56	24	221.5
6/11/2023	2023	6	11	11	39	72	55.5	23.5	245
6/12/2023	2023	6	12	12	35	64	49.5	17.5	262.5
6/13/2023	2023	6	13	13	34	64	49	17	279.5
6/14/2023	2023	6	14	14	38	72	55	23	302.5
6/15/2023	2023	6	15	15	39	71	55	23	325.5
6/16/2023	2023	6	16	16	36	72	54	22	347.5
6/17/2023	2023	6	17	17	37	70	53.5	21.5	369
6/18/2023	2023	6	18	18	42	76	59	27	396
6/19/2023	2023	6	19	19	53	76	64.5	32.5	428.5
6/20/2023	2023	6	20	20	42	75	58.5	26.5	455
6/21/2023	2023	6	21	21	39	78	58.5	26.5	481.5
6/22/2023	2023	6	22	22	42	78	60	28	509.5
6/23/2023	2023	6	23	23	41	76	58.5	26.5	536
6/24/2023	2023	6	24	24	35	76	55.5	23.5	559.5
6/25/2023	2023	6	25	25	47	81	64	32	591.5
6/26/2023	2023	6	26	26	51	83	67	35	626.5
6/27/2023	2023	6	27	27	55	81	68	36	662.5
6/28/2023	2023	6	28	28	53	82	67.5	35.5	698
6/29/2023	2023	6	29	29	49	78	63.5	31.5	729.5
6/30/2023	2023	6	30	30	42	77	59.5	27.5	757
7/1/2023	2023	7	1	31	43	79	61	29	786
7/2/2023	2023	7	2	32	46	82	64	32	818
7/3/2023	2023	7	3	33	47	83	65	33	851
7/4/2023	2023	7	4	34	51	83	67	35	886
7/5/2023	2023	7	5	35	50	82	66	34	920
7/6/2023	2023	7	6	36	48	84	66	34	954
7/7/2023	2023	7	7	37	49	83	66	34	988
7/8/2023	2023	7	8	38	50	82	66	34	1022
7/9/2023	2023	7	9	39	53	83	68	36	1058
7/10/2023	2023	7	10	40	55	83	69	37	1095
7/11/2023	2023	7	11	41	59	85	72	40	1135
7/12/2023	2023	7	12	42	59	83	71	39	1174
7/13/2023	2023	7	13	43	59	85	72	40	1214
7/14/2023	2023	7	14	44	55	88	71.5	39.5	1253.5
7/15/2023	2023	7	15	45	50	88	69	37	1290.5
7/16/2023	2023	7	16	46	49	88	68.5	36.5	1327
7/17/2023	2023	7	17	47	53	92	72.5	40.5	1367.5
7/18/2023	2023	7	18	48	59	87	73	41	1408.5
7/19/2023	2023	7	19	49	60	87	73.5	41.5	1450
7/20/2023	2023	7	20	50	57	90	73.5	41.5	1491.5
7/21/2023	2023	7	21	51	54	87	70.5	38.5	1530
7/22/2023	2023	7	22	52	53	86	69.5	37.5	1567.5
7/23/2023	2023	7	23	53	57	85	71	39	1606.5
7/24/2023	2023	7	24	54	56	87	71.5	39.5	1646
7/25/2023	2023	7	25	55	55	87	71	39	1685
7/26/2023	2023	7	26	56	53	86	69.5	37.5	1722.5
7/27/2023	2023	7	27	57	54	85	69.5	37.5	1760
7/28/2023	2023	7	28	58	51	84	67.5	35.5	1795.5
7/29/2023	2023	7	29	59	54	85	69.5	37.5	1833
7/30/2023	2023	7	30	60	53	80	66.5	34.5	1867.5
7/31/2023	2023	7	31	61	49	78	63.5	31.5	1899
8/1/2023	2023	8	1	62	51	76	63.5	31.5	1930.5
8/2/2023	2023	8	2	63	50	80	65	33	1963.5
8/3/2023	2023	8	3	64	50	79	64.5	32.5	1996
8/4/2023	2023	8	4	65	51	82	66.5	34.5	2030.5
8/5/2023	2023	8	5	66	50	83	66.5	34.5	2065
8/6/2023	2023	8	6	67	49	84	66.5	34.5	2099.5
8/7/2023	2023	8	7	68	53	79	66	34	2133.5
8/8/2023	2023	8	8	69	51	74	62.5	30.5	2164
8/9/2023	2023	8	9	70	50	74	62	30	2194
8/10/2023	2023	8	10	71	53	74	63.5	31.5	2225.5
8/11/2023	2023	8	11	72	48	74	61	29	2254.5
8/12/2023	2023	8	12	73	49	68	58.5	26.5	2281
8/13/2023	2023	8	13	74	47	72	59.5	27.5	2308.5
8/14/2023	2023	8	14	75	52	73	62.5	30.5	2339
8/15/2023	2023	8	15	76	48	75	61.5	29.5	2368.5
8/16/2023	2023	8	16	77	49	77	63	31	2399.5
8/17/2023	2023	8	17	78	49	78	63.5	31.5	2431
8/18/2023	2023	8	18	79	49	80	64.5	32.5	2463.5
8/19/2023	2023	8	19	80	49	79	64	32	2495.5
8/20/2023	2023	8	20	81	58	79	68.5	36.5	2532
8/21/2023	2023	8	21	82	55	78	66.5	34.5	2566.5
8/22/2023	2023	8	22	83	52	76	64	32	2598.5
8/23/2023	2023	8	23	84	50	68	59	27	2625.5
8/24/2023	2023	8	24	85	50	67	58.5	26.5	2652
8/25/2023	2023	8	25	86	48	76	62	30	2682
8/26/2023	2023	8	26	87	51	74	62.5	30.5	2712.5
8/27/2023	2023	8	27	88	50	74	62	30	2742.5
8/28/2023	2023	8	28	89	48	80	64	32	2774.5
8/29/2023	2023	8	29	90	49	81	65	33	2807.5
8/30/2023	2023	8	30	91	51	81	66	34	2841.5
8/31/2023	2023	8	31	92	47	84	65.5	33.5	2875

9/1/2023	2023	9	1	93	48	78	63	31	2906
9/2/2023	2023	9	2	94	49	76	62.5	30.5	2936.5
9/3/2023	2023	9	3	95	48	76	62	30	2966.5
9/4/2023	2023	9	4	96	48	72	60	28	2994.5
9/5/2023	2023	9	5	97	42	76	59	27	3021.5
9/6/2023	2023	9	6	98	43	81	62	30	3051.5
9/7/2023	2023	9	7	99	46	80	63	31	3082.5
9/8/2023	2023	9	8	100	48	81	64.5	32.5	3115
9/9/2023	2023	9	9	101	47	79	63	31	3146
9/10/2023	2023	9	10	102	50	80	65	33	3179
9/11/2023	2023	9	11	103	47	72	59.5	27.5	3206.5
9/12/2023	2023	9	12	104	49	66	57.5	25.5	3232
9/13/2023	2023	9	13	105	42	63	52.5	20.5	3252.5
9/14/2023	2023	9	14	106	42	64	53	21	3273.5
9/15/2023	2023	9	15	107	38	66	52	20	3293.5
9/16/2023	2023	9	16	108	38	69	53.5	21.5	3315
9/17/2023	2023	9	17	109	44	67	55.5	23.5	3338.5
9/18/2023	2023	9	18	110	40	68	54	22	3360.5
9/19/2023	2023	9	19	111	36	68	52	20	3380.5
9/20/2023	2023	9	20	112	36	64	50	18	3398.5
9/21/2023	2023	9	21	113	44	69	56.5	24.5	3423
9/22/2023	2023	9	22	114	44	69	56.5	24.5	3447.5
9/23/2023	2023	9	23	115	41	63	52	20	3467.5
9/24/2023	2023	9	24	116	37	65	51	19	3486.5
9/25/2023	2023	9	25	117	36	72	54	22	3508.5
9/26/2023	2023	9	26	118	38	73	55.5	23.5	3532
9/27/2023	2023	9	27	119	40	73	56.5	24.5	3556.5
9/28/2023	2023	9	28	120	41	72	56.5	24.5	3581
9/29/2023	2023	9	29	121	41	72	56.5	24.5	3605.5
9/30/2023	2023	9	30	122	47	73	60	28	3633.5
10/1/2023	2023	10	1	123	51	68	59.5	27.5	3661
10/2/2023	2023	10	2	124	40	64	52	20	3681
10/3/2023	2023	10	3	125	30	59	44.5	12.5	3693.5
10/4/2023	2023	10	4	126	30	61	45.5	13.5	3707
10/5/2023	2023	10	5	127	30	68	49	17	3724
10/6/2023	2023	10	6	128	35	71	53	21	3745
10/7/2023	2023	10	7	129	40	69	54.5	22.5	3767.5
10/8/2023	2023	10	8	130	40	66	53	21	3788.5
10/9/2023	2023	10	9	131	40	67	53.5	21.5	3810
10/10/2023	2023	10	10	132	38	65	51.5	19.5	3829.5
10/11/2023	2023	10	11	133	41	65	53	21	3850.5
10/12/2023	2023	10	12	134	26	53	39.5	7.5	3858
10/13/2023	2023	10	13	135	22	57	39.5	7.5	3865.5
10/14/2023	2023	10	14	136	33	63	48	16	3881.5
10/15/2023	2023	10	15	137	32	70	51	19	3900.5
10/16/2023	2023	10	16	138	36	71	53.5	21.5	3922
10/17/2023	2023	10	17	139	39	70	54.5	22.5	3944.5
10/18/2023	2023	10	18	140	38	71	54.5	22.5	3967
10/19/2023	2023	10	19	141	38	72	55	23	3990
10/20/2023	2023	10	20	142	37	72	54.5	22.5	4012.5
10/21/2023	2023	10	21	143	39	71	55	23	4035.5
10/22/2023	2023	10	22	144	38	68	53	21	4056.5
10/23/2023	2023	10	23	145	37	66	51.5	19.5	4076
10/24/2023	2023	10	24	146	37	57	47	15	4091
10/25/2023	2023	10	25	147	35	58	46.5	14.5	4105.5
10/26/2023	2023	10	26	148	35	55	45	13	4118.5
10/27/2023	2023	10	27	149	32	60	46	14	4132.5
10/28/2023	2023	10	28	150	38	56	47	15	4147.5
10/29/2023	2023	10	29	151	20	50	35	3	4150.5
10/30/2023	2023	10	30	152	12	45	28.5	-3.5	4147
10/31/2023	2023	10	31	153	16	52	34	2	4149
11/1/2023	2023	11	1	154	22	57	39.5	7.5	4156.5
11/2/2023	2023	11	2	155	27	61	44	12	4168.5
11/3/2023	2023	11	3	156	32	64	48	16	4184.5
11/4/2023	2023	11	4	157	31	65	48	16	4200.5
11/5/2023	2023	11	5	158	34	62	48	16	4216.5
11/6/2023	2023	11	6	159	41	63	52	20	4236.5
11/7/2023	2023	11	7	160	39	61	50	18	4254.5
11/8/2023	2023	11	8	161	24	50	37	5	4259.5
11/9/2023	2023	11	9	162	22	47	34.5	2.5	4262
11/10/2023	2023	11	10	163	24	40	32	0	4262
11/11/2023	2023	11	11	164	21	45	33	1	4263
11/12/2023	2023	11	12	165	20	56	38	6	4269
11/13/2023	2023	11	13	166	31	54	42.5	10.5	4279.5
11/14/2023	2023	11	14	167	26	56	41	9	4288.5
11/15/2023	2023	11	15	168	28	60	44	12	4300.5
11/16/2023	2023	11	16	169	38	55	46.5	14.5	4315
11/17/2023	2023	11	17	170	33	53	43	11	4326
11/18/2023	2023	11	18	171	30	40	35	3	4329
11/19/2023	2023	11	19	172	28	36	32	0	4329
11/20/2023	2023	11	20	173	23	36	29.5	-2.5	4326.5
11/21/2023	2023	11	21	174	20	42	31	-1	4325.5
11/22/2023	2023	11	22	175	19	51	35	3	4328.5
11/23/2023	2023	11	23	176	24	46	35	3	4331.5
11/24/2023	2023	11	24	177	23	40	31.5	-0.5	4331
11/25/2023	2023	11	25	178	15	31	23	-9	4322
11/26/2023	2023	11	26	179	8	37	22.5	-9.5	4312.5
11/27/2023	2023	11	27	180	10	38	24	-8	4304.5
11/28/2023	2023	11	28	181	12	44	28	-4	4300.5
11/29/2023	2023	11	29	182	26	45	35.5	3.5	4304
11/30/2023	2023	11	30	183	25	31	28	-4	4300
12/1/2023	2023	12	1	184	21	28	24.5	-7.5	4292.5
12/2/2023	2023	12	2	185	17	29	23	-9	4283.5

12/3/2023	2023	12	3	186	21	37	29	-3	4280.5
12/4/2023	2023	12	4	187	21	44	32.5	0.5	4281
12/5/2023	2023	12	5	188	20	51	35.5	3.5	4284.5
12/6/2023	2023	12	6	189	23	52	37.5	5.5	4290
12/7/2023	2023	12	7	190	30	46	38	6	4296
12/8/2023	2023	12	8	191	13	37	25	-7	4289
12/9/2023	2023	12	9	192	7	28	17.5	-14.5	4274.5
12/10/2023	2023	12	10	193	6	46	26	-6	4268.5
12/11/2023	2023	12	11	194	22	51	36.5	4.5	4273
12/12/2023	2023	12	12	195	28	48	38	6	4279
12/13/2023	2023	12	13	196	29	39	34	2	4281
12/14/2023	2023	12	14	197	18	35	26.5	-5.5	4275.5
12/15/2023	2023	12	15	198	16	40	28	-4	4271.5
12/16/2023	2023	12	16	199	15	52	33.5	1.5	4273
12/17/2023	2023	12	17	200	24	53	38.5	6.5	4279.5
12/18/2023	2023	12	18	201	25	51	38	6	4285.5
12/19/2023	2023	12	19	202	29	50	39.5	7.5	4293
12/20/2023	2023	12	20	203	28	41	34.5	2.5	4295.5
12/21/2023	2023	12	21	204	24	44	34	2	4297.5
12/22/2023	2023	12	22	205	27	43	35	3	4300.5
12/23/2023	2023	12	23	206	26	33	29.5	-2.5	4298
12/24/2023	2023	12	24	207	11	32	21.5	-10.5	4287.5
12/25/2023	2023	12	25	208	2	28	15	-17	4270.5
12/26/2023	2023	12	26	209	6	31	18.5	-13.5	4257
12/27/2023	2023	12	27	210	11	38	24.5	-7.5	4249.5
12/28/2023	2023	12	28	211	13	38	25.5	-6.5	4243
12/29/2023	2023	12	29	212	14	46	30	-2	4241
12/30/2023	2023	12	30	213	19	47	33	1	4242
12/31/2023	2023	12	31	214	18	38	28	-4	4238
1/1/2024	2024	1	1	215	16	41	28.5	-3.5	4234.5
1/2/2024	2024	1	2	216	15	40	27.5	-4.5	4230
1/3/2024	2024	1	3	217	17	41	29	-3	4227
1/4/2024	2024	1	4	218	21	28	24.5	-7.5	4219.5
1/5/2024	2024	1	5	219	11	27	19	-13	4206.5
1/6/2024	2024	1	6	220	8	26	17	-15	4191.5
1/7/2024	2024	1	7	221	14	21	17.5	-14.5	4177
1/8/2024	2024	1	8	222	4	18	11	-21	4156
1/9/2024	2024	1	9	223	4	29	16.5	-15.5	4140.5
1/10/2024	2024	1	10	224	14	31	22.5	-9.5	4131
1/11/2024	2024	1	11	225	5	21	13	-19	4112
1/12/2024	2024	1	12	226	5	24	14.5	-17.5	4094.5
1/13/2024	2024	1	13	227	17	34	25.5	-6.5	4088
1/14/2024	2024	1	14	228	24	38	31	-1	4087
1/15/2024	2024	1	15	229	22	36	29	-3	4084
1/16/2024	2024	1	16	230	18	41	29.5	-2.5	4081.5
1/17/2024	2024	1	17	231	21	39	30	-2	4079.5
1/18/2024	2024	1	18	232	22	44	33	1	4080.5
1/19/2024	2024	1	19	233	20	48	34	2	4082.5
1/20/2024	2024	1	20	234	27	47	37	5	4087.5
1/21/2024	2024	1	21	235	29	35	32	0	4087.5
1/22/2024	2024	1	22	236	20	35	27.5	-4.5	4083
1/23/2024	2024	1	23	237	20	36	28	-4	4079
1/24/2024	2024	1	24	238	26	38	32	0	4079
1/25/2024	2024	1	25	239	25	32	28.5	-3.5	4075.5
1/26/2024	2024	1	26	240	14	32	23	-9	4066.5
1/27/2024	2024	1	27	241	12	40	26	-6	4060.5
1/28/2024	2024	1	28	242	12	49	30.5	-1.5	4059
1/29/2024	2024	1	29	243	20	52	36	4	4063
1/30/2024	2024	1	30	244	22	51	36.5	4.5	4067.5
1/31/2024	2024	1	31	245	24	50	37	5	4072.5
2/1/2024	2024	2	1	246	29	48	38.5	6.5	4079
2/2/2024	2024	2	2	247	22	36	29	-3	4076
2/3/2024	2024	2	3	248	17	29	23	-9	4067
2/4/2024	2024	2	4	249	13	38	25.5	-6.5	4060.5
2/5/2024	2024	2	5	250	16	51	33.5	1.5	4062
2/6/2024	2024	2	6	251	31	48	39.5	7.5	4069.5
2/7/2024	2024	2	7	252	22	31	26.5	-5.5	4064
2/8/2024	2024	2	8	253	16	36	26	-6	4058
2/9/2024	2024	2	9	254	15	32	23.5	-8.5	4049.5
2/10/2024	2024	2	10	255	13	29	21	-11	4038.5
2/11/2024	2024	2	11	256	8	35	21.5	-10.5	4028
2/12/2024	2024	2	12	257	9	42	25.5	-6.5	4021.5
2/13/2024	2024	2	13	258	13	47	30	-2	4019.5
2/14/2024	2024	2	14	259	19	41	30	-2	4017.5
2/15/2024	2024	2	15	260	20	46	33	1	4018.5
2/16/2024	2024	2	16	261	19	43	31	-1	4017.5
2/17/2024	2024	2	17	262	20	44	32	0	4017.5
2/18/2024	2024	2	18	263	22	47	34.5	2.5	4020
2/19/2024	2024	2	19	264	24	51	37.5	5.5	4025.5
2/20/2024	2024	2	20	265	30	54	42	10	4035.5
2/21/2024	2024	2	21	266	30	48	39	7	4042.5
2/22/2024	2024	2	22	267	19	44	31.5	-0.5	4042
2/23/2024	2024	2	23	268	14	44	29	-3	4039
2/24/2024	2024	2	24	269	20	51	35.5	3.5	4042.5
2/25/2024	2024	2	25	270	28	53	40.5	8.5	4051
2/26/2024	2024	2	26	271	32	47	39.5	7.5	4058.5
2/27/2024	2024	2	27	272	23	43	33	1	4059.5
2/28/2024	2024	2	28	273	12	48	30	-2	4057.5
2/29/2024	2024	2	29	274	22	47	34.5	2.5	4060
3/1/2024	2024	3	1	275	27	49	38	6	4066
3/2/2024	2024	3	2	276	30	49	39.5	7.5	4073.5
3/3/2024	2024	3	3	277	29	47	38	6	4079.5
3/4/2024	2024	3	4	278	28	44	36	4	4083.5

3/5/2024	2024	3	5	279	25	49	37	5	4088.5
3/6/2024	2024	3	6	280	26	44	35	3	4091.5
3/7/2024	2024	3	7	281	24	38	31	-1	4090.5
3/8/2024	2024	3	8	282	18	37	27.5	-4.5	4086
3/9/2024	2024	3	9	283	14	42	28	-4	4082
3/10/2024	2024	3	10	284	15	50	32.5	0.5	4082.5
3/11/2024	2024	3	11	285	23	50	36.5	4.5	4087
3/12/2024	2024	3	12	286	31	50	40.5	8.5	4095.5
3/13/2024	2024	3	13	287	25	33	29	-3	4092.5
3/14/2024	2024	3	14	288	22	39	30.5	-1.5	4091
3/15/2024	2024	3	15	289	26	33	29.5	-2.5	4088.5
3/16/2024	2024	3	16	290	19	41	30	-2	4086.5
3/17/2024	2024	3	17	291	14	38	26	-6	4080.5
3/18/2024	2024	3	18	292	27	41	34	2	4082.5
3/19/2024	2024	3	19	293	23	45	34	2	4084.5
3/20/2024	2024	3	20	294	20	49	34.5	2.5	4087
3/21/2024	2024	3	21	295	26	53	39.5	7.5	4094.5
3/22/2024	2024	3	22	296	27	54	40.5	8.5	4103
3/23/2024	2024	3	23	297	28	50	39	7	4110
3/24/2024	2024	3	24	298	21	36	28.5	-3.5	4106.5
3/25/2024	2024	3	25	299	20	32	26	-6	4100.5
3/26/2024	2024	3	26	300	20	36	28	-4	4096.5
3/27/2024	2024	3	27	301	16	40	28	-4	4092.5
3/28/2024	2024	3	28	302	20	53	36.5	4.5	4097
3/29/2024	2024	3	29	303	32	52	42	10	4107
3/30/2024	2024	3	30	304	32	57	44.5	12.5	4119.5
3/31/2024	2024	3	31	305	25	48	36.5	4.5	4124
4/1/2024	2024	4	1	306	23	38	30.5	-1.5	4122.5
4/2/2024	2024	4	2	307	20	46	33	1	4123.5
4/3/2024	2024	4	3	308	26	57	41.5	9.5	4133
4/4/2024	2024	4	4	309	28	61	44.5	12.5	4145.5
4/5/2024	2024	4	5	310	21	55	38	6	4151.5
4/6/2024	2024	4	6	311	18	31	24.5	-7.5	4144
4/7/2024	2024	4	7	312	19	44	31.5	-0.5	4143.5
4/8/2024	2024	4	8	313	25	46	35.5	3.5	4147
4/9/2024	2024	4	9	314	26	49	37.5	5.5	4152.5
4/10/2024	2024	4	10	315	27	54	40.5	8.5	4161
4/11/2024	2024	4	11	316	26	61	43.5	11.5	4172.5
4/12/2024	2024	4	12	317	31	65	48	16	4188.5
4/13/2024	2024	4	13	318	29	60	44.5	12.5	4201
4/14/2024	2024	4	14	319	32	62	47	15	4216
4/15/2024	2024	4	15	320	30	46	38	6	4222
4/16/2024	2024	4	16	321	29	57	43	11	4233
4/17/2024	2024	4	17	322	30	63	46.5	14.5	4247.5
4/18/2024	2024	4	18	323	35	63	49	17	4264.5
4/19/2024	2024	4	19	324	33	66	49.5	17.5	4282
4/20/2024	2024	4	20	325	35	63	49	17	4299
4/21/2024	2024	4	21	326	33	65	49	17	4316
4/22/2024	2024	4	22	327	35	66	50.5	18.5	4334.5
4/23/2024	2024	4	23	328	36	68	52	20	4354.5
4/24/2024	2024	4	24	329	34	64	49	17	4371.5
4/25/2024	2024	4	25	330	33	54	43.5	11.5	4383
4/26/2024	2024	4	26	331	28	54	41	9	4392
4/27/2024	2024	4	27	332	27	37	32	0	4392
4/28/2024	2024	4	28	333	28	48	38	6	4398
4/29/2024	2024	4	29	334	28	58	43	11	4409
4/30/2024	2024	4	30	335	32	62	47	15	4424
5/1/2024	2024	5	1	336	34	63	48.5	16.5	4440.5
5/2/2024	2024	5	2	337	30	61	45.5	13.5	4454
5/3/2024	2024	5	3	338	34	62	48	16	4470
5/4/2024	2024	5	4	339	36	63	49.5	17.5	4487.5
5/5/2024	2024	5	5	340	36	62	49	17	4504.5
5/6/2024	2024	5	6	341	36	62	49	17	4521.5
5/7/2024	2024	5	7	342	36	62	49	17	4538.5
5/8/2024	2024	5	8	343	36	41	38.5	6.5	4545
5/9/2024	2024	5	9	344	28	55	41.5	9.5	4554.5
5/10/2024	2024	5	10	345	30	57	43.5	11.5	4566
5/11/2024	2024	5	11	346	29	62	45.5	13.5	4579.5
5/12/2024	2024	5	12	347	34	58	46	14	4593.5
5/13/2024	2024	5	13	348	31	60	45.5	13.5	4607
5/14/2024	2024	5	14	349	36	66	51	19	4626
5/15/2024	2024	5	15	350	39	65	52	20	4646
5/16/2024	2024	5	16	351	38	62	50	18	4664
5/17/2024	2024	5	17	352	38	56	47	15	4679
5/18/2024	2024	5	18	353	38	68	53	21	4700
5/19/2024	2024	5	19	354	38	69	53.5	21.5	4721.5
5/20/2024	2024	5	20	355	41	67	54	22	4743.5
5/21/2024	2024	5	21	356	41	65	53	21	4764.5
5/22/2024	2024	5	22	357	33	63	48	16	4780.5
5/23/2024	2024	5	23	358	30	65	47.5	15.5	4796
5/24/2024	2024	5	24	359	39	67	53	21	4817
5/25/2024	2024	5	25	360	36	67	51.5	19.5	4836.5
5/26/2024	2024	5	26	361	36	63	49.5	17.5	4854
5/27/2024	2024	5	27	362	37	67	52	20	4874
5/28/2024	2024	5	28	363	37	72	54.5	22.5	4896.5
5/29/2024	2024	5	29	364	42	74	58	26	4922.5
5/30/2024	2024	5	30	365	42	74	58	26	4948.5
5/31/2024	2024	5	31	366	42	74	58	26	4974.5
6/1/2024	2024	6	1	1	51	74	62.5	30.5	30.5
6/2/2024	2024	6	2	2	47	76	61.5	29.5	60
6/3/2024	2024	6	3	3	45	72	58.5	26.5	86.5
6/4/2024	2024	6	4	4	47	73	60	28	114.5
6/5/2024	2024	6	5	5	48	75	61.5	29.5	144

6/6/2024	2024	6	6	6	45	80	62.5	30.5	174.5
6/7/2024	2024	6	7	7	47	86	66.5	34.5	209
6/8/2024	2024	6	8	8	51	84	67.5	35.5	244.5
6/9/2024	2024	6	9	9	53	80	66.5	34.5	279
6/10/2024	2024	6	10	10	53	76	64.5	32.5	311.5
6/11/2024	2024	6	11	11	47	67	57	25	336.5
6/12/2024	2024	6	12	12	44	77	60.5	28.5	365
6/13/2024	2024	6	13	13	48	83	65.5	33.5	398.5
6/14/2024	2024	6	14	14	48	84	66	34	432.5
6/15/2024	2024	6	15	15	44	74	59	27	459.5
6/16/2024	2024	6	16	16	43	78	60.5	28.5	488
6/17/2024	2024	6	17	17	53	79	66	34	522
6/18/2024	2024	6	18	18	47	79	63	31	553
6/19/2024	2024	6	19	19	45	74	59.5	27.5	580.5
6/20/2024	2024	6	20	20	44	80	62	30	610.5
6/21/2024	2024	6	21	21	53	75	64	32	642.5
6/22/2024	2024	6	22	22	53	73	63	31	673.5
6/23/2024	2024	6	23	23	51	66	58.5	26.5	700
6/24/2024	2024	6	24	24	53	69	61	29	729
6/25/2024	2024	6	25	25	49	76	62.5	30.5	759.5
6/26/2024	2024	6	26	26	55	81	68	36	795.5
6/27/2024	2024	6	27	27	54	80	67	35	830.5
6/28/2024	2024	6	28	28	53	74	63.5	31.5	862
6/29/2024	2024	6	29	29	49	74	61.5	29.5	891.5
6/30/2024	2024	6	30	30	52	75	63.5	31.5	923
7/1/2024	2024	7	1	31	54	74	64	32	955
7/2/2024	2024	7	2	32	54	71	62.5	30.5	985.5
7/3/2024	2024	7	3	33	49	72	60.5	28.5	1014
7/4/2024	2024	7	4	34	49	76	62.5	30.5	1044.5
7/5/2024	2024	7	5	35	47	79	63	31	1075.5
7/6/2024	2024	7	6	36	45	77	61	29	1104.5
7/7/2024	2024	7	7	37	43	78	60.5	28.5	1133
7/8/2024	2024	7	8	38	47	81	64	32	1165
7/9/2024	2024	7	9	39	45	76	60.5	28.5	1193.5
7/10/2024	2024	7	10	40	50	78	64	32	1225.5
7/11/2024	2024	7	11	41	49	79	64	32	1257.5
7/12/2024	2024	7	12	42	53	82	67.5	35.5	1293
7/13/2024	2024	7	13	43	51	81	66	34	1327
7/14/2024	2024	7	14	44	50	82	66	34	1361
7/15/2024	2024	7	15	45	52	83	67.5	35.5	1396.5
7/16/2024	2024	7	16	46	53	81	67	35	1431.5
7/17/2024	2024	7	17	47	52	82	67	35	1466.5
7/18/2024	2024	7	18	48	52	78	65	33	1499.5
7/19/2024	2024	7	19	49	49	79	64	32	1531.5
7/20/2024	2024	7	20	50	48	78	63	31	1562.5
7/21/2024	2024	7	21	51	52	78	65	33	1595.5
7/22/2024	2024	7	22	52	48	70	59	27	1622.5
7/23/2024	2024	7	23	53	45	73	59	27	1649.5
7/24/2024	2024	7	24	54	48	78	63	31	1680.5
7/25/2024	2024	7	25	55	54	79	66.5	34.5	1715
7/26/2024	2024	7	26	56	53	80	66.5	34.5	1749.5
7/27/2024	2024	7	27	57	52	78	65	33	1782.5
7/28/2024	2024	7	28	58	51	79	65	33	1815.5
7/29/2024	2024	7	29	59	51	78	64.5	32.5	1848
7/30/2024	2024	7	30	60	55	78	66.5	34.5	1882.5
7/31/2024	2024	7	31	61	54	82	68	36	1918.5
8/1/2024	2024	8	1	62	56	82	69	37	1955.5
8/2/2024	2024	8	2	63	55	83	69	37	1992.5
8/3/2024	2024	8	3	64	48	77	62.5	30.5	2023
8/4/2024	2024	8	4	65	54	79	66.5	34.5	2057.5
8/5/2024	2024	8	5	66	50	77	63.5	31.5	2089
8/6/2024	2024	8	6	67	50	81	65.5	33.5	2122.5
8/7/2024	2024	8	7	68	53	80	66.5	34.5	2157
8/8/2024	2024	8	8	69	49	79	64	32	2189
8/9/2024	2024	8	9	70	49	76	62.5	30.5	2219.5
8/10/2024	2024	8	10	71	53	73	63	31	2250.5
8/11/2024	2024	8	11	72	53	75	64	32	2282.5
8/12/2024	2024	8	12	73	52	77	64.5	32.5	2315
8/13/2024	2024	8	13	74	51	77	64	32	2347
8/14/2024	2024	8	14	75	51	67	59	27	2374
8/15/2024	2024	8	15	76	47	74	60.5	28.5	2402.5
8/16/2024	2024	8	16	77	47	78	62.5	30.5	2433
8/17/2024	2024	8	17	78	52	80	66	34	2467
8/18/2024	2024	8	18	79	52	81	66.5	34.5	2501.5
8/19/2024	2024	8	19	80	51	79	65	33	2534.5
8/20/2024	2024	8	20	81	50	79	64.5	32.5	2567
8/21/2024	2024	8	21	82	50	82	66	34	2601
8/22/2024	2024	8	22	83	49	80	64.5	32.5	2633.5
8/23/2024	2024	8	23	84	46	72	59	27	2660.5
8/24/2024	2024	8	24	85	48	74	61	29	2689.5
8/25/2024	2024	8	25	86	49	68	58.5	26.5	2716
8/26/2024	2024	8	26	87	48	73	60.5	28.5	2744.5
8/27/2024	2024	8	27	88	49	71	60	28	2772.5
8/28/2024	2024	8	28	89	45	72	58.5	26.5	2799
8/29/2024	2024	8	29	90	49	63	56	24	2823
8/30/2024	2024	8	30	91	48	72	60	28	2851
8/31/2024	2024	8	31	92	46	73	59.5	27.5	2878.5
9/1/2024	2024	9	1	93	46	73	59.5	27.5	2906
9/2/2024	2024	9	2	94	45	71	58	26	2932
9/3/2024	2024	9	3	95	47	69	58	26	2958
9/4/2024	2024	9	4	96	43	74	58.5	26.5	2984.5
9/5/2024	2024	9	5	97	47	78	62.5	30.5	3015
9/6/2024	2024	9	6	98	46	78	62	30	3045

9/7/2024	2024	9	7	99	48	71	59.5	27.5	3072.5
9/8/2024	2024	9	8	100	45	72	58.5	26.5	3099
9/9/2024	2024	9	9	101	47	74	60.5	28.5	3127.5
9/10/2024	2024	9	10	102	48	75	61.5	29.5	3157
9/11/2024	2024	9	11	103	46	73	59.5	27.5	3184.5
9/12/2024	2024	9	12	104	47	74	60.5	28.5	3213
9/13/2024	2024	9	13	105	47	75	61	29	3242
9/14/2024	2024	9	14	106	46	71	58.5	26.5	3268.5
9/15/2024	2024	9	15	107	44	75	59.5	27.5	3296
9/16/2024	2024	9	16	108	46	66	56	24	3320
9/17/2024	2024	9	17	109	48	64	56	24	3344
9/18/2024	2024	9	18	110	48	61	54.5	22.5	3366.5
9/19/2024	2024	9	19	111	40	65	52.5	20.5	3387
9/20/2024	2024	9	20	112	38	69	53.5	21.5	3408.5
9/21/2024	2024	9	21	113	38	71	54.5	22.5	3431
9/22/2024	2024	9	22	114	34	62	48	16	3447
9/23/2024	2024	9	23	115	33	61	47	15	3462
9/24/2024	2024	9	24	116	36	65	50.5	18.5	3480.5
9/25/2024	2024	9	25	117	38	70	54	22	3502.5
9/26/2024	2024	9	26	118	45	74	59.5	27.5	3530
9/27/2024	2024	9	27	119	46	75	60.5	28.5	3558.5
9/28/2024	2024	9	28	120	45	77	61	29	3587.5
9/29/2024	2024	9	29	121	45	78	61.5	29.5	3617
9/30/2024	2024	9	30	122	48	75	61.5	29.5	3646.5
10/1/2024	2024	10	1	123	47	76	61.5	29.5	3676
10/2/2024	2024	10	2	124	45	74	59.5	27.5	3703.5
10/3/2024	2024	10	3	125	44	74	59	27	3730.5
10/4/2024	2024	10	4	126	43	74	58.5	26.5	3757
10/5/2024	2024	10	5	127	43	76	59.5	27.5	3784.5
10/6/2024	2024	10	6	128	42	74	58	26	3810.5
10/7/2024	2024	10	7	129	41	73	57	25	3835.5
10/8/2024	2024	10	8	130	42	72	57	25	3860.5
10/9/2024	2024	10	9	131	40	71	55.5	23.5	3884
10/10/2024	2024	10	10	132	42	71	56.5	24.5	3908.5
10/11/2024	2024	10	11	133	41	70	55.5	23.5	3932
10/12/2024	2024	10	12	134	41	72	56.5	24.5	3956.5
10/13/2024	2024	10	13	135	43	71	57	25	3981.5
10/14/2024	2024	10	14	136	42	72	57	25	4006.5
10/15/2024	2024	10	15	137	43	70	56.5	24.5	4031
10/16/2024	2024	10	16	138	40	65	52.5	20.5	4051.5
10/17/2024	2024	10	17	139	39	60	49.5	17.5	4069
10/18/2024	2024	10	18	140	39	60	49.5	17.5	4086.5
10/19/2024	2024	10	19	141	29	57	43	11	4097.5
10/20/2024	2024	10	20	142	28	38	33	1	4098.5
10/21/2024	2024	10	21	143	29	49	39	7	4105.5
10/22/2024	2024	10	22	144	27	56	41.5	9.5	4115
10/23/2024	2024	10	23	145	28	63	45.5	13.5	4128.5
10/24/2024	2024	10	24	146	33	65	49	17	4145.5
10/25/2024	2024	10	25	147	36	64	50	18	4163.5
10/26/2024	2024	10	26	148	35	67	51	19	4182.5
10/27/2024	2024	10	27	149	37	67	52	20	4202.5
10/28/2024	2024	10	28	150	40	66	53	21	4223.5
10/29/2024	2024	10	29	151	40	63	51.5	19.5	4243
10/30/2024	2024	10	30	152	40	47	43.5	11.5	4254.5
10/31/2024	2024	10	31	153	21	39	30	-2	4252.5
11/1/2024	2024	11	1	154	20	51	35.5	3.5	4256
11/2/2024	2024	11	2	155	26	54	40	8	4264
11/3/2024	2024	11	3	156	28	53	40.5	8.5	4272.5
11/4/2024	2024	11	4	157	28	37	32.5	0.5	4273
11/5/2024	2024	11	5	158	20	31	25.5	-6.5	4266.5
11/6/2024	2024	11	6	159	20	41	30.5	-1.5	4265
11/7/2024	2024	11	7	160	9	28	18.5	-13.5	4251.5
11/8/2024	2024	11	8	161	18	29	23.5	-8.5	4243
11/9/2024	2024	11	9	162	18	29	23.5	-8.5	4234.5
11/10/2024	2024	11	10	163	19	39	29	-3	4231.5
11/11/2024	2024	11	11	164	22	54	38	6	4237.5
11/12/2024	2024	11	12	165	22	51	36.5	4.5	4242
11/13/2024	2024	11	13	166	23	44	33.5	1.5	4243.5
11/14/2024	2024	11	14	167	18	50	34	2	4245.5
11/15/2024	2024	11	15	168	29	56	42.5	10.5	4256
11/16/2024	2024	11	16	169	29	56	42.5	10.5	4266.5
11/17/2024	2024	11	17	170	20	39	29.5	-2.5	4264
11/18/2024	2024	11	18	171	18	42	30	-2	4262
11/19/2024	2024	11	19	172	18	39	28.5	-3.5	4258.5
11/20/2024	2024	11	20	173	15	35	25	-7	4251.5
11/21/2024	2024	11	21	174	16	47	31.5	-0.5	4251
11/22/2024	2024	11	22	175	21	56	38.5	6.5	4257.5
11/23/2024	2024	11	23	176	25	58	41.5	9.5	4267
11/24/2024	2024	11	24	177	29	55	42	10	4277
11/25/2024	2024	11	25	178	34	50	42	10	4287
11/26/2024	2024	11	26	179	26	47	36.5	4.5	4291.5
11/27/2024	2024	11	27	180	26	47	36.5	4.5	4296
11/28/2024	2024	11	28	181	26	40	33	1	4297
11/29/2024	2024	11	29	182	11	35	23	-9	4288
11/30/2024	2024	11	30	183	9	40	24.5	-7.5	4280.5
12/1/2024	2024	12	1	184	15	48	31.5	-0.5	4280
12/2/2024	2024	12	2	185	20	52	36	4	4284
12/3/2024	2024	12	3	186	24	51	37.5	5.5	4289.5
12/4/2024	2024	12	4	187	27	50	38.5	6.5	4296
12/5/2024	2024	12	5	188	25	47	36	4	4300
12/6/2024	2024	12	6	189	25	46	35.5	3.5	4303.5
12/7/2024	2024	12	7	190	24	44	34	2	4305.5
12/8/2024	2024	12	8	191	23	45	34	2	4307.5

12/9/2024	2024	12	9	192	23	44	33.5	1.5	4309
12/10/2024	2024	12	10	193	14	38	26	-6	4303
12/11/2024	2024	12	11	194	11	30	20.5	-11.5	4291.5
12/12/2024	2024	12	12	195	15	41	28	-4	4287.5
12/13/2024	2024	12	13	196	26	50	38	6	4293.5
12/14/2024	2024	12	14	197	24	37	30.5	-1.5	4292
12/15/2024	2024	12	15	198	20	49	34.5	2.5	4294.5
12/16/2024	2024	12	16	199	21	44	32.5	0.5	4295
12/17/2024	2024	12	17	200	22	52	37	5	4300
12/18/2024	2024	12	18	201	24	48	36	4	4304
12/19/2024	2024	12	19	202	22	53	37.5	5.5	4309.5
12/20/2024	2024	12	20	203	25	54	39.5	7.5	4317
12/21/2024	2024	12	21	204	28	55	41.5	9.5	4326.5
12/22/2024	2024	12	22	205	26	56	41	9	4335.5
12/23/2024	2024	12	23	206	27	51	39	7	4342.5
12/24/2024	2024	12	24	207	28	48	38	6	4348.5
12/25/2024	2024	12	25	208	28	49	38.5	6.5	4355
12/26/2024	2024	12	26	209	20	38	29	-3	4352
12/27/2024	2024	12	27	210	17	38	27.5	-4.5	4347.5
12/28/2024	2024	12	28	211	27	38	32.5	0.5	4348
12/29/2024	2024	12	29	212	24	46	35	3	4351
12/30/2024	2024	12	30	213	24	52	38	6	4357
12/31/2024	2024	12	31	214	23	45	34	2	4359
1/1/2025	2025	1	1	215	23	41	32	0	4359
1/2/2025	2025	1	2	216	18	43	30.5	-1.5	4357.5
1/3/2025	2025	1	3	217	26	50	38	6	4363.5
1/4/2025	2025	1	4	218	26	52	39	7	4370.5
1/5/2025	2025	1	5	219	26	44	35	3	4373.5
1/6/2025	2025	1	6	220	14	36	25	-7	4366.5
1/7/2025	2025	1	7	221	14	39	26.5	-5.5	4361
1/8/2025	2025	1	8	222	14	34	24	-8	4353
1/9/2025	2025	1	9	223	13	30	21.5	-10.5	4342.5
1/10/2025	2025	1	10	224	11	24	17.5	-14.5	4328
1/11/2025	2025	1	11	225	5	31	18	-14	4314
1/12/2025	2025	1	12	226	12	38	25	-7	4307
1/13/2025	2025	1	13	227	4	29	16.5	-15.5	4291.5
1/14/2025	2025	1	14	228	7	28	17.5	-14.5	4277
1/15/2025	2025	1	15	229	4	28	16	-16	4261
1/16/2025	2025	1	16	230	6	38	22	-10	4251
1/17/2025	2025	1	17	231	16	48	32	0	4251
1/18/2025	2025	1	18	232	16	34	25	-7	4244
1/19/2025	2025	1	19	233	4	30	17	-15	4229
1/20/2025	2025	1	20	234	0	29	14.5	-17.5	4211.5
1/21/2025	2025	1	21	235	1	29	15	-17	4194.5
1/22/2025	2025	1	22	236	-4	33	14.5	-17.5	4177
1/23/2025	2025	1	23	237	4	34	19	-13	4164
1/24/2025	2025	1	24	238	4	34	19	-13	4151
1/25/2025	2025	1	25	239	8	44	26	-6	4145
1/26/2025	2025	1	26	240	8	42	25	-7	4138
1/27/2025	2025	1	27	241	8	42	25	-7	4131
1/28/2025	2025	1	28	242	15	43	29	-3	4128
1/29/2025	2025	1	29	243	14	41	27.5	-4.5	4123.5
1/30/2025	2025	1	30	244	15	26	20.5	-11.5	4112
1/31/2025	2025	1	31	245	17	37	27	-5	4107
2/1/2025	2025	2	1	246	14	49	31.5	-0.5	4106.5
2/2/2025	2025	2	2	247	26	49	37.5	5.5	4112
2/3/2025	2025	2	3	248	33	57	45	13	4125
2/4/2025	2025	2	4	249	33	62	47.5	15.5	4140.5
2/5/2025	2025	2	5	250	33	58	45.5	13.5	4154
2/6/2025	2025	2	6	251	29	53	41	9	4163
2/7/2025	2025	2	7	252	25	56	40.5	8.5	4171.5
2/8/2025	2025	2	8	253	37	55	46	14	4185.5
2/9/2025	2025	2	9	254	33	52	42.5	10.5	4196
2/10/2025	2025	2	10	255	27	50	38.5	6.5	4202.5
2/11/2025	2025	2	11	256	27	50	38.5	6.5	4209
2/12/2025	2025	2	12	257	27	42	34.5	2.5	4211.5
2/13/2025	2025	2	13	258	18	33	25.5	-6.5	4205
2/14/2025	2025	2	14	259	13	42	27.5	-4.5	4200.5
2/15/2025	2025	2	15	260	13	34	23.5	-8.5	4192
2/16/2025	2025	2	16	261	21	31	26	-6	4186
2/17/2025	2025	2	17	262	13	45	29	-3	4183
2/18/2025	2025	2	18	263	13	47	30	-2	4181
2/19/2025	2025	2	19	264	19	40	29.5	-2.5	4178.5
2/20/2025	2025	2	20	265	16	45	30.5	-1.5	4177
2/21/2025	2025	2	21	266	22	47	34.5	2.5	4179.5
2/22/2025	2025	2	22	267	18	42	30	-2	4177.5
2/23/2025	2025	2	23	268	16	46	31	-1	4176.5
2/24/2025	2025	2	24	269	23	53	38	6	4182.5
2/25/2025	2025	2	25	270	29	57	43	11	4193.5
2/26/2025	2025	2	26	271	29	57	43	11	4204.5
2/27/2025	2025	2	27	272	23	52	37.5	5.5	4210
2/28/2025	2025	2	28	273	18	43	30.5	-1.5	4208.5
3/1/2025	2025	3	1	274	23	52	37.5	5.5	4214
3/2/2025	2025	3	2	275	26	58	42	10	4224
3/3/2025	2025	3	3	276	26	48	37	5	4229
3/4/2025	2025	3	4	277	21	35	28	-4	4225
3/5/2025	2025	3	5	278	20	37	28.5	-3.5	4221.5
3/6/2025	2025	3	6	279	20	48	34	2	4223.5
3/7/2025	2025	3	7	280	20	42	31	-1	4222.5
3/8/2025	2025	3	8	281	20	36	28	-4	4218.5
3/9/2025	2025	3	9	282	16	32	24	-8	4210.5
3/10/2025	2025	3	10	283	13	48	30.5	-1.5	4209
3/11/2025	2025	3	11	284	22	55	38.5	6.5	4215.5

3/12/2025	2025	3	12	285	24	49	36.5	4.5	4220
3/13/2025	2025	3	13	286	24	41	32.5	0.5	4220.5
3/14/2025	2025	3	14	287	19	49	34	2	4222.5
3/15/2025	2025	3	15	288	16	26	21	-11	4211.5
3/16/2025	2025	3	16	289	19	31	25	-7	4204.5
3/17/2025	2025	3	17	290	16	47	31.5	-0.5	4204
3/18/2025	2025	3	18	291	16	58	37	5	4209
3/19/2025	2025	3	19	292	16	40	28	-4	4205
3/20/2025	2025	3	20	293	12	35	23.5	-8.5	4196.5
3/21/2025	2025	3	21	294	12	49	30.5	-1.5	4195
3/22/2025	2025	3	22	295	25	50	37.5	5.5	4200.5
3/23/2025	2025	3	23	296	29	52	40.5	8.5	4209
3/24/2025	2025	3	24	297	29	52	40.5	8.5	4217.5
3/25/2025	2025	3	25	298	28	61	44.5	12.5	4230
3/26/2025	2025	3	26	299	30	65	47.5	15.5	4245.5
3/27/2025	2025	3	27	300	34	64	49	17	4262.5
3/28/2025	2025	3	28	301	34	64	49	17	4279.5
3/29/2025	2025	3	29	302	34	58	46	14	4293.5
3/30/2025	2025	3	30	303	29	50	39.5	7.5	4301
3/31/2025	2025	3	31	304	26	50	38	6	4307
4/1/2025	2025	4	1	305	26	56	41	9	4316
4/2/2025	2025	4	2	306	18	46	32	0	4316
4/3/2025	2025	4	3	307	16	36	26	-6	4310
4/4/2025	2025	4	4	308	20	35	27.5	-4.5	4305.5
4/5/2025	2025	4	5	309	20	37	28.5	-3.5	4302
4/6/2025	2025	4	6	310	17	32	24.5	-7.5	4294.5
4/7/2025	2025	4	7	311	16	45	30.5	-1.5	4293
4/8/2025	2025	4	8	312	22	55	38.5	6.5	4299.5
4/9/2025	2025	4	9	313	28	61	44.5	12.5	4312
4/10/2025	2025	4	10	314	34	66	50	18	4330
4/11/2025	2025	4	11	315	33	69	51	19	4349
4/12/2025	2025	4	12	316	36	72	54	22	4371
4/13/2025	2025	4	13	317	37	69	53	21	4392
4/14/2025	2025	4	14	318	46	61	53.5	21.5	4413.5
4/15/2025	2025	4	15	319	38	64	51	19	4432.5
4/16/2025	2025	4	16	320	36	66	51	19	4451.5
4/17/2025	2025	4	17	321	36	67	51.5	19.5	4471
4/18/2025	2025	4	18	322	36	58	47	15	4486
4/19/2025	2025	4	19	323	26	48	37	5	4491
4/20/2025	2025	4	20	324	21	32	26.5	-5.5	4485.5
4/21/2025	2025	4	21	325	21	50	35.5	3.5	4489
4/22/2025	2025	4	22	326	26	58	42	10	4499
4/23/2025	2025	4	23	327	30	63	46.5	14.5	4513.5
4/24/2025	2025	4	24	328	34	64	49	17	4530.5
4/25/2025	2025	4	25	329	34	62	48	16	4546.5
4/26/2025	2025	4	26	330	31	66	48.5	16.5	4563
4/27/2025	2025	4	27	331	30	66	48	16	4579
4/28/2025	2025	4	28	332	30	60	45	13	4592
4/29/2025	2025	4	29	333	26	54	40	8	4600
4/30/2025	2025	4	30	334	28	55	41.5	9.5	4609.5
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5/2/2025	2025	5	2	336	33	57	45	13	4633.5
5/3/2025	2025	5	3	337	31	58	44.5	12.5	4646
5/4/2025	2025	5	4	338	31	61	46	14	4660
5/5/2025	2025	5	5	339	31	52	41.5	9.5	4669.5
5/6/2025	2025	5	6	340	26	46	36	4	4673.5
5/7/2025	2025	5	7	341	27	44	35.5	3.5	4677
5/8/2025	2025	5	8	342	33	49	41	9	4686
5/9/2025	2025	5	9	343	30	57	43.5	11.5	4697.5
5/10/2025	2025	5	10	344	32	64	48	16	4713.5
5/11/2025	2025	5	11	345	37	65	51	19	4732.5
5/12/2025	2025	5	12	346	37	65	51	19	4751.5
5/13/2025	2025	5	13	347	42	67	54.5	22.5	4774
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5/23/2025	2025	5	23	357	39	74	56.5	24.5	4932.5
5/24/2025	2025	5	24	358	38	72	55	23	4955.5
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5/27/2025	2025	5	27	361	40	72	56	24	5026.5
5/28/2025	2025	5	28	362	40	72	56	24	5050.5
5/29/2025	2025	5	29	363	40	72	56	24	5074.5
5/30/2025	2025	5	30	364	43	76	59.5	27.5	5102
5/31/2025	2025	5	31	365	52	76	64	32	5134
6/1/2025	2025	6	1	1	50	80	65	33	33
6/2/2025	2025	6	2	2	47	63	55	23	56
6/3/2025	2025	6	3	3	44	69	56.5	24.5	80.5
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6/5/2025	2025	6	5	5	39	67	53	21	121.5
6/6/2025	2025	6	6	6	40	74	57	25	146.5
6/7/2025	2025	6	7	7	42	78	60	28	174.5
6/8/2025	2025	6	8	8	44	78	61	29	203.5
6/9/2025	2025	6	9	9	45	74	59.5	27.5	231
6/10/2025	2025	6	10	10	46	74	60	28	259
6/11/2025	2025	6	11	11	47	77	62	30	289
6/12/2025	2025	6	12	12	51	80	65.5	33.5	322.5

6/13/2025	2025	6	13	13	51	80	65.5	33.5	356
6/14/2025	2025	6	14	14	45	83	64	32	388
6/15/2025	2025	6	15	15	47	85	66	34	422
6/16/2025	2025	6	16	16	51	85	68	36	458
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6/18/2025	2025	6	18	18	47	84	65.5	33.5	524
6/19/2025	2025	6	19	19	52	86	69	37	561
6/20/2025	2025	6	20	20	53	85	69	37	598
6/21/2025	2025	6	21	21	56	80	68	36	634
6/22/2025	2025	6	22	22	49	75	62	30	664
6/23/2025	2025	6	23	23	42	78	60	28	692
6/24/2025	2025	6	24	24	46	77	61.5	29.5	721.5
6/25/2025	2025	6	25	25	48	73	60.5	28.5	750
6/26/2025	2025	6	26	26	45	77	61	29	779
6/27/2025	2025	6	27	27	49	79	64	32	811
6/28/2025	2025	6	28	28	48	81	64.5	32.5	843.5
6/29/2025	2025	6	29	29	47	84	65.5	33.5	877
6/30/2025	2025	6	30	30	50	83	66.5	34.5	911.5
7/1/2025	2025	7	1	31	54	74	64	32	943.5
7/2/2025	2025	7	2	32	46	76	61	29	972.5
7/3/2025	2025	7	3	33	45	72	58.5	26.5	999
7/4/2025	2025	7	4	34	45	74	59.5	27.5	1026.5
7/5/2025	2025	7	5	35	48	82	65	33	1059.5
7/6/2025	2025	7	6	36	51	80	65.5	33.5	1093
7/7/2025	2025	7	7	37	54	84	69	37	1130
7/8/2025	2025	7	8	38	56	87	71.5	39.5	1169.5
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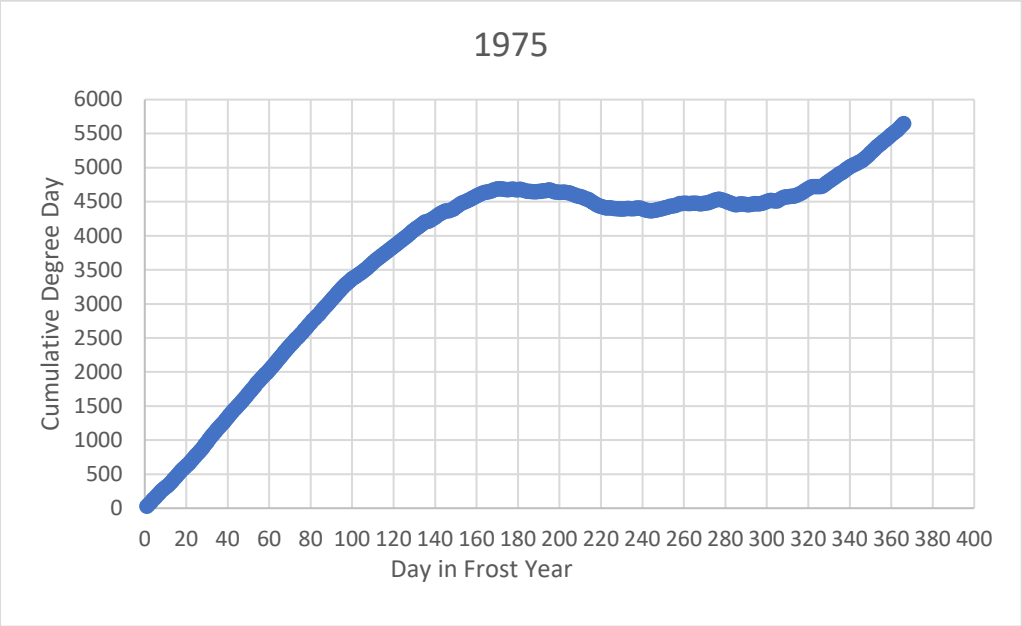
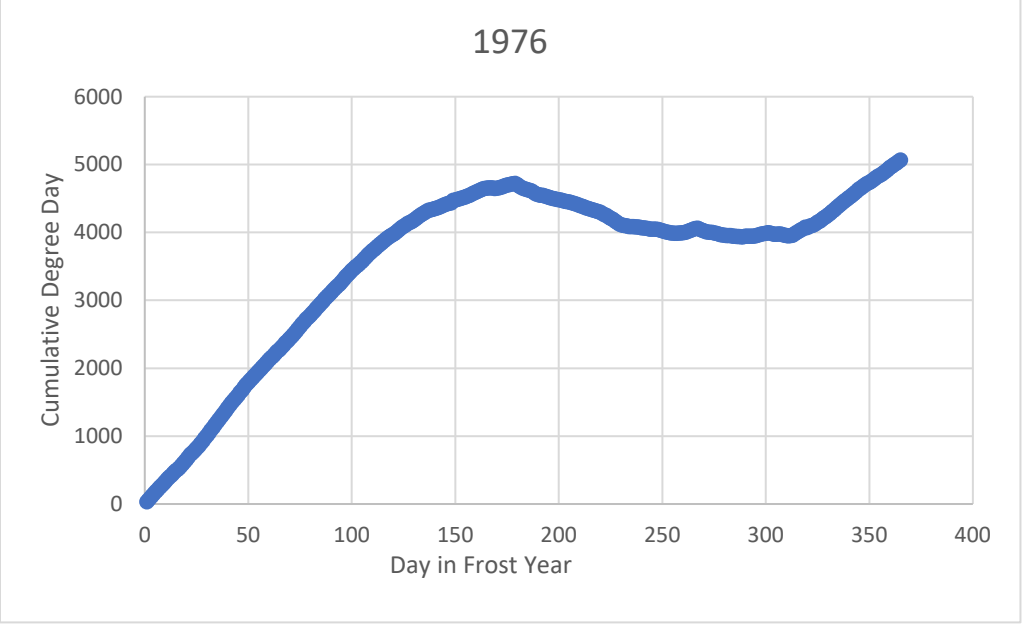
7/10/2025	2025	7	10	40	59	88	73.5	41.5	1247.5
7/11/2025	2025	7	11	41	54	85	69.5	37.5	1285
7/12/2025	2025	7	12	42	53	83	68	36	1321
7/13/2025	2025	7	13	43	51	86	68.5	36.5	1357.5
7/14/2025	2025	7	14	44	53	82	67.5	35.5	1393
7/15/2025	2025	7	15	45	51	81	66	34	1427
7/16/2025	2025	7	16	46	53	79	66	34	1461
7/17/2025	2025	7	17	47	49	79	64	32	1493
7/18/2025	2025	7	18	48	50	78	64	32	1525
7/19/2025	2025	7	19	49	52	74	63	31	1556

ATTACHMENT D2
FROST INDEX CALCULATIONS

ATTACHMENT D2.1
CUMULATIVE DEGREE DAY PLOTS


1975
Cumulative Degree Day
6000
5500
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400
Day in Frost Year


1976
Cumulative Degree Day
6000
5000
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3000
2000
1000
0
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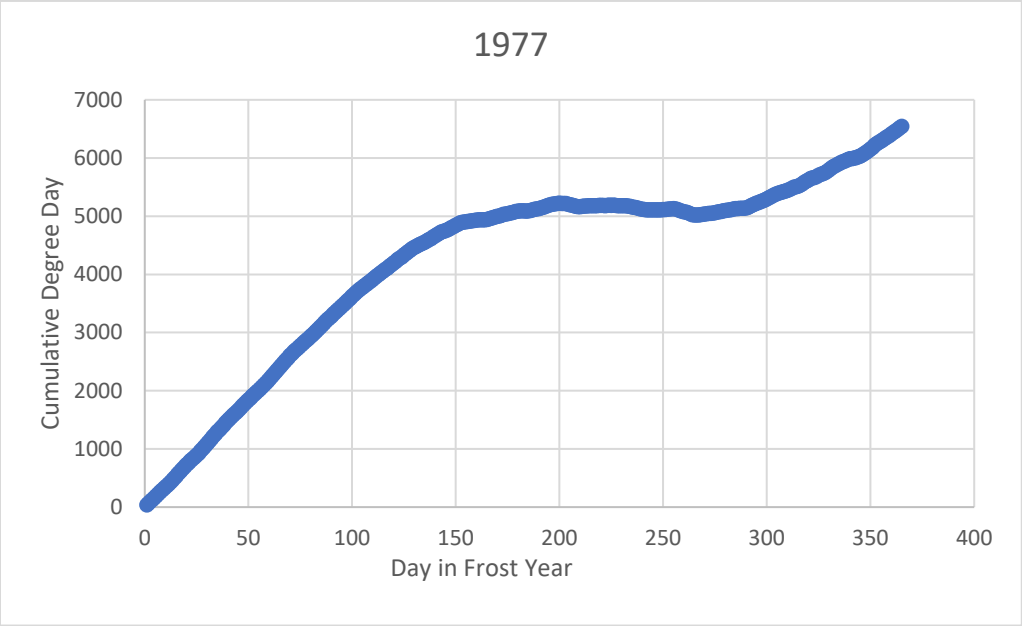
Day in Frost Year


1977
Cumulative Degree Day
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4000
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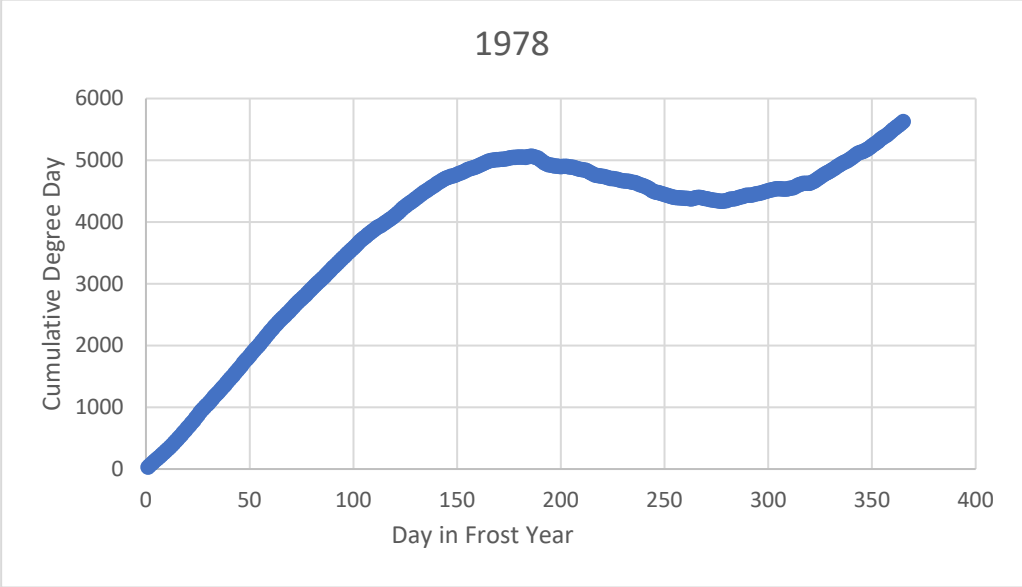
2000
1000
0
0
50
100
150
200
250
300
350
400
Day in Frost Year


1978
Cumulative Degree Day
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2000
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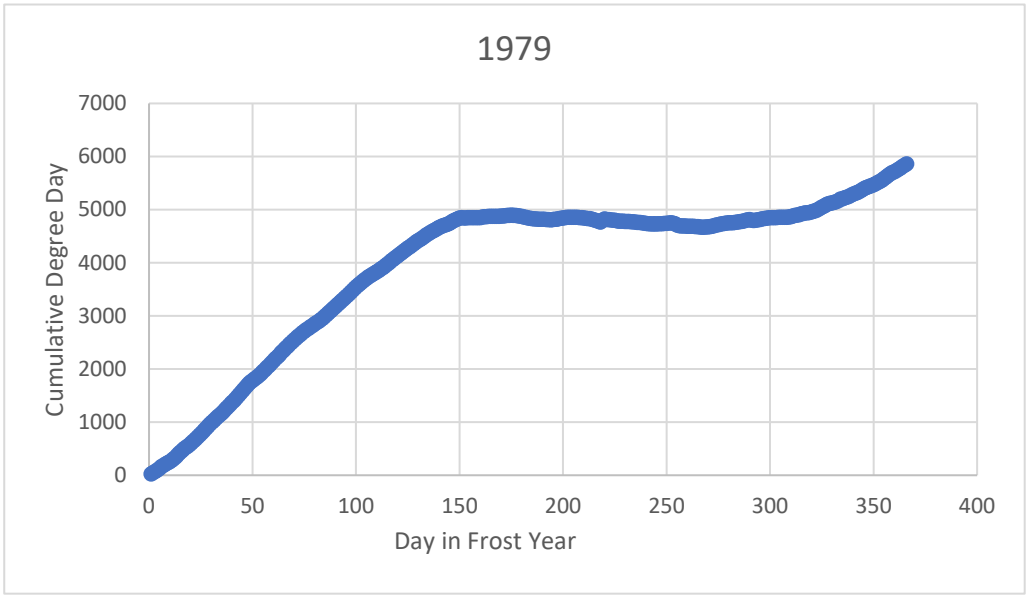
0
0
50
100
150
200
250
300
350
400
Day in Frost Year


1979
Cumulative Degree Day
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4000
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2000
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50
100
150
200
250
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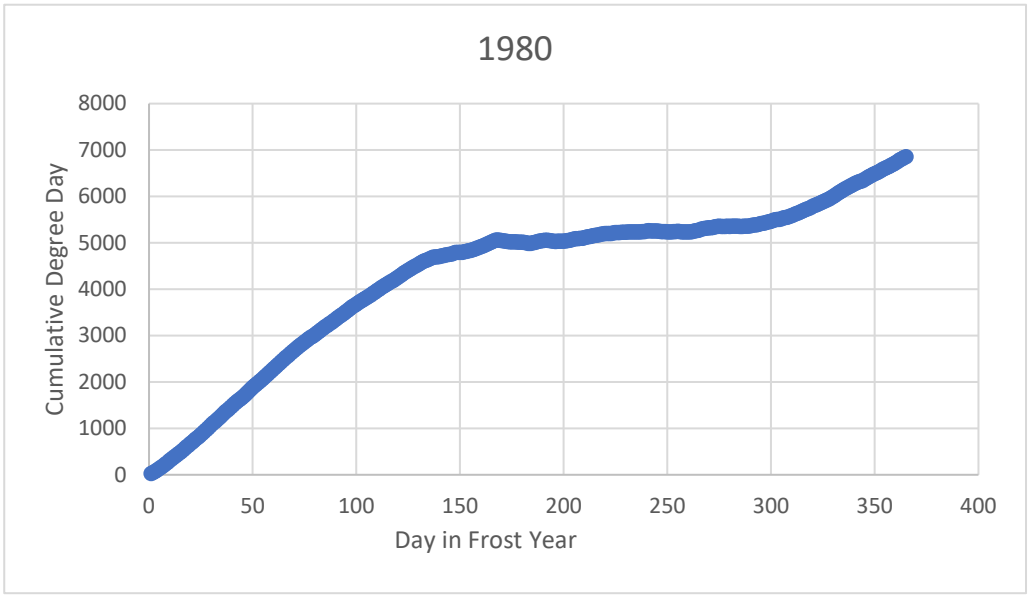
350
400
Day in Frost Year


1980
Cumulative Degree Day
8000
7000
6000
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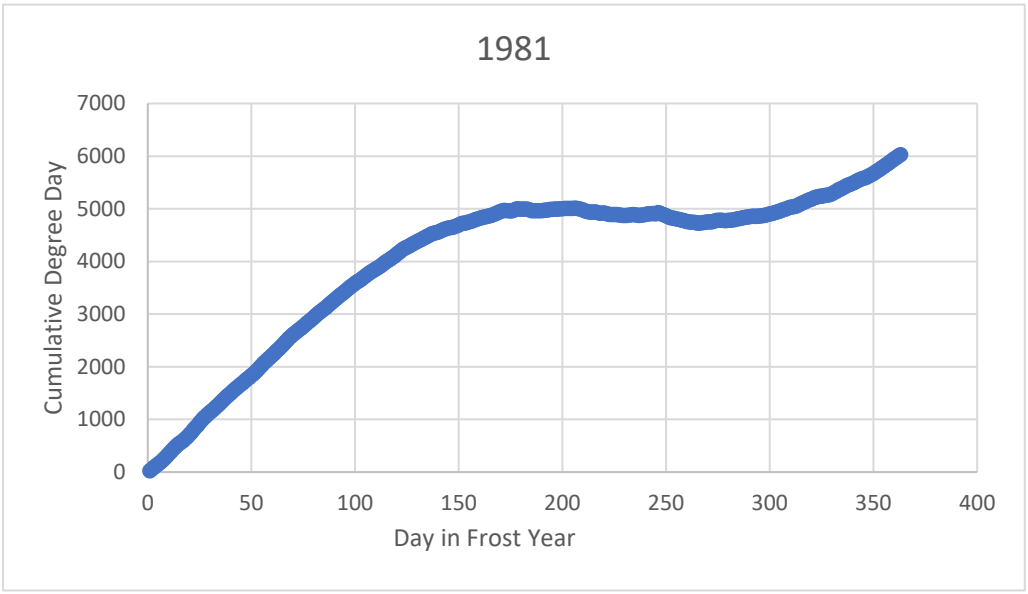
4000
3000
2000
1000
0
0
50
100
150
200
250
300
350
400
Day in Frost Year


1981
Cumulative Degree Day
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4000
3000
2000
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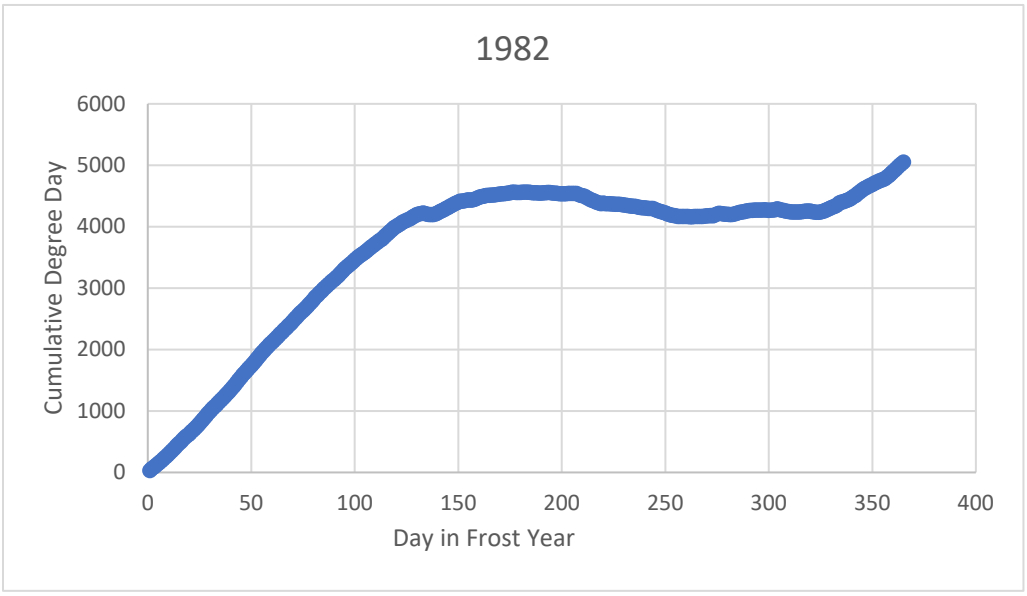
0
50
100
150
200
250
300
350
400
Day in Frost Year


1982
Cumulative Degree Day
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1000
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0
50
100
150
200
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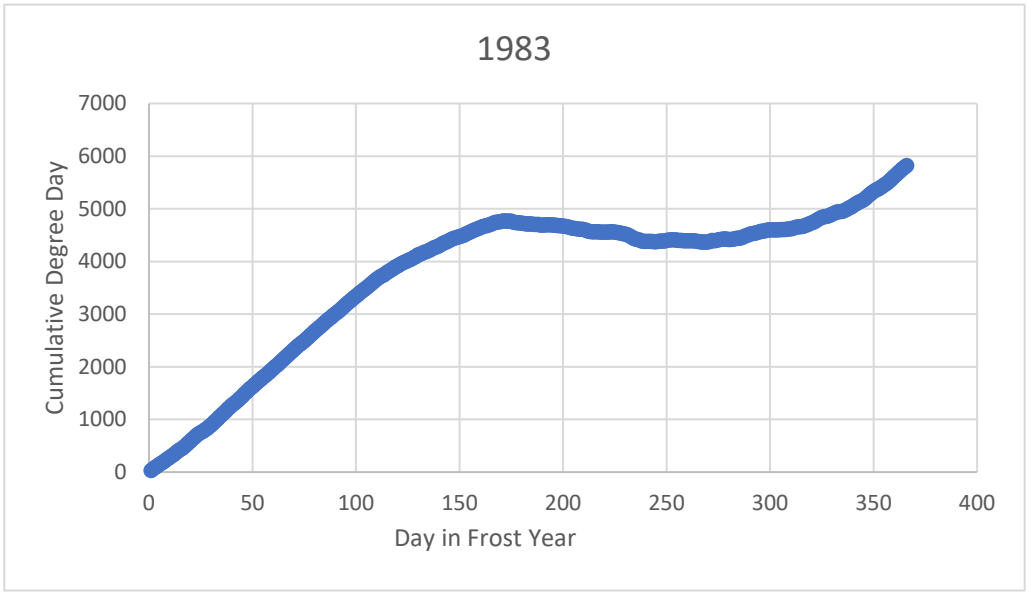
300
350
400
Day in Frost Year


1983
Cumulative Degree Day
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4000
3000
2000
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0
50
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150
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350
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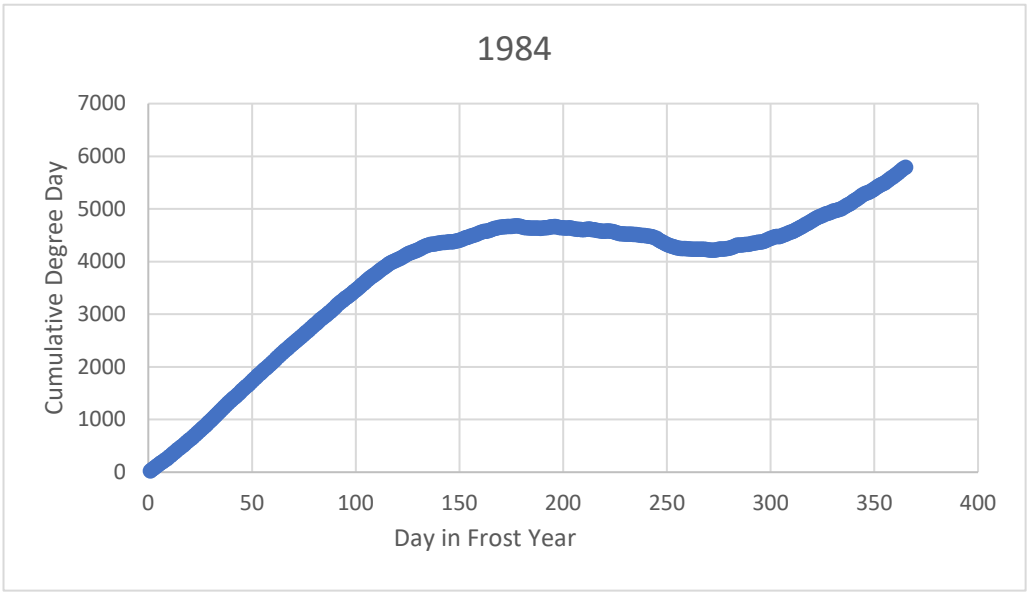
Day in Frost Year


1984
Cumulative Degree Day
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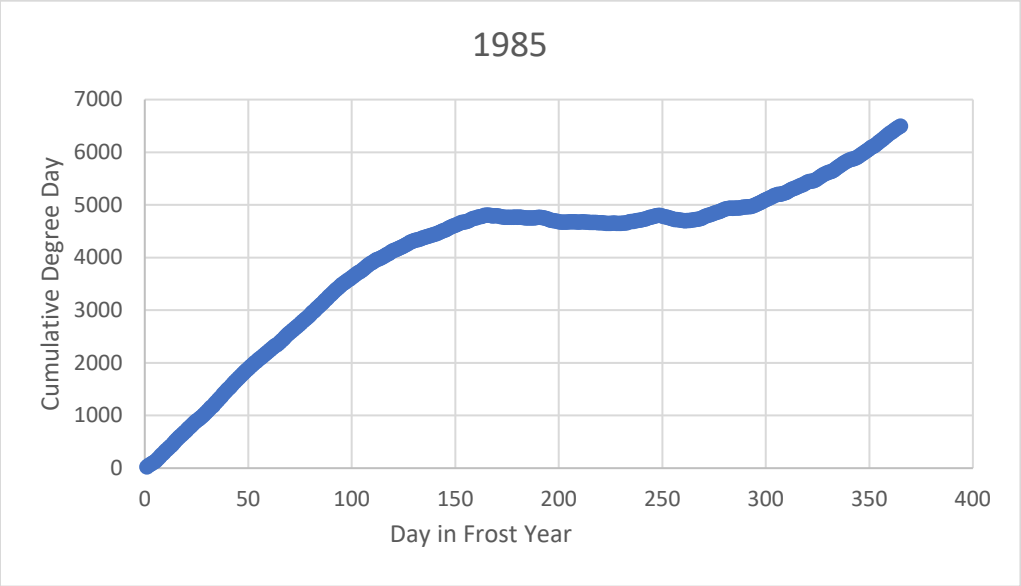
Day in Frost Year


1985
Cumulative Degree Day
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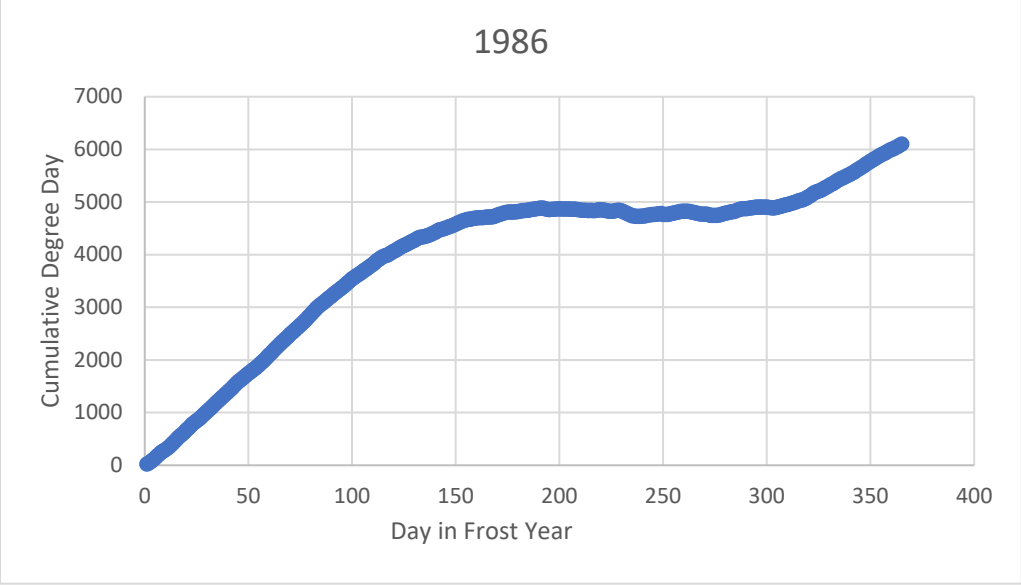
Day in Frost Year


1986
Cumulative Degree Day
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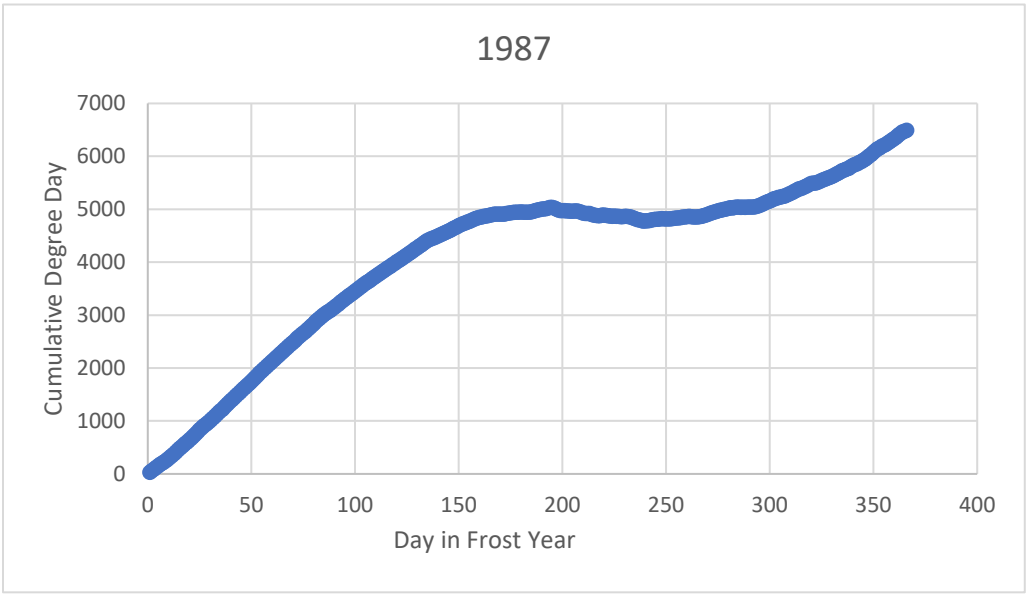
Day in Frost Year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Cumulative Degree Day
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150
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350
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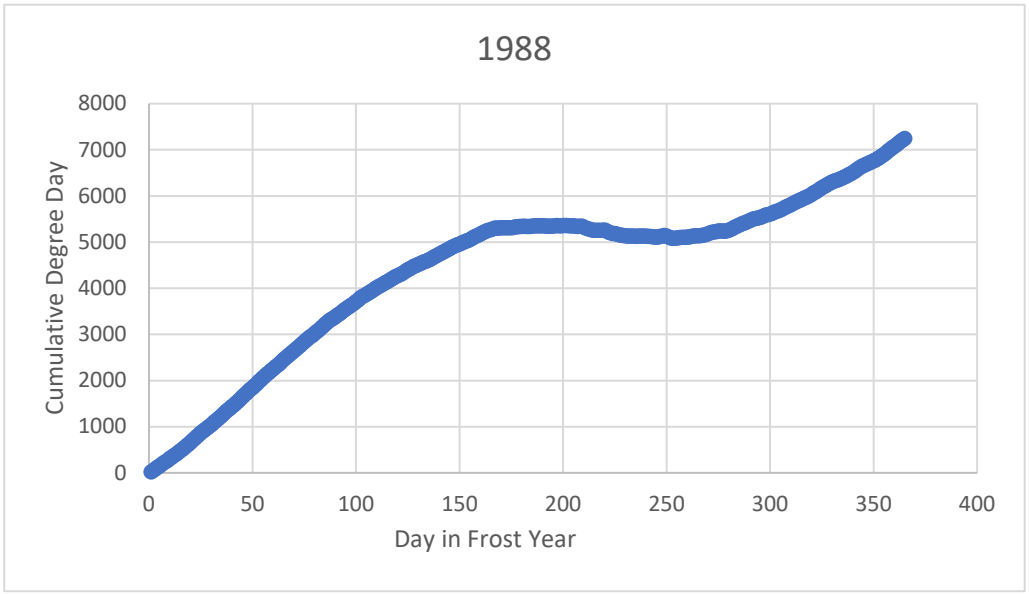
Day in Frost Year


1988
Cumulative Degree Day
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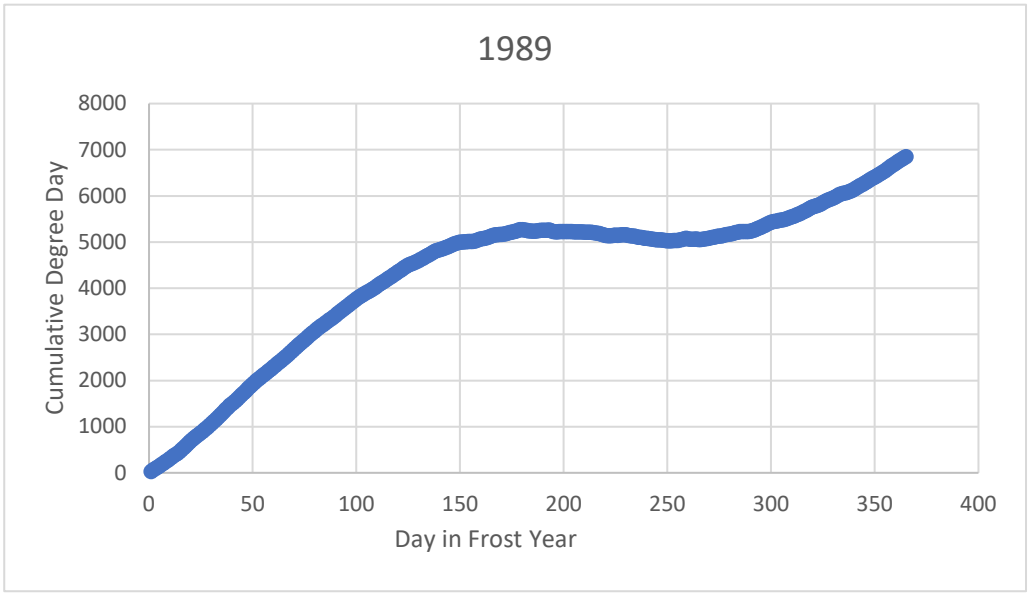
400
Day in Frost Year


1989
Cumulative Degree Day
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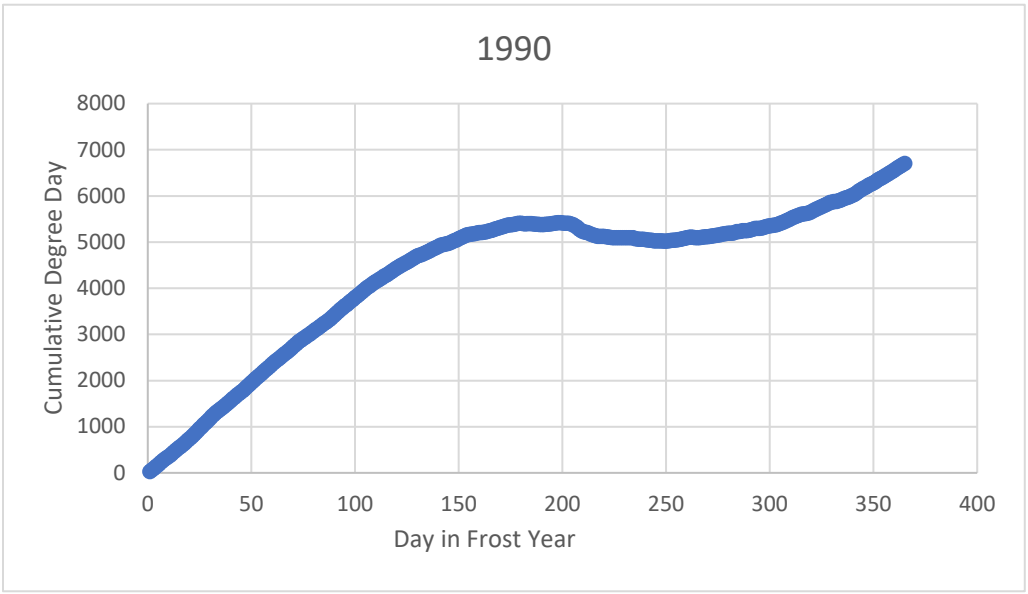
350
400
Day in Frost Year


1990
Cumulative Degree Day
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350
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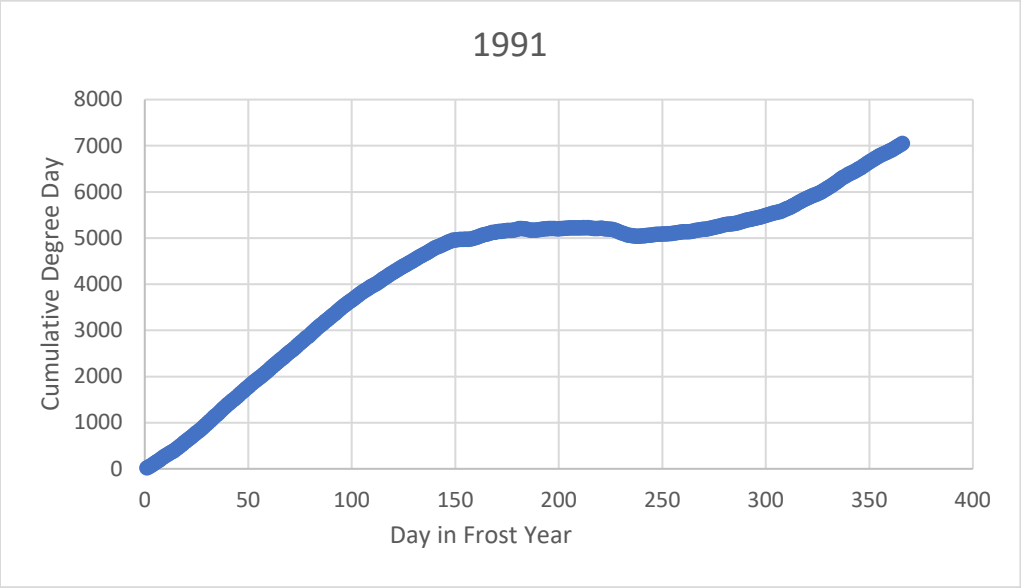
Day in Frost Year


1991
Cumulative Degree Day
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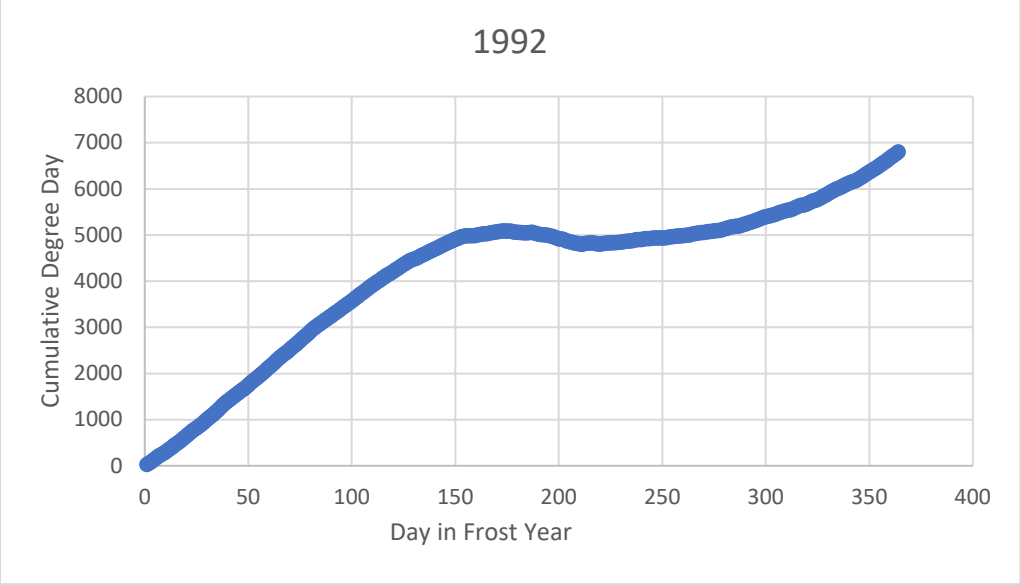
Day in Frost Year


1992
Cumulative Degree Day
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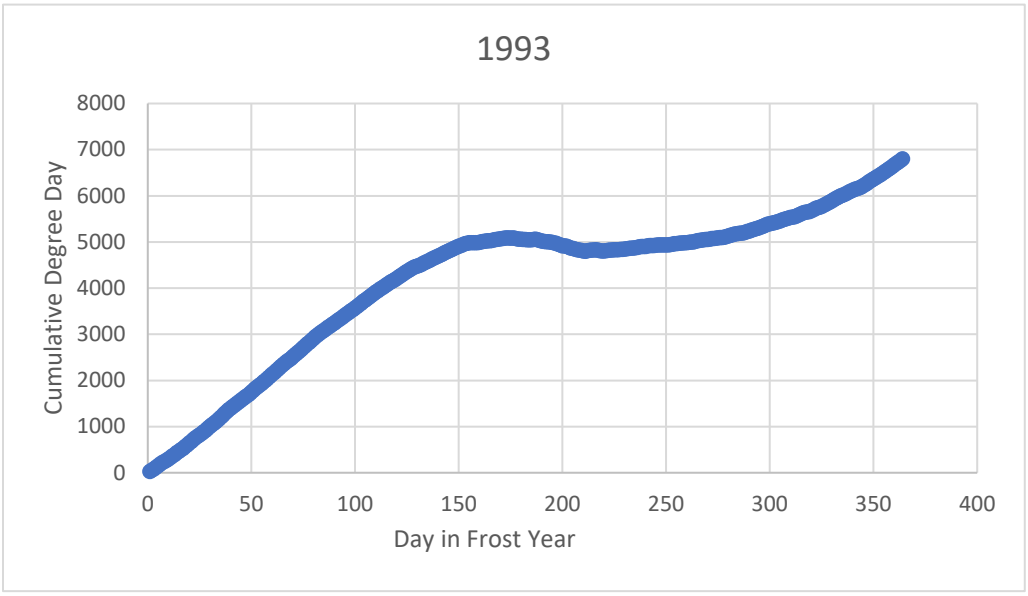
Day in Frost Year


1993
Cumulative Degree Day
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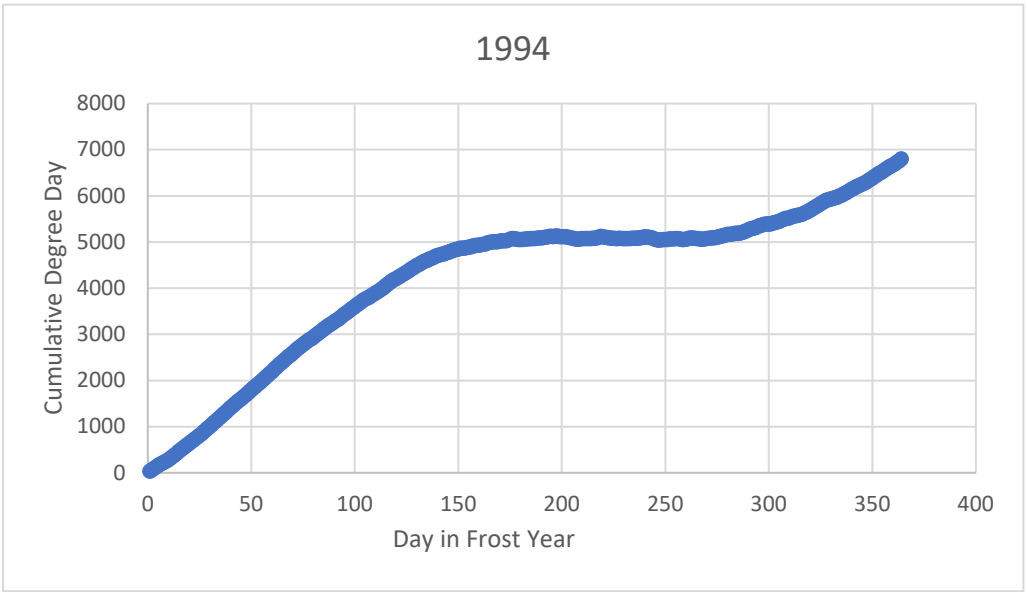
Day in Frost Year


1994
Cumulative Degree Day
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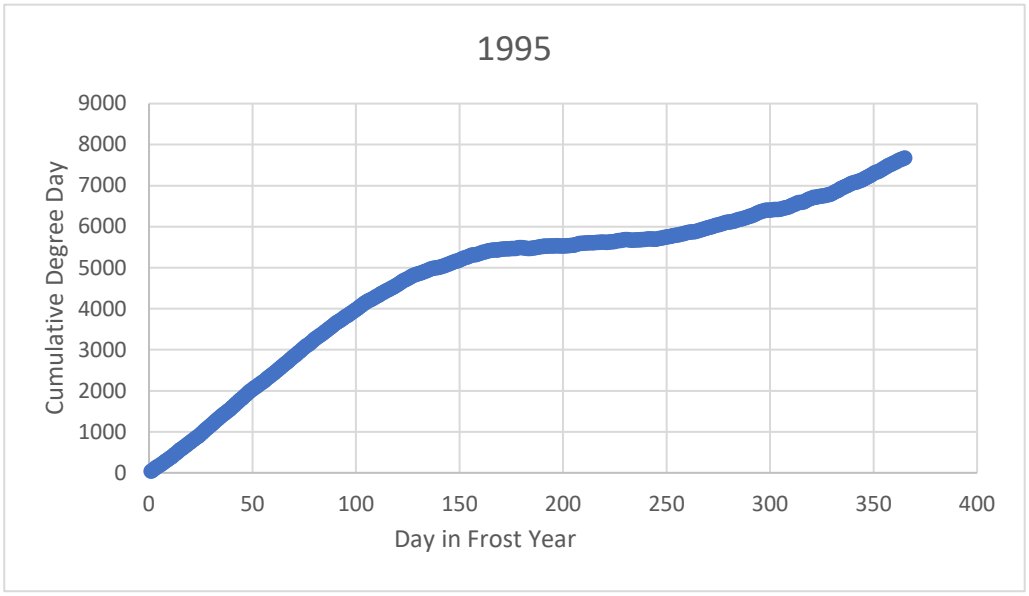
Day in Frost Year


1995
Cumulative Degree Day
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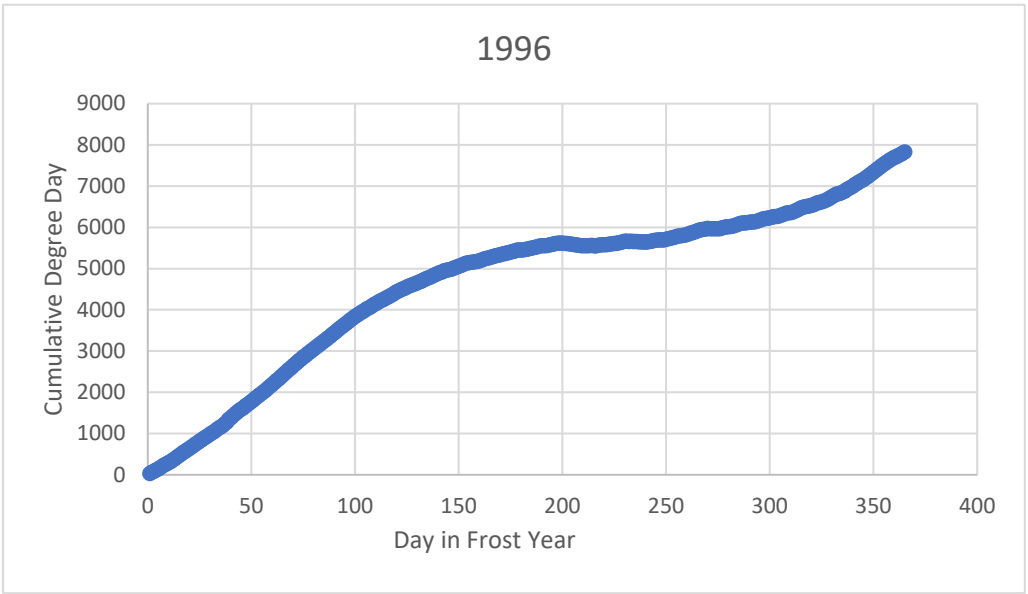
400
Day in Frost Year


1996
Cumulative Degree Day
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6000
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3000
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150
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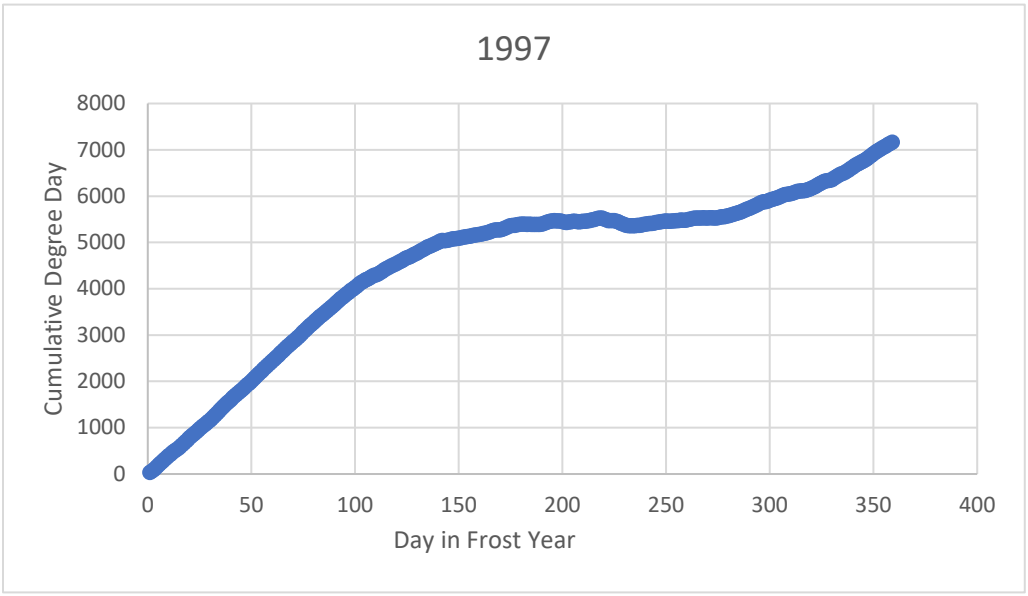
350
400
Day in Frost Year


1997
Cumulative Degree Day
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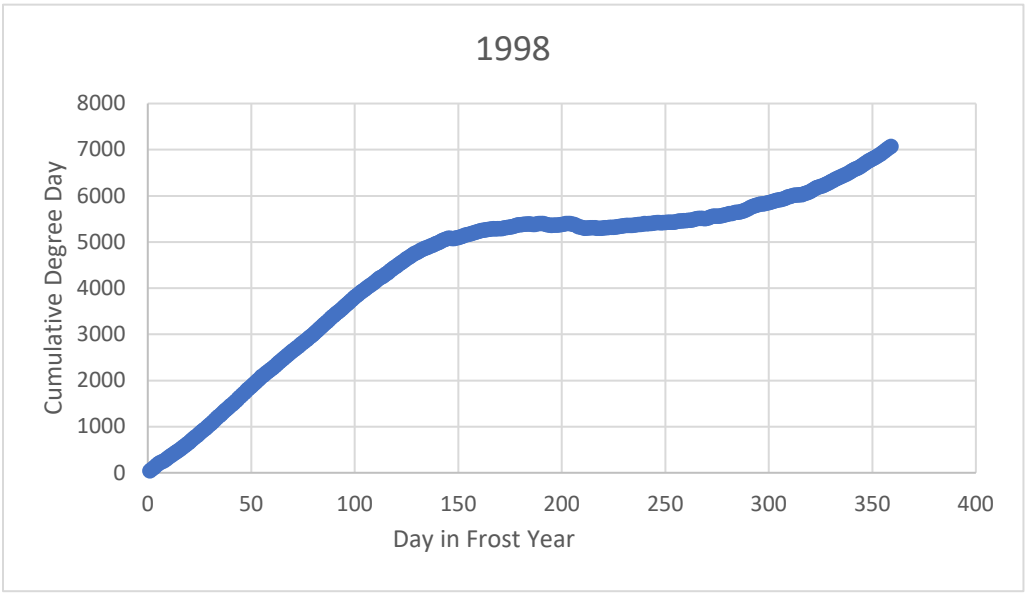
Day in Frost Year


1998
Cumulative Degree Day
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2000
1000
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100
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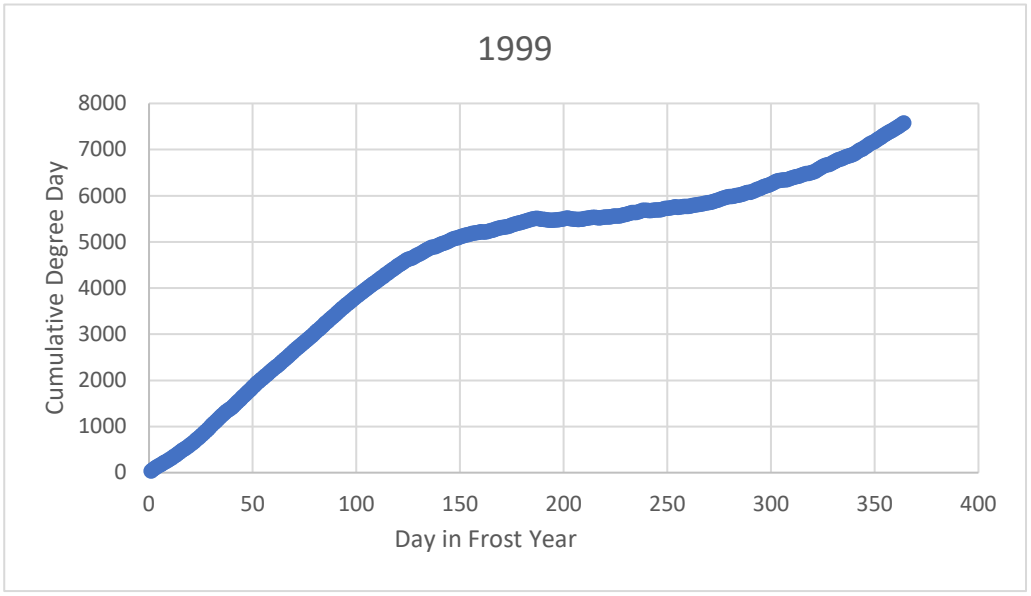
250
300
350
400
Day in Frost Year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Cumulative Degree Day
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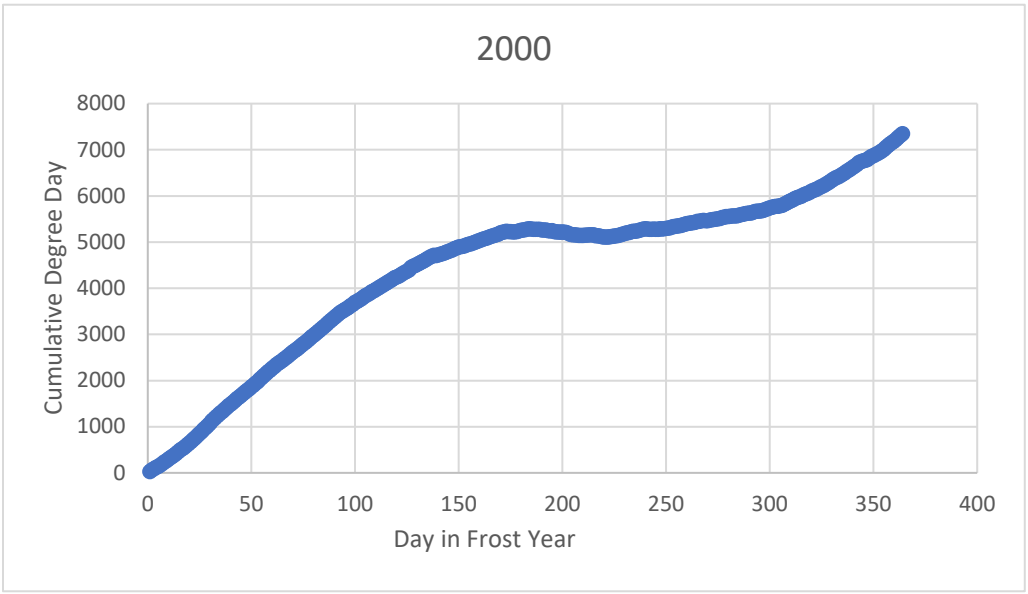
Day in Frost Year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Cumulative Degree Day
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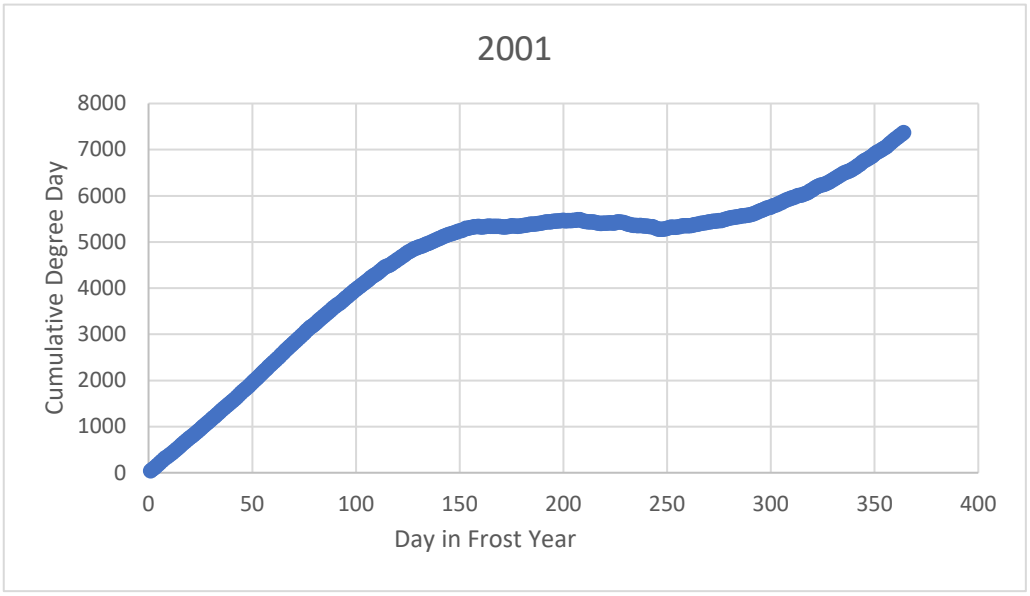
Day in Frost Year


2001
Cumulative Degree Day
8000
7000
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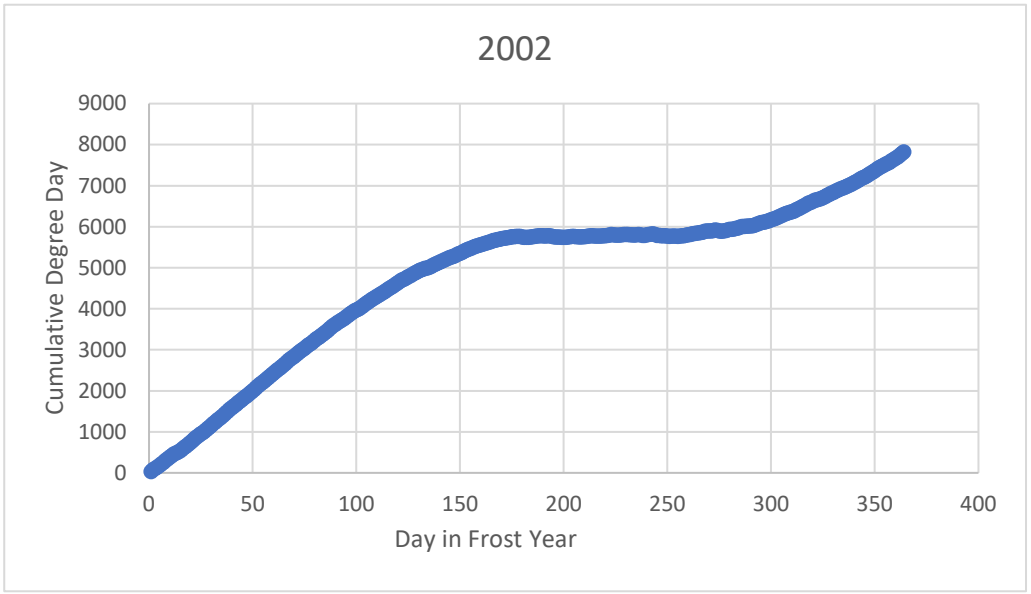
400
Day in Frost Year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Cumulative Degree Day
9000
8000
7000
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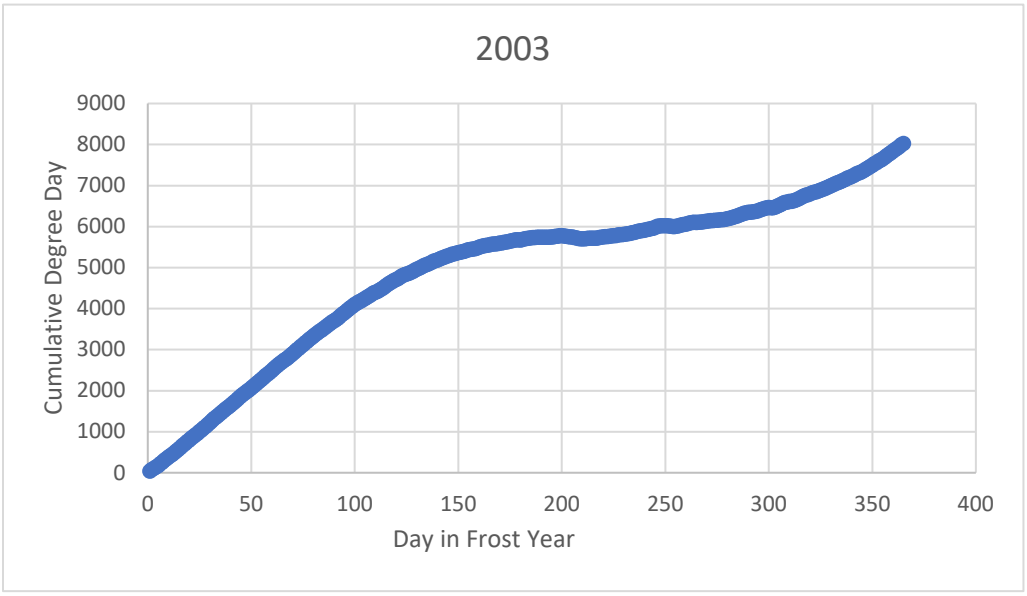
Day in Frost Year


2003
Cumulative Degree Day
9000
8000
7000
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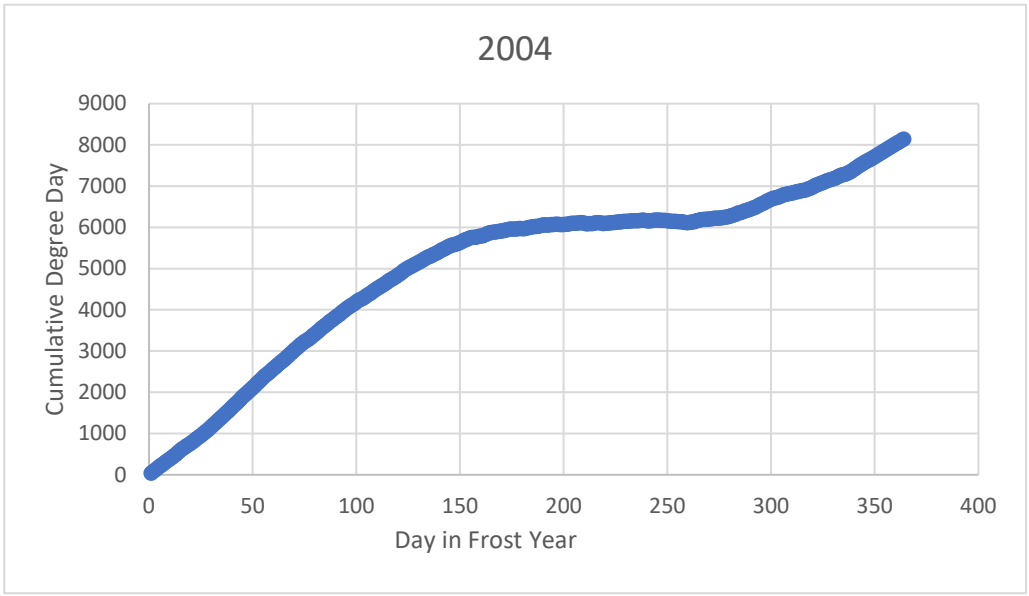
Day in Frost Year


2004
Cumulative Degree Day
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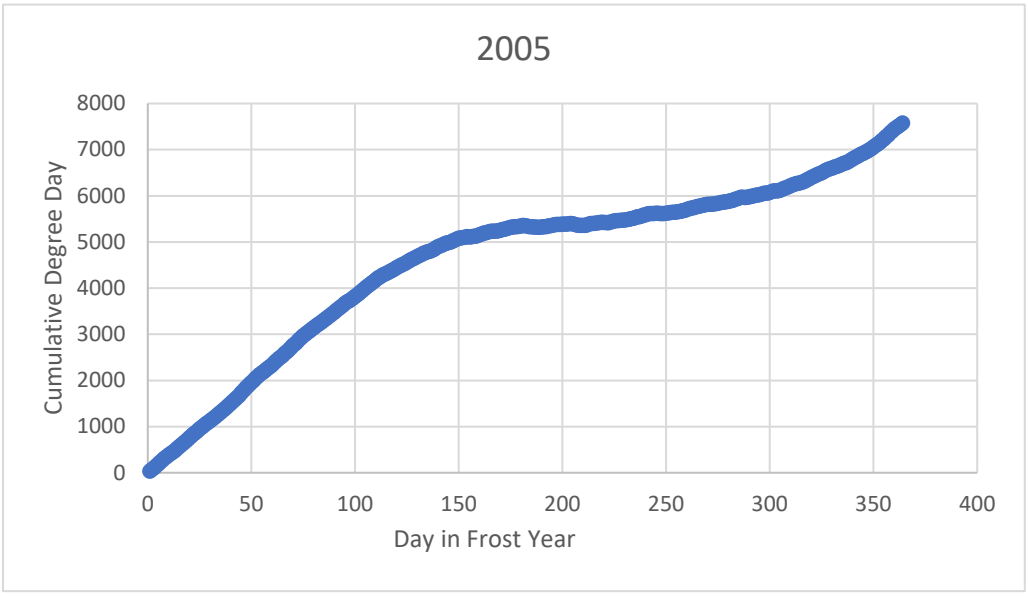
Day in Frost Year


2005
Cumulative Degree Day
8000
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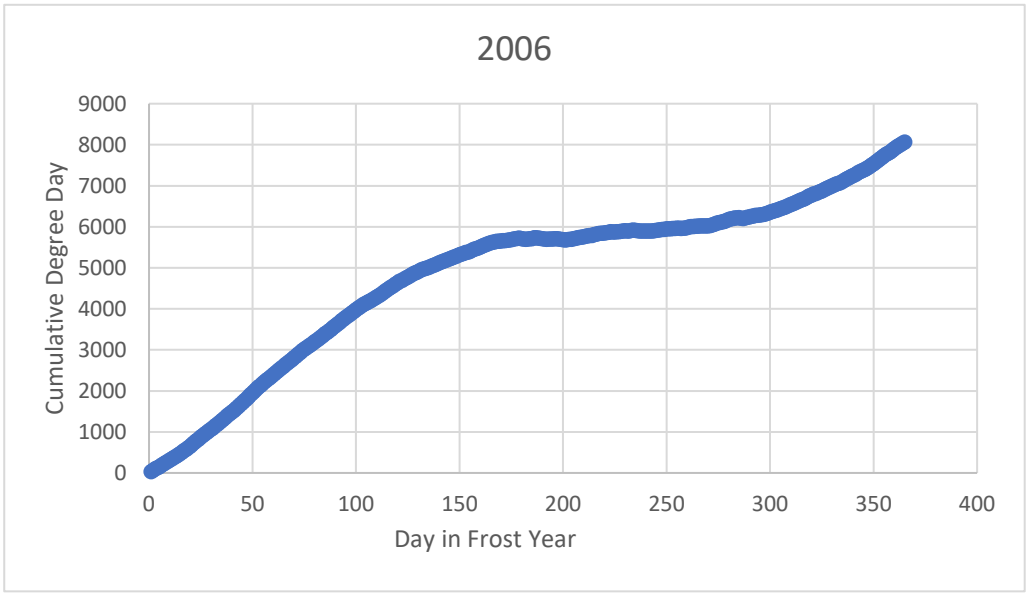
Day in Frost Year


2006
Cumulative Degree Day
9000
8000
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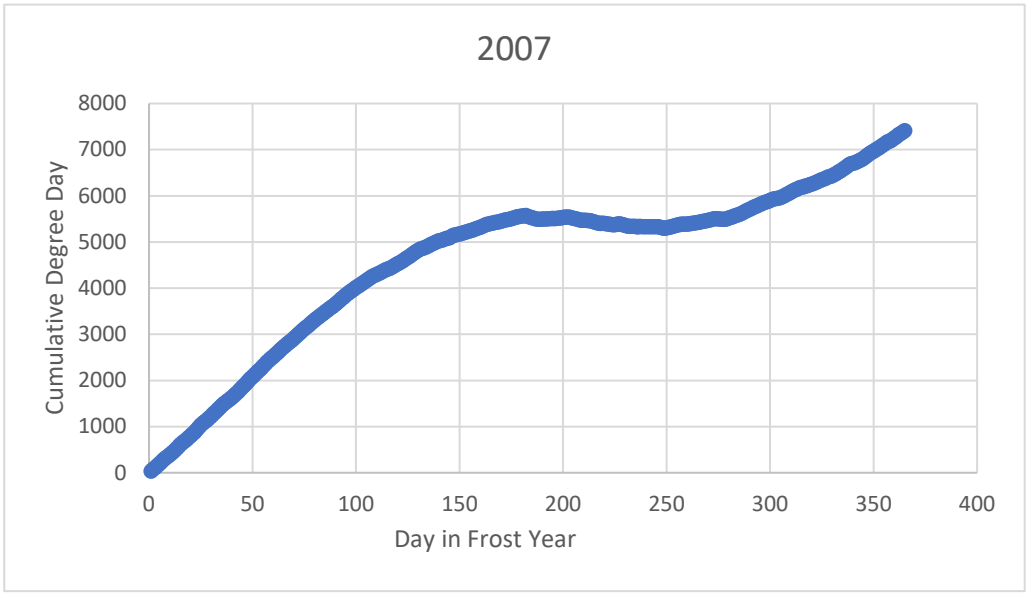
Day in Frost Year


2007
Cumulative Degree Day
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7000
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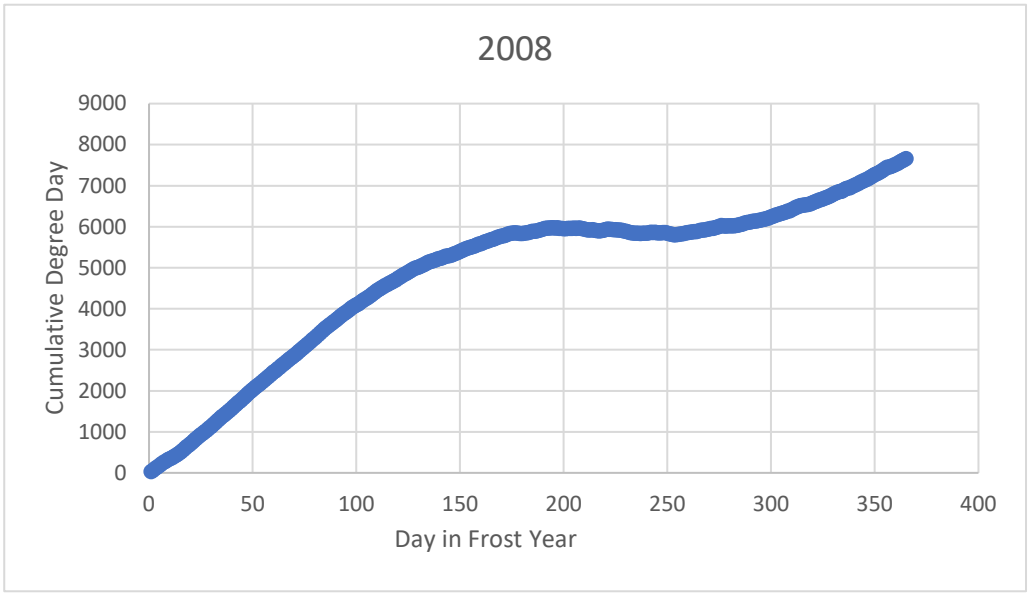
Day in Frost Year


2008
Cumulative Degree Day
9000
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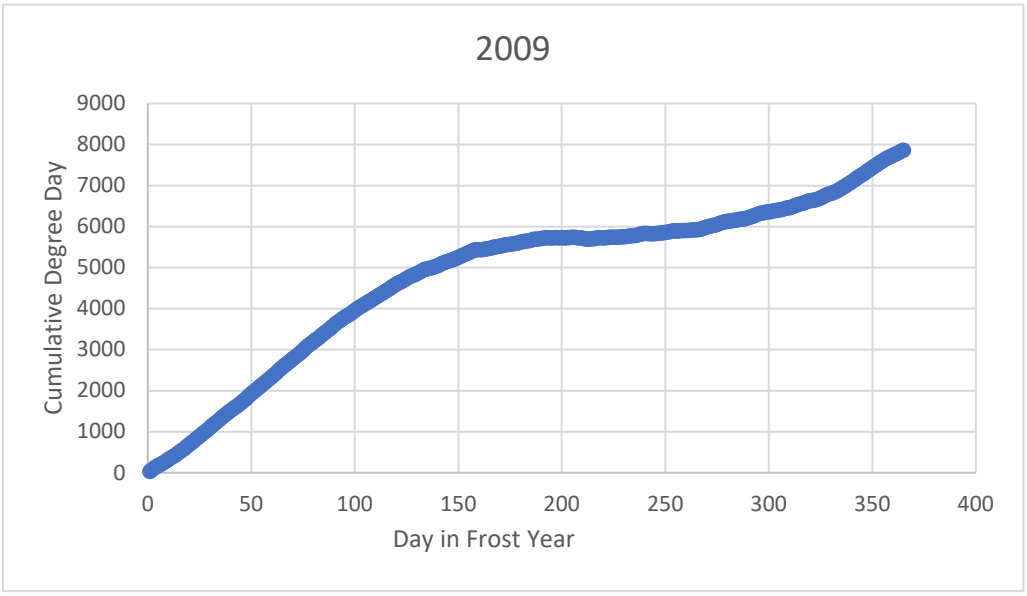
400
Day in Frost Year


2009
Cumulative Degree Day
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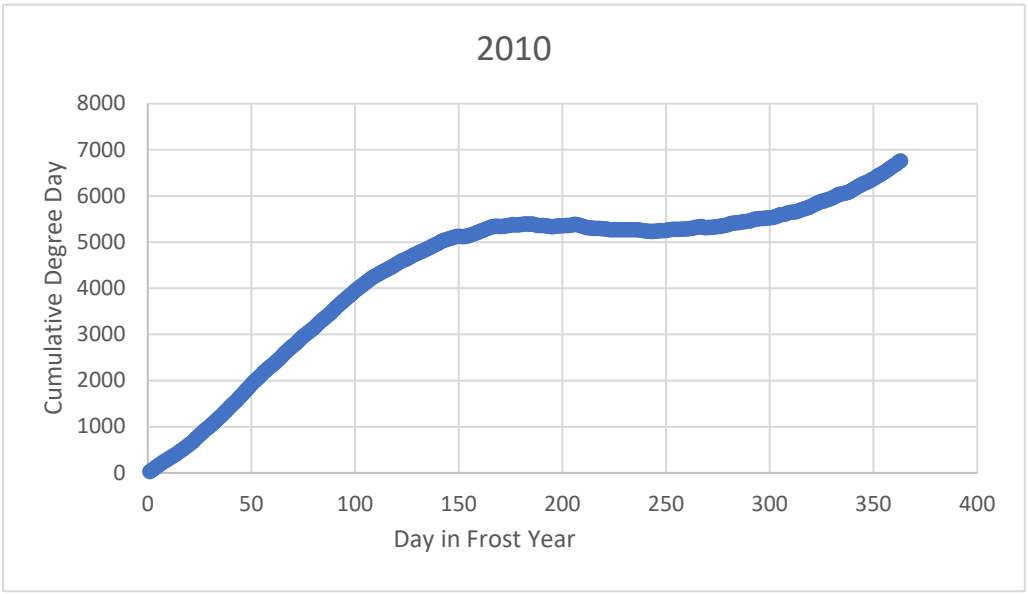
400
Day in Frost Year


2010
Cumulative Degree Day
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7000
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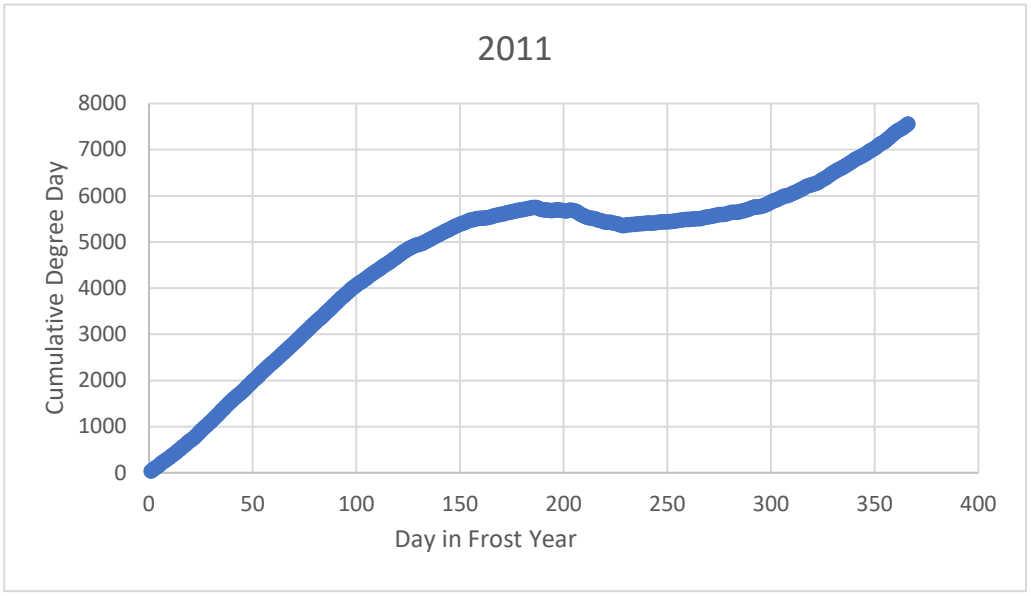
400
Day in Frost Year


2011
Cumulative Degree Day
8000
7000
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5000
4000
3000
2000
1000
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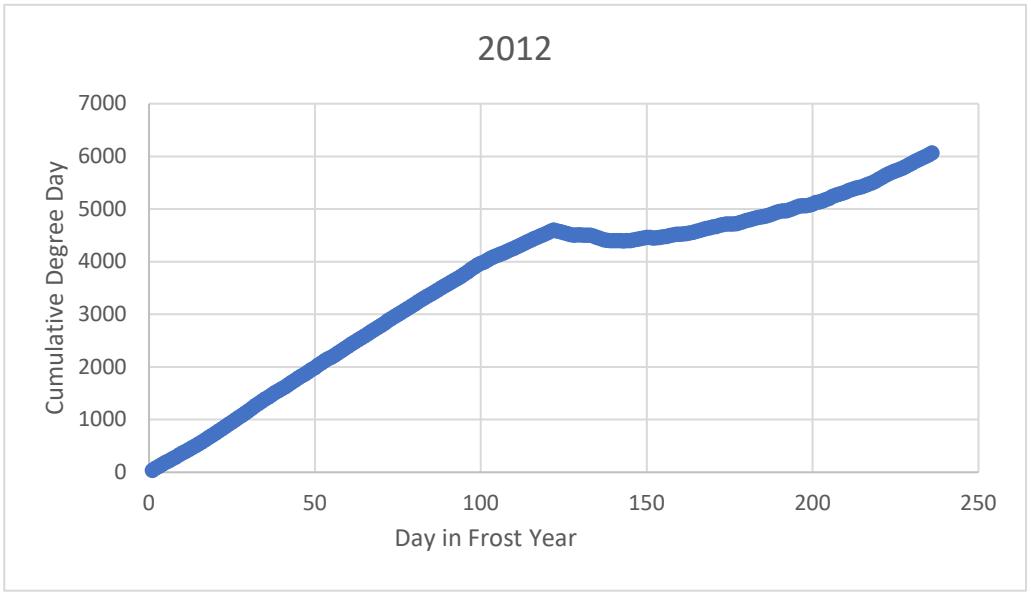
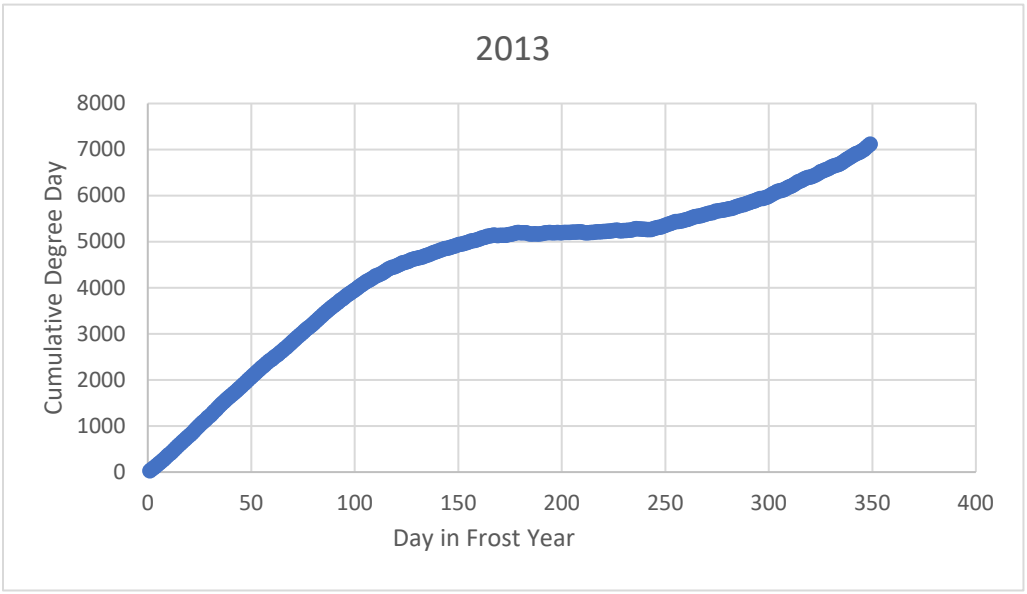
350
400
Day in Frost Year


2012
Cumulative Degree Day
7000
6000
5000
4000
3000
2000
1000
0
0
50
100
150
200
250
Day in Frost Year


2013
Cumulative Degree Day
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7000
6000
5000
4000
3000
2000
1000
0
0
50
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150
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250
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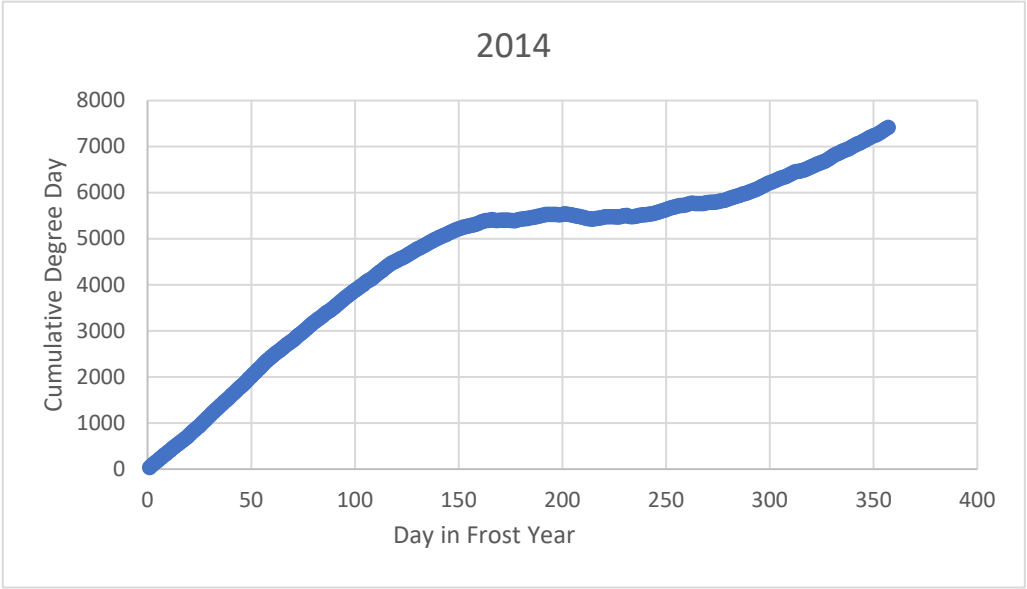
350
400
Day in Frost Year


2014
Cumulative Degree Day
8000
7000
6000
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4000
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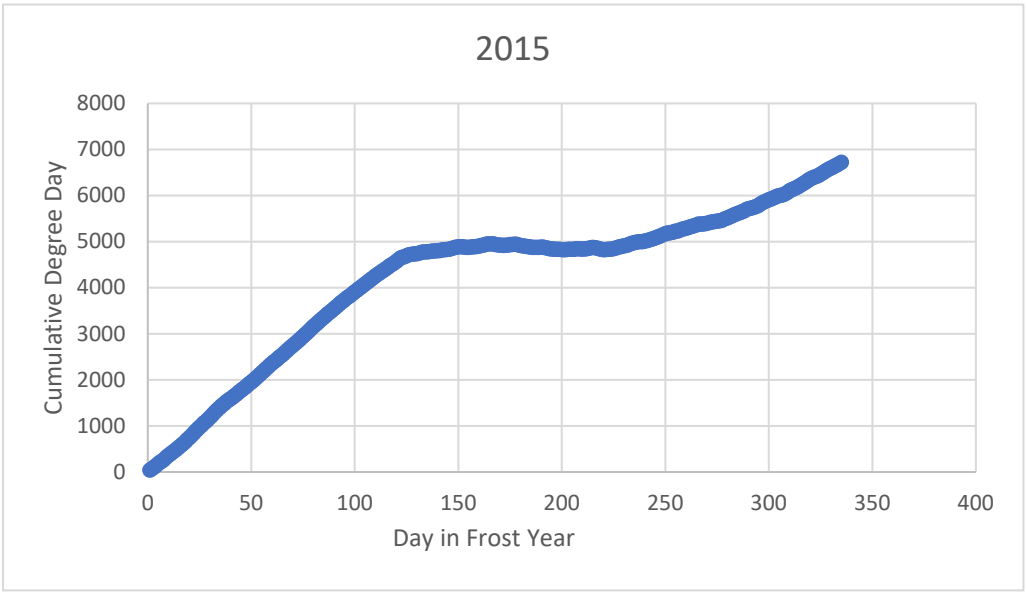
400
Day in Frost Year


2015
Cumulative Degree Day
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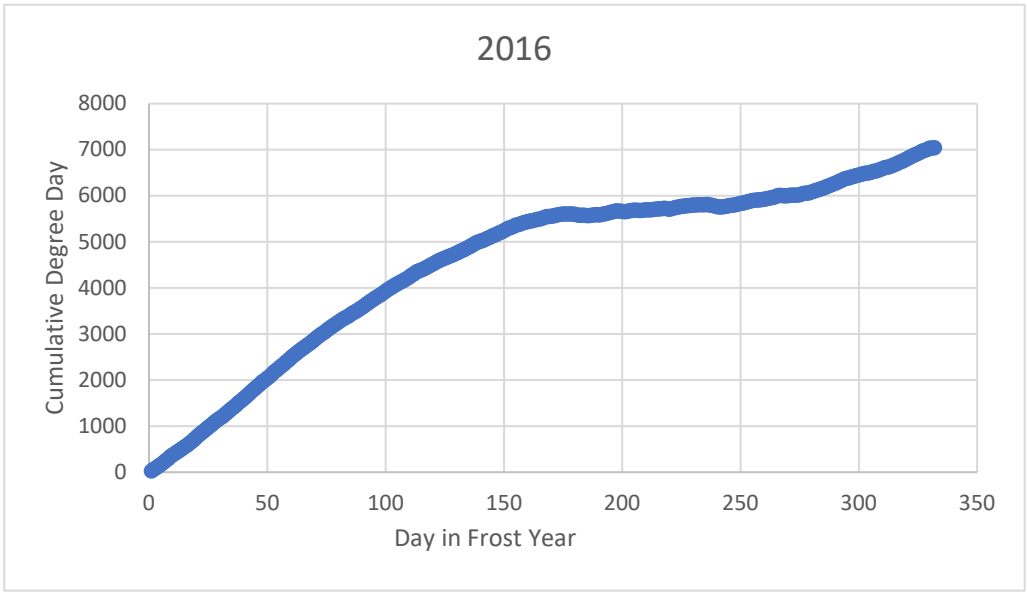
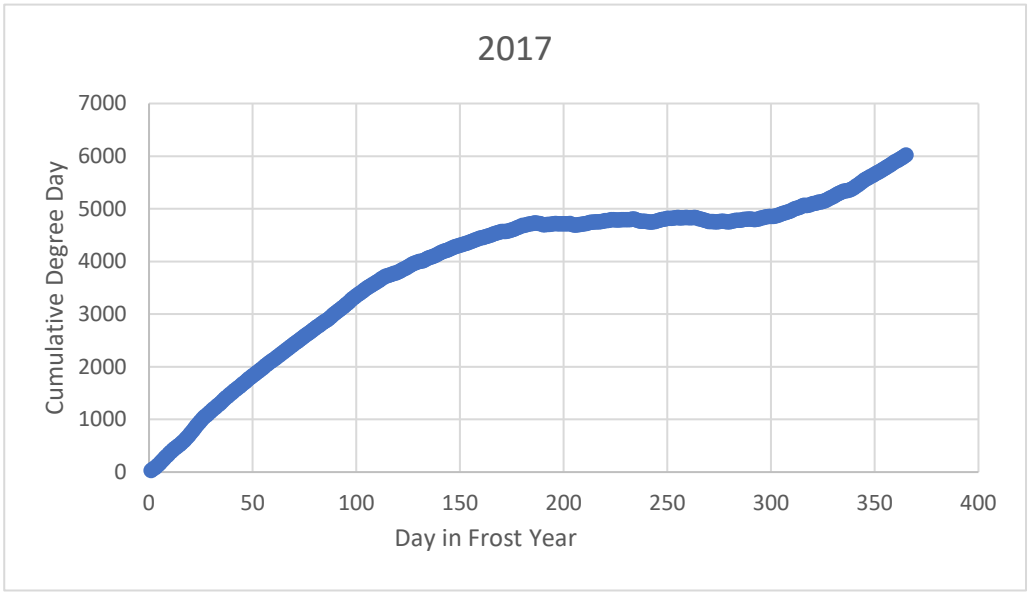
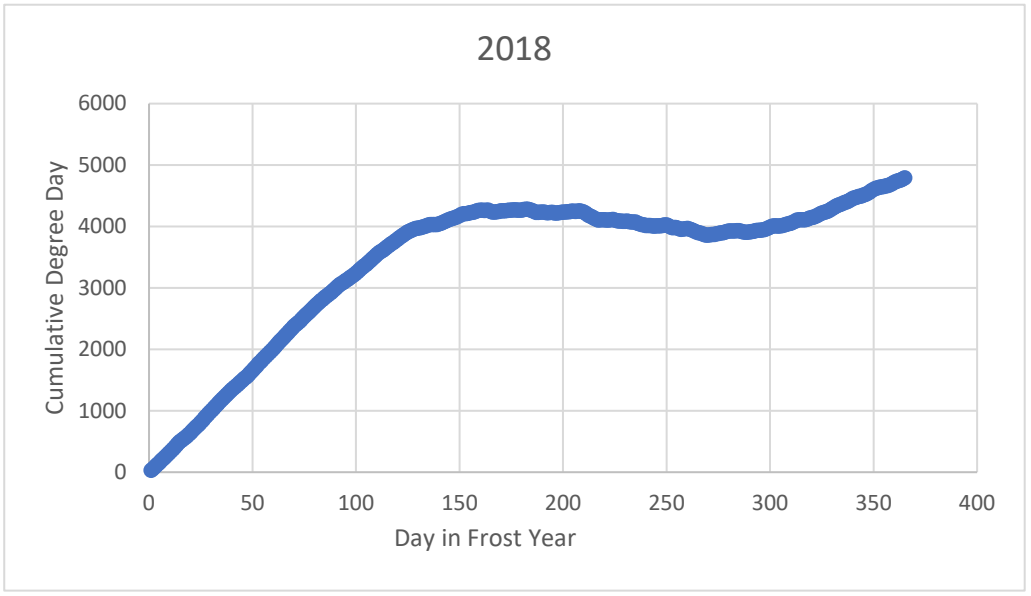
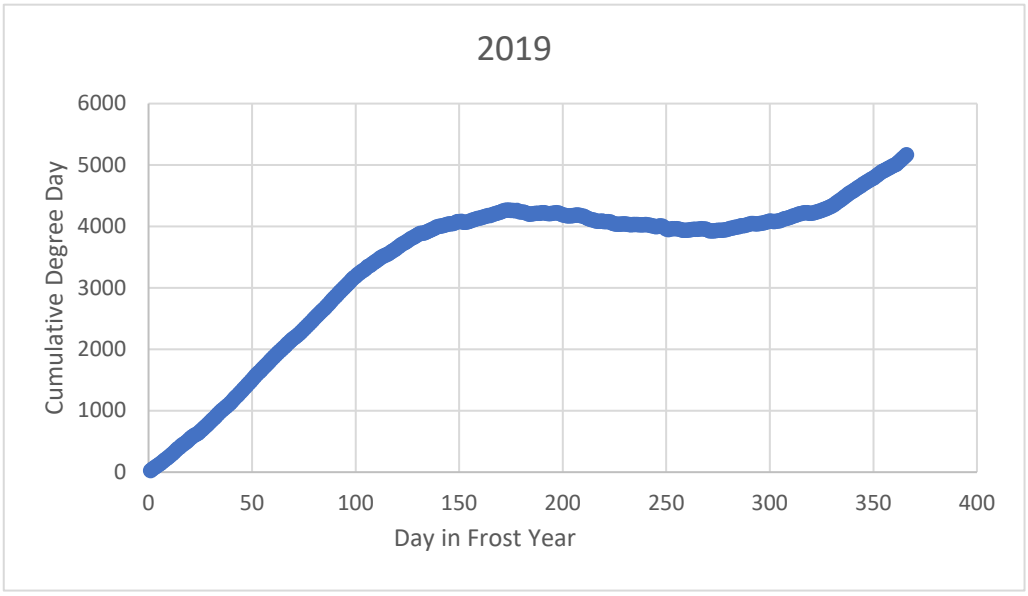
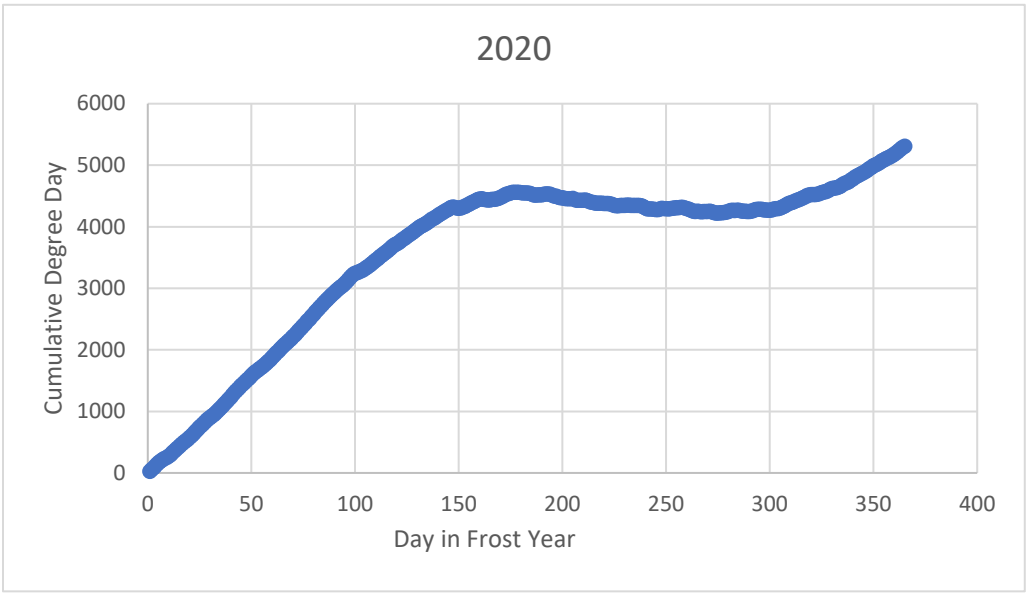
7000
6000
5000
4000
3000
2000
1000
0
0
50
100
150
200
250
300
350
400
Day in Frost Year

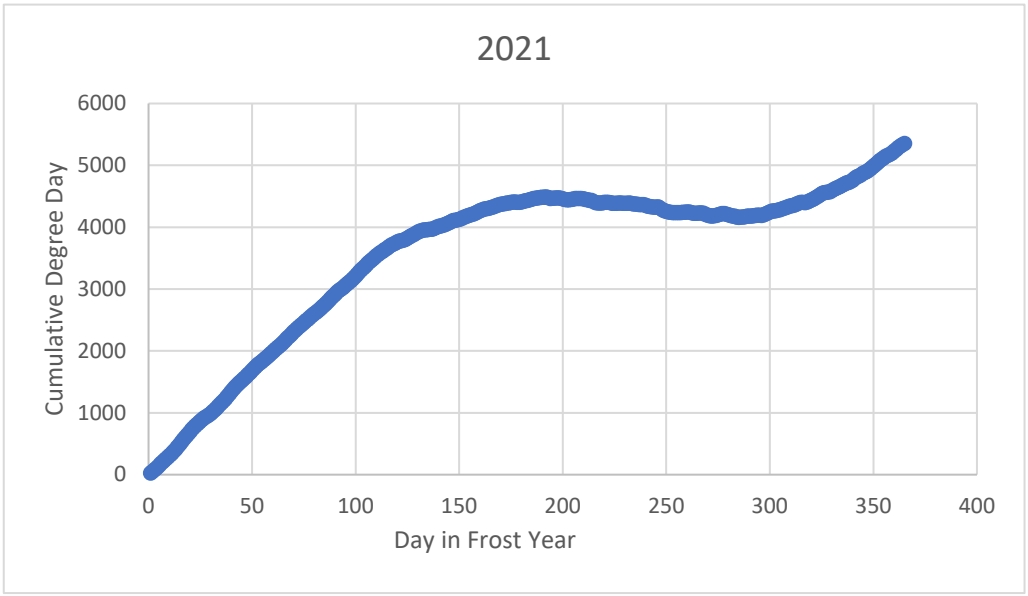

2016
Cumulative Degree Day
8000
7000
6000
5000
4000
3000
2000
1000
0
0
50
100
150
200
250
300
350
Day in Frost Year


2017
Cumulative Degree Day
7000
6000
5000
4000
3000
2000
1000
0
0
50
100
150
200
250
300
350
400
Day in Frost Year


2018
Cumulative Degree Day
6000
5000
4000
3000
2000
1000
0
0
50
100
150
200
250
300
350
400
Day in Frost Year


2019
Cumulative Degree Day
6000
5000
4000
3000
2000
1000
0
0
50
100
150
200
250
300
350
400
Day in Frost Year


2020
Cumulative Degree Day
6000
5000
4000
3000
2000
1000
0
0
50
100
150
200
250
300
350
400
Day in Frost Year


2021
Cumulative Degree Day
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4000
3000
2000
1000
0
0
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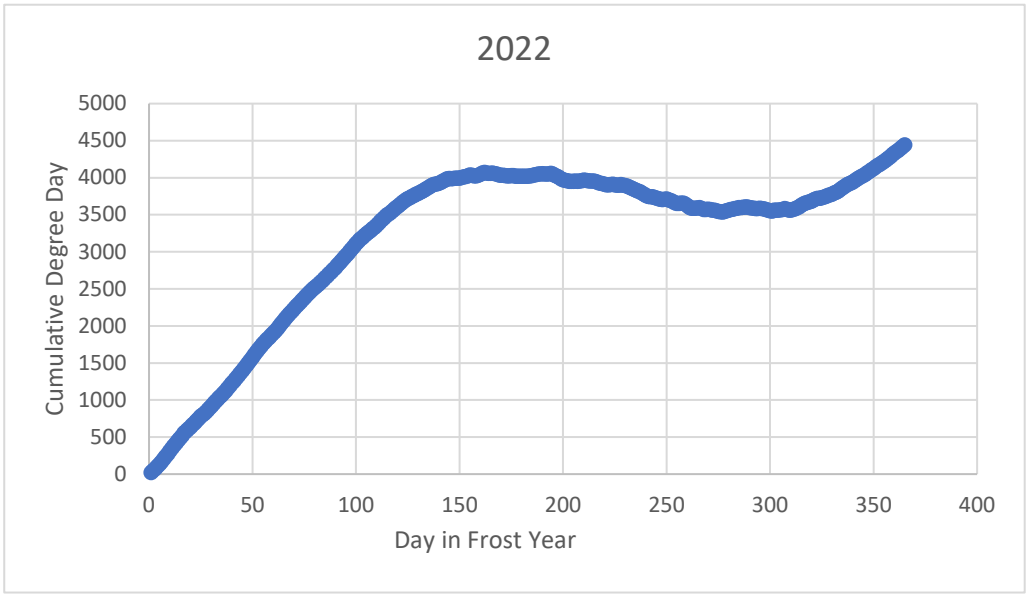
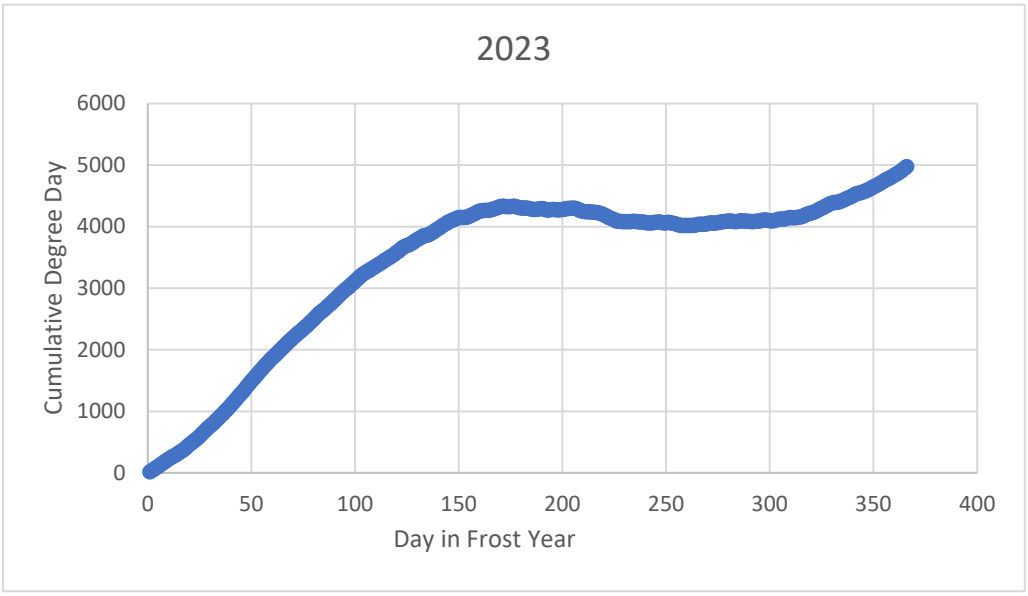
100
150
200
250
300
350
400
Day in Frost Year


2022
Cumulative Degree Day
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0
50
100
150
200
250
300
350
400
Day in Frost Year


2023
Cumulative Degree Day
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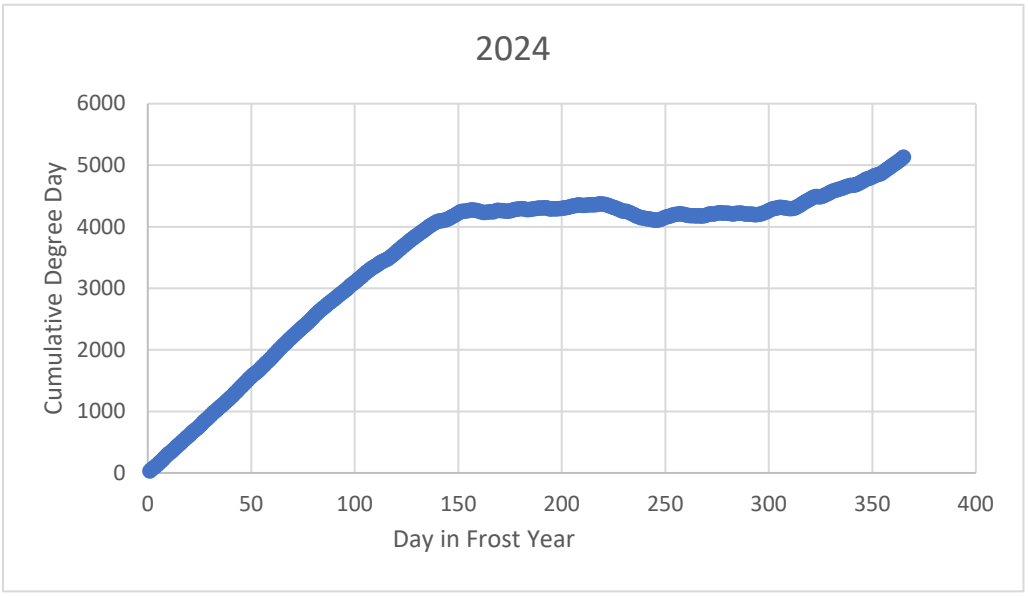
5000
4000
3000
2000
1000
0
0
50
100
150
200
250
300
350
400
Day in Frost Year


2024
Cumulative Degree Day
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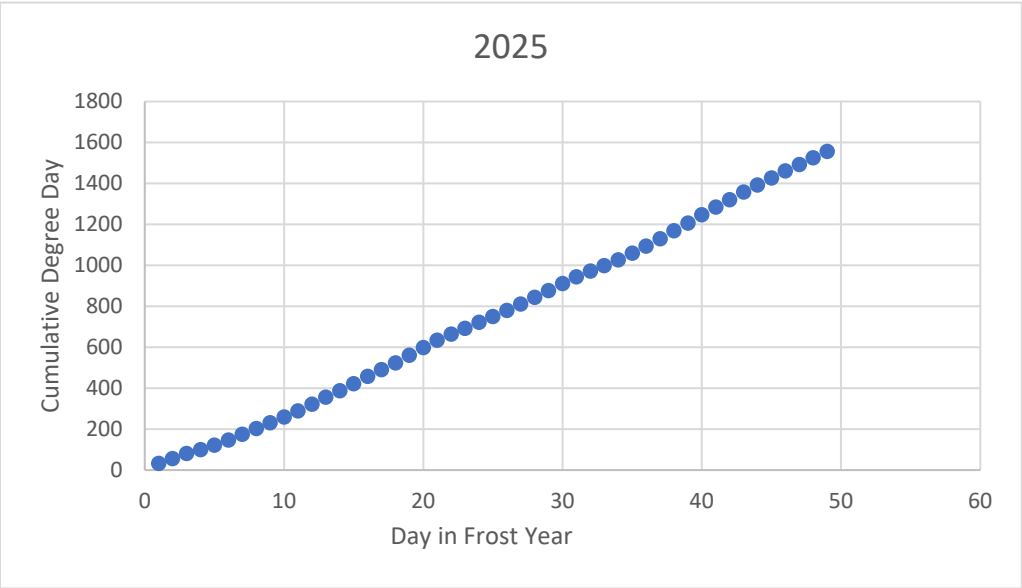
4000
3000
2000
1000
0
0
50
100
150
200
250
300
350
400
Day in Frost Year


2025
Cumulative Degree Day
1800
1600
1400
1200
1000
800
600
400
200
0
0
10
20
30
40
50
60
Day in Frost Year

ATTACHMENT D2.2
FROST INDEX DETERMINATION

Results of Graphical analysis of Freeze Cumulative Degree Day Plots						
	Beginning of Freeze		End of Freeze			
Year	Days	Deg-Day	Days	Deg-Day	**Deg-Day**	**Days**
1975	164	4682	243	4368	314	79
1976	179	4723	289	3937	786	110
1977	204	5209	270	5037	172	66
1978	186	5066	276	4342	724	90
1979	173	4889	265	4679	210	92
1980	170	5051	187	5023	28	17
1981	198	4996	268	4740	256	70
1982	186	4551	265	4165	386	79
1983	177	4737	279	4425	312	102
1984	182	4645	273	4216	429	91
1985	170	4739	228	4651	88	58
1986	203	4869	268	4773	96	65
1987	198	4987	241	4784	203	43
1988	185	5344	252	5091	253	67
1989	181	5262	251	5025	237	70
1990	183	5398	249	5020	378	66
1991	185	5185	238	5042	143	53
1992	177	5081	217	4828	253	40
1993	178	5071	215	4825	246	37
1994	200	5116	253	5070	46	53
1995	174	5459	225	5450	9	51
1996	201	5613	219	5576	37	18
1997	219	5524	238	5372	152	19
1998	190	5401	218	5293	108	28
1999	185	5495	203	5486	9	18
2000	187	5278	223	5114	164	36
2001	205	5469	249	5282	187	44
2002	185	5756	201	5741	15	16
2003	201	5772	215	5720	52	14
2004	246	6177	263	6139	38	17
2005	242	5316	262	5230	86	20
2006	186	5733	204	5696	37	18
2007	185	5527	252	5325	202	67
2008	203	5959	253	5799	160	50
2009	203	5729	214	5698	31	11
2010	186	5387	246	5241	146	60
2011	187	5744	231	5369	375	44
2012	124	4567	144	4398	169	20
2013	186	5168	204	5108	60	18
2014	202	5532	215	5429	103	13
2015	181	4910	223	4836	74	42
2016	180	5600	191	5592	8	11
2017	263	4836	279	4751	85	16

2018	184	4273	273	3872	401	89
2019	178	4258	273	3928	330	95
2020	182	4549	279	4238	311	97
2021	196	4470	286	4163	307	90
2022	166	4062	277	3538	524	111
2023	175	4329	262	4017	312	87
2024	222	4342	246	4106	236	24

These were calculate in accordance with step 1 of the Smith and Rager procedure						
Freeze index						
				Avg. Temp (F)	F	
Year	Avg. Temp	(n)	% values	w/ 95% data	Degree-Day (F-day)	Duration (Days)
1975	47.43	366	100%	47.43	314	79
1976	45.88	365	100%	45.88	786	110
1977	49.92	365	100%	49.92	172	66
1978	47.41	365	100%	47.41	724	90
1979	48.02	366	100%	48.02	210	92
1980	50.78	365	100%	50.78	28	17
1981	55.05	363	99%	55.05	256	70
1982	39.16	365	100%	39.16	386	79
1983	47.91	366	100%	47.91	312	102
1984	47.87	365	100%	47.87	429	91
1985	49.79	365	100%	49.79	88	58
1986	48.72	365	100%	48.72	96	65
1987	49.74	366	100%	49.74	203	43
1988	51.84	365	100%	51.84	253	67
1989	50.77	365	100%	50.77	237	70
1990	50.36	365	100%	50.36	378	66
1991	51.27	366	100%	51.27	143	53
1992	50.73	365	100%	50.73	253	40
1993	50.68	364	100%	50.68	246	37
1994	53.03	365	100%	53.03	46	53
1995	53.47	366	100%	53.47	9	51
1996	52.15	365	100%	52.15	37	18
1997	51.71	359	98%	51.71	152	19
1998	52.82	364	100%	52.82	108	28
1999	52.20	364	100%	52.20	9	18
2000	52.24	364	100%	52.24	164	36
2001	53.50	364	100%	53.50	187	44
2002	54.00	365	100%	54.00	15	16
2003	54.39	365	100%	54.39	52	14
2004	52.82	364	100%	52.82	38	17
2005	54.10	365	100%	54.10	86	20
2006	52.30	365	100%	52.30	37	18
2007	53.02	366	100%	53.02	202	67
2008	53.54	365	100%	53.54	160	50

2009	50.68	365	100%	50.68	31	11
2010	53.50	363	99%	53.50	146	60
2011	52.64	366	100%	52.64	375	44
2012	57.71	236	65%	57.71	169	20
2013	52.40	349	96%	52.40	60	18
2014	52.79	357	98%	52.79	103	13
2015	52.07	335	92%	52.07	74	42
2016	53.21	332	91%	53.21	8	11
2017	48.50	365	100%	48.50	85	16
2018	45.13	365	100%	45.13	401	89
2019	46.12	366	100%	46.12	330	95
2020	46.55	365	100%	46.55	311	97
2021	46.66	365	100%	46.66	307	90
2022	44.17	365	100%	44.17	524	111
2023	45.59	366	100%	45.59	312	87
2024	46.07	365	100%	46.07	236	24

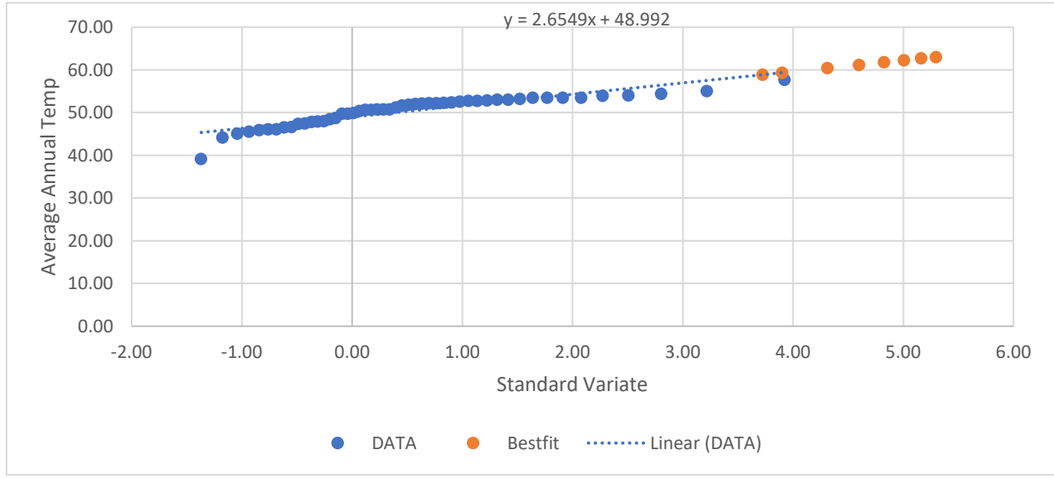
ATTACHMENT D3
DETERMINATION OF PARAMETERS AT A 200-YEAR RECURRENCE INTERVAL

ATTACHMENT D3.1
MEAN ANNUAL TEMPERATURE AT 200-YEAR RECURRENCE INTERVAL

Project No. 111360
Project Name: Mt. Taylor Uranium Mine
Calculated By: JB

n= number of observations
n= 50

Mean Annual Temperature Distribution					
Year	Average Temperature	Rank	Recurrence interval	Probability	Standard Variate
2012	57.71	1	51.0	0.02	3.92
1981	55.05	2	25.5	0.04	3.22
2003	54.39	3	17.0	0.06	2.80
2005	54.10	4	12.8	0.09	2.50
2002	54.00	5	10.2	0.11	2.27
2008	53.54	6	8.5	0.13	2.08
2010	53.50	7	7.3	0.16	1.91
2001	53.50	8	6.4	0.19	1.77
1995	53.47	9	5.7	0.21	1.64
2016	53.21	10	5.1	0.24	1.52
1994	53.03	11	4.6	0.28	1.41
2007	53.02	12	4.3	0.31	1.32
1998	52.82	13	3.9	0.34	1.22
2004	52.82	14	3.6	0.38	1.14
2014	52.79	15	3.4	0.42	1.05
2011	52.64	16	3.2	0.46	0.98
2013	52.40	17	3.0	0.50	0.90
2006	52.30	18	2.8	0.55	0.83
2000	52.24	19	2.7	0.59	0.76
1999	52.20	20	2.6	0.65	0.70
1996	52.15	21	2.4	0.70	0.63
2015	52.07	22	2.3	0.76	0.57
1988	51.84	23	2.2	0.82	0.51
1997	51.71	24	2.1	0.89	0.45
1991	51.27	25	2.0	0.96	0.39
1980	50.78	26	2.0	1.04	0.34
1989	50.77	27	1.9	1.13	0.28
1992	50.73	28	1.8	1.22	0.23
2009	50.68	29	1.8	1.32	0.17
1993	50.68	30	1.7	1.43	0.12
1990	50.36	31	1.6	1.55	0.07
1977	49.92	32	1.6	1.68	0.01
1985	49.79	33	1.5	1.83	-0.04
1987	49.74	34	1.5	2.00	-0.09
1986	48.72	35	1.5	2.19	-0.15
2017	48.50	36	1.4	2.40	-0.20
1979	48.02	37	1.4	2.64	-0.26
1983	47.91	38	1.3	2.92	-0.31
1984	47.87	39	1.3	3.25	-0.37
1975	47.43	40	1.3	3.64	-0.43
1978	47.41	41	1.2	4.10	-0.49
2021	46.66	42	1.2	4.67	-0.55



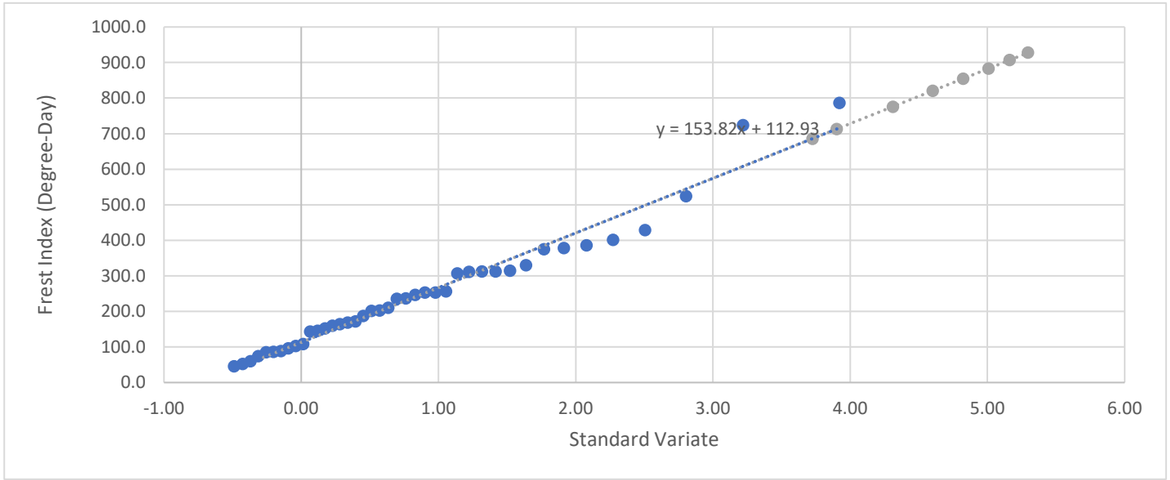
Best Fit			
Y	2.6549	x+	48.992
Recurrence interval	Standard Variate	Average Temperature	
42	3.73	58.9	
50	3.90	59.4	
75	4.31	60.4	
100	4.60	61.2	
125	4.82	61.8	
150	5.01	62.3	
175	5.16	62.7	
200	5.30	63.1	

ATTACHMENT D3.2
FROST INDEX AT 200-YEAR RECURRENCE INTERVAL

Project No. 111360
Project Name: Mt. Taylor Uranium Mine
Calculated By: JB

n= number of observations
n= 50

Frost Index Distribution					
Year	Frost index	Rank	Recurrence interval	Probability	Standard Variate
1976	786	1	51.00	0.02	3.92
1978	724	2	25.50	0.04	3.22
2022	524	3	17.00	0.06	2.80
1984	429	4	12.75	0.09	2.50
2018	401	5	10.20	0.11	2.27
1982	386	6	8.50	0.13	2.08
1990	378	7	7.29	0.16	1.91
2011	375	8	6.38	0.19	1.77
2019	330	9	5.67	0.21	1.64
1975	314	10	5.10	0.24	1.52
1983	312	11	4.64	0.28	1.41
2023	312	12	4.25	0.31	1.32
2020	311	13	3.92	0.34	1.22
2021	307	14	3.64	0.38	1.14
1981	256	15	3.40	0.42	1.05
1988	253	16	3.19	0.46	0.98
1992	253	17	3.00	0.50	0.90
1993	246	18	2.83	0.55	0.83
1989	237	19	2.68	0.59	0.76
2024	236	20	2.55	0.65	0.70
1979	210	21	2.43	0.70	0.63
1987	203	22	2.32	0.76	0.57
2007	202	23	2.22	0.82	0.51
2001	187	24	2.13	0.89	0.45
1977	172	25	2.04	0.96	0.39
2012	169	26	1.96	1.04	0.34
2000	164	27	1.89	1.13	0.28
2008	160	28	1.82	1.22	0.23
1997	152	29	1.76	1.32	0.17
2010	146	30	1.70	1.43	0.12
1991	143	31	1.65	1.55	0.07
1998	108	32	1.59	1.68	0.01
2014	103	33	1.55	1.83	-0.04
1986	96	34	1.50	2.00	-0.09
1985	88	35	1.46	2.19	-0.15
2005	86	36	1.42	2.40	-0.20
2017	85	37	1.38	2.64	-0.26
2015	74	38	1.34	2.92	-0.31
2013	60	39	1.31	3.25	-0.37
2003	52	40	1.28	3.64	-0.43
1994	46	41	1.24	4.10	-0.49



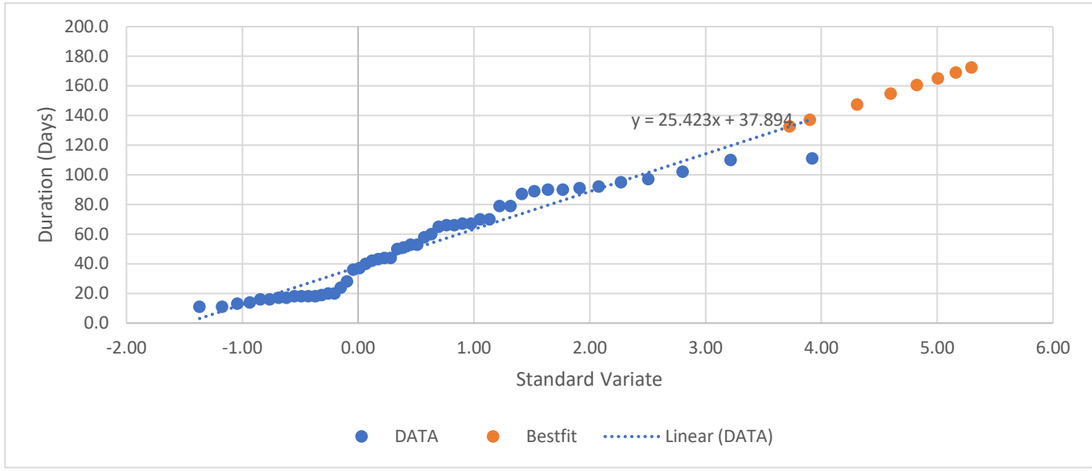
Best Fit			
Y	153.82	x+	112.93
Recurrence interval	Standard Variate	Frost Index	
42	3.73	686.0	
50	3.90	713.1	
75	4.31	776.0	
100	4.60	820.5	
125	4.82	855.0	
150	5.01	883.2	
175	5.16	906.9	
200	5.30	927.5	

ATTACHMENT D3.3
DURATION OF FREEZE SEASON AT 200-YEAR RECURRENCE INTERVAL

Project No. 111360
Project Name: Mt. Taylor Uranium Mines
Calculated By: JB

n= number of observations
n= 50

Duration of Freeze Distribution					
Year	Duration	Rank	Recurrence interval	Probability	Standard Variate
2022	111.0	1	51.00	0.02	3.92
1976	110.0	2	25.50	0.04	3.22
1983	102.0	3	17.00	0.06	2.80
2020	97.0	4	12.75	0.09	2.50
2019	95.0	5	10.20	0.11	2.27
1979	92.0	6	8.50	0.13	2.08
1984	91.0	7	7.29	0.16	1.91
1978	90.0	8	6.38	0.19	1.77
2021	90.0	9	5.67	0.21	1.64
2018	89.0	10	5.10	0.24	1.52
2023	87.0	11	4.64	0.28	1.41
1975	79.0	12	4.25	0.31	1.32
1982	79.0	13	3.92	0.34	1.22
1981	70.0	14	3.64	0.38	1.14
1989	70.0	15	3.40	0.42	1.05
1988	67.0	16	3.19	0.46	0.98
2007	67.0	17	3.00	0.50	0.90
1977	66.0	18	2.83	0.55	0.83
1990	66.0	19	2.68	0.59	0.76
1986	65.0	20	2.55	0.65	0.70
2010	60.0	21	2.43	0.70	0.63
1985	58.0	22	2.32	0.76	0.57
1991	53.0	23	2.22	0.82	0.51
1994	53.0	24	2.13	0.89	0.45
1995	51.0	25	2.04	0.96	0.39
2008	50.0	26	1.96	1.04	0.34
2001	44.0	27	1.89	1.13	0.28
2011	44.0	28	1.82	1.22	0.23
1987	43.0	29	1.76	1.32	0.17
2015	42.0	30	1.70	1.43	0.12
1992	40.0	31	1.65	1.55	0.07
1993	37.0	32	1.59	1.68	0.01
2000	36.0	33	1.55	1.83	-0.04
1998	28.0	34	1.50	2.00	-0.09
2024	24.0	35	1.46	2.19	-0.15
2005	20.0	36	1.42	2.40	-0.20
2012	20.0	37	1.38	2.64	-0.26
1997	19.0	38	1.34	2.92	-0.31
1996	18.0	39	1.31	3.25	-0.37
1999	18.0	40	1.28	3.64	-0.43
2006	18.0	41	1.24	4.10	-0.49
2013	18	42	1.21	4.67	-0.55



Best Fit			
Y	25.423	x+	37.894
Recurrence interval	Standard Variate	durations	
42	3.73	132.6	
50	3.90	137.1	
75	4.31	147.5	
100	4.60	154.8	
125	4.82	160.5	
150	5.01	165.2	
175	5.16	169.1	
200	5.30	172.5	

ATTACHMENT D4
FROST DEPTH DETERMINATION

Layer	Optimum Dry Density (PCF)	Water content (%)	dry density		Thermal Conductivity Kf (BTU/ Ft hr F)	Thermal Conductivity Ku (BTU/ Ft hr F)	Average Thermal Conductivity (1/2*(Ku+Kf))	Volumetric Heat Capacity (Cavg)	Latent heat of fusion	Depth (Inches)
Mulch	115	10	97.75	85% proctor	0.83	0.87	0.85	23.9	1407.60	12
Soil Cover	110.7	11	94.10	85% proctor	0.80	0.82	0.81	23.8	1490.46	33

n-factor	0.7

	Avg temp	F	Duration	Vs	Vo	Thermal ratio	Fusion parameter					eqn 52	eqn 53	Lambda parameter				
								K	Ci	L	Thickness ft	Ci average	Li average		Ri	Ri/2	Sum Ri-1	Ati
Mulch Layer	63.1	927.5	173	3.8	31.1	8.25	0.06	0.85	23.9	1407.6	1.00	23.9	1407.6	0.45	1.18	0.59	0.00	243.16
Soil Cover	63.1	927.5	173	3.8	31.1	8.25	0.06	0.81	23.8	1490.5	2.75	23.8	1468.4	0.45	3.39	1.70	1.18	3460.37
Mean		927.5						0.8	23.9	1449.0	1.9	23.9	1438.0	0.45				
	649.27									Total FT	3.75							3703.53
										total inches	45							

Frost Depth (feet) **2.27**
Frost Depth (inches) **27.28**

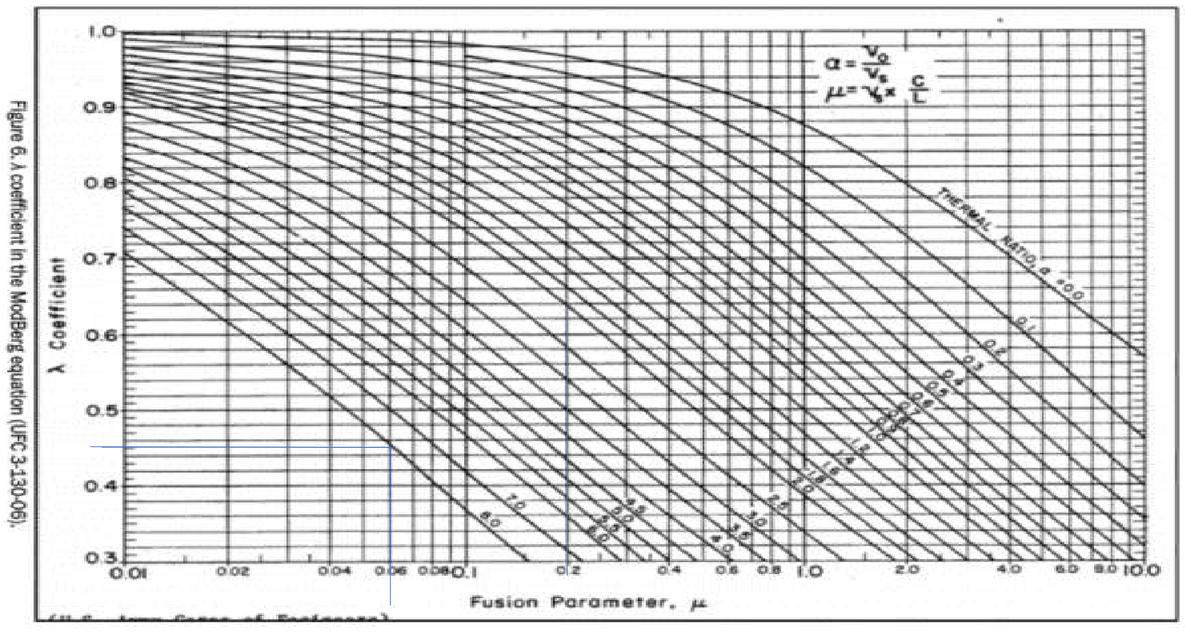


Figure 6. λ coefficient in the Modified Berg equation (UFC 3-130-06).

APPENDIX E
RADON ATTENUATION

Engineering Analytics, Inc.
Now Part of MacKay

Fort Collins Office

1600 Specht Point Road, Suite 209, Fort Collins, CO 80525
970.488.3111 / GoMacKay.com

Technical Memorandum

To:	Rio Grande Resources, Ltd.	From:	Jason Andrews, P.E.
Company:	Rio Grande Resources, Ltd.	Date:	August 5, 2026
EA No.:	111360		
Re:	Mt. Taylor Uranium Mine – Radon Cover Design and Analyses		

1.0 INTRODUCTION

This technical memorandum presents the results of modeling of emanation of radon-226 from the top surface of the proposed cover over the expanded disposal cell. These results comprise radon attenuation modeling based on the proposed cover design, and cover materials.

The cover system design consists of a three-layer cover system over contaminated soils, with a total thickness of approximately 52 inches (4.33 feet) as shown on Figure 4-1. The final cover system will consist of the following layers from top to bottom.

- 12 inches of rock mulch cover for erosion protection.
- 28 inches of onsite in-situ soils for bio intrusion and frost protection.
- 12 inches of clay layer to minimize infiltration and emanation of radon gas

For the radon emanation modeling, the rock mulch layer was included as the uppermost modeled cover layer because the Uranium Mill Tailings Cover Calculator was run with four layers: contaminated materials, clay radon barrier, in-situ soil, and rock mulch.

The radon emanation modeling shows that the planned cover system reduces the rate of radon emanation to values below the Nuclear Regulatory Commission (NRC) limit of 20 picocuries per square meter per second (pCi/m^2-sec) averaged over the entire expanded disposal cell.

2.0 DESCRIPTION OF MODEL AND INPUT VALUES

Radon emanation calculations for the cover system were made using the Wise Uranium Project Uranium Mill Tailings Cover Calculator, which implements the RADON model described in NRC Regulatory Guide 3.64 (NRC, 1989). The calculator evaluates one-dimensional radon-222 diffusion from a radium-226 source through layered cover materials. The calculator was run using metric units with four model layers: contaminated materials, clay radon barrier, in-situ soil, and rock mulch. The key input parameters include layer thickness, radium-226 activity concentration, radon emanation coefficient, porosity, long-term moisture content, and the calculated radon diffusion coefficient. The input parameters and values used in the model are outlined below.

2.1 Radium Activity Concentrations

Radium-226 activity values used in the model were taken from Radiological Characterization Reports by AVM Environmental Services, Inc. (AVM) for the Windblown Area, Ore Pad Area, and Mine Compound (AVM 2023), for the Treatment Ponds (AVM 2024), and for the North Controlled Area (AVM 2025). The radium-226 activity values used in the model are summarized below. Attachment E-1 includes pages extracted from the AVM reports used to calculate representative radium activities for the model.

Windblown Area (WA): The representative radium-226 activity value for contaminated soils within the WA north of the mine site was estimated from a static gamma radiation survey performed by AVM (2023) on May 17 and May 31, 2023. Attachment E-1.1 includes Table 2 from the AVM report illustrating the results of the survey, and Figure 1 from the AVM report illustrating the location of the WA. From a total of 12 survey locations using data for the "Bare 2x2 Nal Detector", a mean activity value of 9.8 pCi/g Ra-226 is estimated.

Ore Pad Area (OPA): The representative radium-226 activity value for contaminated soils within the OPA was estimated from a static gamma radiation survey performed by AVM (2023) on May 31, 2023. Attachment E-1.1 includes Table 2 from the AVM report illustrating the results of the survey, and Figure 1 from the AVM report illustrating the location of the OPA. From a total of 5 survey locations using data for the "Bare 2x2 Nal Detector", a mean activity value of 431.6 pCi/g Ra-226 is estimated.

Mine Compound Area (MCA): The representative radium-226 activity value for contaminated soils within the MCA was estimated from a static gamma radiation survey performed by AVM (2023) from May 18 through May 31, 2023. Attachment E-1.1 includes Table 2 from the AVM report illustrating the results of the survey, and Figure 1 from the AVM report illustrating the location of the MCA. From a total of 20 survey locations using data for the "Bare 2x2 Nal Detector", a mean activity value of 13.1 pCi/g Ra-226 is estimated.

Pond Area (PA): The representative radium-226 activity value for contaminated soils within the PA was estimated from a static gamma radiation survey performed by AVM (2024) from October 18, 2023. Attachment E-1.2 includes Table 1 from the AVM report illustrating the results of the survey, and Figure 1 from the AVM report illustrating the location of the PA. From a total of 40

survey locations using data for the "Bare 2x2 Nal Detector", a mean activity value of 4.8 pCi/g Ra-226 is estimated.

North Controlled Area (NCA): The representative radium-226 activity value for contaminated soils within the NCA was estimated from a static gamma radiation survey performed by AVM (2025) from September 19 through December 12, 2024. Attachment E-1.3 includes Table 2 from the AVM report illustrating the results of the survey, and Figure 1 from the AVM report illustrating the location of the NCA. From a total of 47 survey locations using data for the "Bare 2x2 Nal Detector", a mean activity value of 47.1 pCi/g Ra-226 is estimated.

Ra-226 activity concentration is a required model input. For the purposes of modeling radon emanation, the arithmetic mean radium-226 concentration value from the five distinct source areas (WA, OPA, MCA, PA, and NCA) is approximately 101 pCi/g. The updated Uranium Mill Tailings Cover Calculator run used a Ra-226 activity concentration of 115 pCi/g for the contaminated materials layer. For this to be a reasonable assumption in the assessment of radon flux from the cover, it is recommended that the materials from the OPA be placed at the base of the disposal cell because the OPA materials have the highest mean Ra-226 activity concentration (431.6 pCi/g).

2.2 Radion Emanation Coefficient

Radon emanation coefficient is a required model input. For all modeled layers, including the contaminated materials and cover materials, a radon emanation coefficient of 0.35 was used. This is the conservative default value used in the Uranium Mill Tailings Cover Calculator.

2.3 Density and Porosity

Attachment E-2 includes laboratory testing data for the cover layer materials. While material density of the cover layers is not a direct model input, material placement and performance density affects the porosity and long-term moisture model input values. The general textures of the contaminated materials to be consolidated into the expanded disposal cell consist of some variable percentages of silt, clay and sand. As such, a density of 100 lb/cf (1.60 g/cc) was assumed for contaminated materials below the cover. For the 12-inch layer of radon barrier clay on top of the waste, a value of 99 lb/cf (1.59 g/cc) was used which is equivalent to 90 percent of the standard Proctor dry density of the clay sample from EA-BSB04 collected from Borrow Area A-B in January 2025. For the in-situ frost protection soil layer above the radon barrier, a value of 94 lb/cf (1.51 g/cc) was used which is equivalent to 85 percent of the mean standard Proctor dry density of samples EA-BSB04 (sand), EA-BSC12 (sandy clay), and EA-BSC09 (silty clay) collected from Borrow Area A-B in January 2025. The same density of 94 lb/cf (1.51 g/cc) was used for the upper rock mulch layer as the soil matrix of the rock mulch layer is anticipated to be the same as, or similar to, the in-situ soil layer.

Porosity is a required model input. Porosity values for the waste material, the in-situ soil layer, and the rock mulch layer are not very sensitive to calculation of radon flux in the model, and the values can range +/- 20 percent individually with only a +/-10 percent change in radon flux. In contrast, radon flux calculated by the model is sensitive to porosity of the radon barrier. A similar

range of +/- 20 percent change in radon barrier porosity can change the calculated radon flux value to zero (with a lower porosity value), or can double the calculated radon flux (with a higher porosity value). A typical porosity value for the mixed sand, silt and clay of 0.35 was assumed for the waste materials. The porosity of the radon barrier clay layer was estimated from the compaction test report for sample EA-BSC09 (silty clay). From the compaction test report, a void ratio of 0.62 can be determined, and an associated porosity of 0.38 is calculated. For the in-situ soil layer and upper rock mulch layer, a porosity of 0.35 is assumed.

2.4 Long-Term Moisture Content

Long-term moisture content of the cover layers is a required model input. The long-term moisture contents for the frost protection layer and rock mulch layer were assumed to be 6% based on the NRC guidance (1989). While the long-term moisture contents of both the waste materials and the radon barrier are sensitive to calculation of radon flux, the long term moisture content of the radon barrier is particularly sensitive to calculation of radon flux. The long-term, 15-bar, moisture content of the radon barrier clay layer was determined to be 15.1 percent from EA-BSC09 (silty clay) collected from Borrow Area A-B in January 2025 (Attachment E-2). This value represents a sample of the material remolded to 90 percent of the standard Proctor density. The long term, 15-bar, moisture content for the contaminated material below the radon barrier was also assumed to be 15.1 percent since the materials are below the depth of influence from evapotranspiration.

2.5 Radion Diffusion Coefficient

The radon diffusion coefficient was calculated by the Uranium Mill Tailings Cover Calculator based on the material properties and moisture content for each layer. The calculated diffusion coefficients used in the updated model are 1.69E-07 m^2/s for the contaminated materials, 4.62E-07 m^2/s for the clay radon barrier, and 2.01E-06 m^2/s for both the in-situ soil layer and rock mulch layer. The lower the diffusion coefficient value, the lower the resulting rate of radon emanation through the layer.

3.0 RESULTS

The input values and updated results from the Uranium Mill Tailings Cover Calculator are summarized in Table E-1. The model output is provided in Attachment E-3.

The updated radon emanation model results presented in Table E-1 show that the cover system reduces the calculated radon-222 flux from a bare source flux of 42.10 $pCi/m^2/s$ to 13.99 $pCi/m^2/s$ at the top of the cover system. The calculated total cover radon retention is 66.77 percent. The final calculated radon flux is below the NRC allowable emanation limit of 20 $pCi/m^2/s$ averaged over the disposal cell.

4.0 RADON SENSITIVITY ANALYSIS CALCULATIONS

4.1 Mathematical Framework

The sensitivity calculations in Table 4.3 were generated using the one-dimensional, steady state radon diffusion model from U.S. NRC Regulatory Guide 3.64 ("Calculation of Radon Flux Attenuation by Earthen Uranium Mill Tailings Covers").
The governing differential equation for radon 222 diffusion in a porous medium is:

$$D\frac{d^2C}{dx^2} - \lambda C + \frac{R\rho E\lambda}{n} = 0$$

Where:

- C= radon-222 concentration in the pore space $\left(\text{pCi/cm}^3\right)$
- D= effective radon diffusion coefficient (m^2/s)
- λ= radon-222 decay constant ($2.1 \times 10^{-6}\ \text{s}^{-1}$)
- R= Ra-226 activity concentration (pCi/g)
- ρ= dry density $\left(\text{g/cm}^3\right)$
- E= radon emanation coefficient (dimensionless)
- n= total porosity (dimensionless)
- x= depth (m)

Radon flux at any interface is computed using Fick's Law:

$$J = -10^4 \cdot D \cdot n\frac{dC}{dx}$$

For the multilayer system (Waste to Clay Barrier to Undisturbed Soil to Rock Mulch), continuity of concentration and flux is enforced at each interface. The resulting system of hyperbolic functions (,) is solved numerically using a matrix solution in the WISE Uranium Project cover calculator. A key intermediate parameter is the diffusion length :

$$l = \sqrt{\frac{D}{\lambda}}$$

4.2 Base Input Parameters

Baseline parameters were established from site geotechnical data and conservative design assumptions.

Layer 1 – Contaminated Waste (source):

- $R = 115$ pCi/g
- $\rho = 1.60$ g/cm^3
- $n = 0.35$
- $E = 0.35$
- $D_1 = 1.69 \times 10^{-7}$ m^2/s
- Thickness ≈ 197 in (5.0 m; treated as effectively infinite)

Layer 2 – Compacted Clay Radon Barrier:

- $\rho = 1.59$ g/cm^3
- $n = 0.38$
- $D_{\text{clay}} = 4.62 \times 10^{-7}$ m^2/s
- $l_{\text{clay}} = \sqrt{\frac{4.62\times10^{-7}}{2.1\times10^{-6}}} \approx 0.469$ m

Layer 3 – Undisturbed Soil Cover:

- $\rho = 1.51$ g/cm^3
- $n = 0.35$
- $D_{\text{soil}} = 2.01 \times 10^{-6}$ m^2/s
- $l_{\text{soil}} = \sqrt{\frac{2.01\times10^{-6}}{2.1\times10^{-6}}} \approx 0.978$ m

Layer 4 – Rock Mulch:

- $\rho = 1.51$ g/cm^3
- $n = 0.35$
- $D_{\text{mulch}} = 2.01 \times 10^{-6}$ m^2/s
- Thickness = 12 in = 0.305 m (constant for all cases)

4.3 Sensitivity Case Configurations (Table 4.3 of main report)

Each case modifies layer thicknesses or diffusion coefficients and is then solved with the same numerical framework. The flux values below are direct model outputs.

- **Case 1 – Base Design**
    - Clay: 12 in (0.305 m)
    - Soil: 28 in (0.711 m)
    - Diffusion: baseline $D_{\text{clay}}, D_{\text{soil}}, D_{\text{mulch}}$
    - Note: Clay provides the strongest attenuation due to its short diffusion length.
    - **Calculated surface flux:** $J = 13.99$ pCi/m^2/s
- **Case 2: Reduced Undisturbed Soil Cover**
    - Clay: 12 in (0.305 m)
    - Soil: 20 in (0.508 m)
    - Diffusion: baseline values
    - Note: Shorter soil path length reduces attenuation above the clay barrier.
    - **Calculated surface flux:** $J = 16.21$ pCi/m^2/s
- **Case 3: Increased Undisturbed Soil Cover**
    - Clay: 12 in (0.305 m)
    - Soil: 36 in (0.914 m)
    - Diffusion: baseline values
    - Note: Longer soil path increases decay opportunity before radon reaches the surface.
    - **Calculated surface flux:** $J = 12.08$ pCi/m^2/s
- **Case 4 – Reduced Clay Barrier**
    - Clay: 9 in (0.229 m)
    - Soil: 28 in (0.711 m)
    - Diffusion: baseline values
    - Note: Removing 3 in of low diffusivity clay has a larger impact than removing 8 in of soil because clay controls the sharpest attenuation.
    - **Calculated surface flux:** $J = 17.62$ pCi/m^2/s
- **Case 5: Higher Diffusion Coefficient (1.5 times)**
    - Geometry: 12 in clay, 28 in soil, 12 in mulch
    - Adjusted diffusion:

- $D'_{\text{clay}} = 1.5 \times 4.62 \times 10^{-7} = 6.93 \times 10^{-7}$ m^2/s
- $D'_{\text{soil}} = 1.5 \times 2.01 \times 10^{-6} = 3.015 \times 10^{-6}$ m^2/s
- $D'_{\text{mulch}} = 3.015 \times 10^{-6}$ m^2/s

  - Note: Simulates drier, more diffusive long term conditions; clay diffusion length increases to .
  - **Calculated surface flux:** $J = 18.74$ pCi/m^2/s

- **Case 6: Lower Diffusion Coefficient (0.75 times)**
  - Geometry: 12 in clay, 28 in soil, 12 in mulch
  - Adjusted diffusion:
    - $D'_{\text{clay}} = 0.75 \times 4.62 \times 10^{-7} = 3.465 \times 10^{-7}$ m^2/s
    - $D'_{\text{soil}} = 0.75 \times 2.01 \times 10^{-6} = 1.508 \times 10^{-6}$ m^2/s
    - $D'_{\text{mulch}} = 1.508 \times 10^{-6}$ m^2/s
  - Note: Simulates well-compacted, moist conditions that restrict gas transport.
  - **Calculated surface flux:** $J = 11.34$ pCi/m^2/s

4.4 Results of Sensitivity Assessment

All sensitivity cases, including reduced clay thickness, reduced soil thickness, and increased diffusion, remain below the regulatory limit of 20 pCi/m^2/s. The results are shown in Table E-2. The analysis confirms that the optimized 52 inch cover provides a robust margin of safety for radon attenuation under plausible variations in geometry and material properties.

REFERENCES

Nuclear Regulatory Commission (NRC). (1989). *Calculation of Radon Flux Attenuation by Earthen Uranium Mill Tailings Covers, Regulatory Guide 3.64*.

Nuclear Regulatory Commission (NRC). (2018). *Proceedings of the Radon Barriers Workshop*. Dated July 25-26. NRC Headquarters, Rockville, MD.

AVM Environmental Services, Inc. (AVM). (2023) *Surface and Subsurface Soil Radiologic Characterization, Windblown Area, Ore Pad Area and Mine Compound, Mount Taylor Mine Site, San Mateo, NM.* Prepared for Rio Grande Resource Corporation. August 14, 2023.

AVM Environmental Services, Inc. (AVM). (2024) *Treatment Pond Radiologic Characterization, Mount Taylor Mine Site, San Mateo, NM.* Prepared for Rio Grande Resource Corporation. May 22, 2024.

AVM Environmental Services, Inc. (AVM). (2025) *North Controlled Area Soil Radiologic Characterization, Mount Taylor Mine Site, San Mateo, NM.* Prepared for Rio Grande Resource Corporation. June 5, 2025.

LIST OF TABLES

Table E-1 Soil Inputs and Calculated Radon Flux

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Figure E-1 Final Reclamation Cover System

LIST OF ATTACHMENTS

Attachment E-1 Radium Activity Concentration References
Attachment E-1.1 AVM 2023 – Windblown Area, Ore Pad Area, Mine Compound
Attachment E-1.2 AVM 2024 – Treatment Pond
Attachment E-1.3 AVM 2025 – North Controlled Area
Attachment E-2 EA Laboratory Material Testing Results
Attachment E-3 Radon Model Output

TABLES

Table E-1 – Soil Inputs and Calculated Radon Flux

Layer No[1]	Layer Description[1]	Thickness[1] (cm)	Thickness[1] (in)	Porosity	Dry Density (g/cm^3)	Radium-226 Activity (pCi/g)	Emanation Coefficient[2]	Moisture Content (%)	Diffusion Coefficient (m^2/s)	Exit Conc. (pCi/L)	Exit Radon Flux[3] ($pCi/m^2/s$)
4	Rock Mulch[4]	30.5	12	0.35[5]	1.51[5] 94 (pcf)	0	0.35	6[6]	2.01E-06	0.00E+00	13.99
3	In-Situ Soil Layer (Frost Protection and Biointrusion)	71.1	28	0.35[5]	1.51[5] 94 (pcf)	0	0.35	6[6]	2.01E-06	6.15E+03	14.67
2	Clay Layer (Radon Barrier)	30.5	12	0.38[7]	1.59[7] 99 (pcf)	0	0.35	15.1[7]	4.62E-07	1.57E+04	22.22
1	Contaminated Materials[8]	500.0	197	0.35	1.60 100 (pcf)	115	0.35	15.1	1.69E-07	5.24E+04	31.17

Notes:
1 - See Figure 4-1.
2 – Required model assumption for all materials.
3 – Exit radon flux calculated by the Uranium Mill Tailings Cover Calculator at the top of each modeled layer.
4 – The soil matrix of the rock mulch layer is similar to, or the same as, the in-situ soil layer and thus governs the properties of the rock mulch layer.
5 – Mean values from compaction test reports for samples EA-BSC09 (silty clay), EA-BSC12 (sandy clay), and EA-BSB04 (sand) from Borrow Areas A-B (Attachment E-2). Porosity values are assumed for mixed sand, silt, and clay.
6 - Long term moisture content NRC (1989).
7 – Input values for clay radon barrier from compaction test report for sample EA-BSC09 (Attachment E-2) assuming a density of 90% of maximum standard Proctor density. The long-term 15-bar moisture content from the soil water characteristic curve (SWCC) for sample EA-BSC09 (Attachment E-2)
8 – The contaminated materials below the cover are assumed to be 5 meters (16.4 feet) thick. Soil properties of the waste materials are assumed to be characteristic of a mixed sand, silt, and clay with a porosity of 0.35, dry density of 100 pcf (1.60 g/cm^3), Ra-226 activity of 115 pCi/g, emanation coefficient of 0.35, and long-term moisture content of 15.1 percent.

Table E-2 – Results of Sensitivity Analysis

Case	On-Site Soil Cover Thickness (in)	Clay Barrier Thickness (in)	Radon Diffusion Coefficient Assumption	Surface Flux (pCi/m²/s)
Appendix F base design	28	12	Appendix F design value	13.99
Reduced on-site soil cover	20	12	Appendix F design value	16.21
Increased on-site soil cover	36	12	Appendix F design value	12.08
Reduced clay barrier	28	9	Appendix F design value	17.62
Higher diffusion coefficient	28	12	1.5 × Appendix F value	18.74
Lower diffusion coefficient	28	12	0.75 × Appendix F value	11.34

ATTACHMENT E-1
RADIUM ACTIVITY CONCENTRATION
REFERENCES

ATTACHMENT E-1.1
AVM 2023- WINDBLOWN AREA, ORE PAD AREA, MINE COMPOUND

Surface and Subsurface Soil Radiologic Characterization

Windblown Area, Ore Pad Area and Mine Compound

Mount Taylor Mine Site

San Mateo, NM

Prepared by:

AVM Environmental Services, Inc.

1717 Del Norte Blvd.

Grants, NM 87020

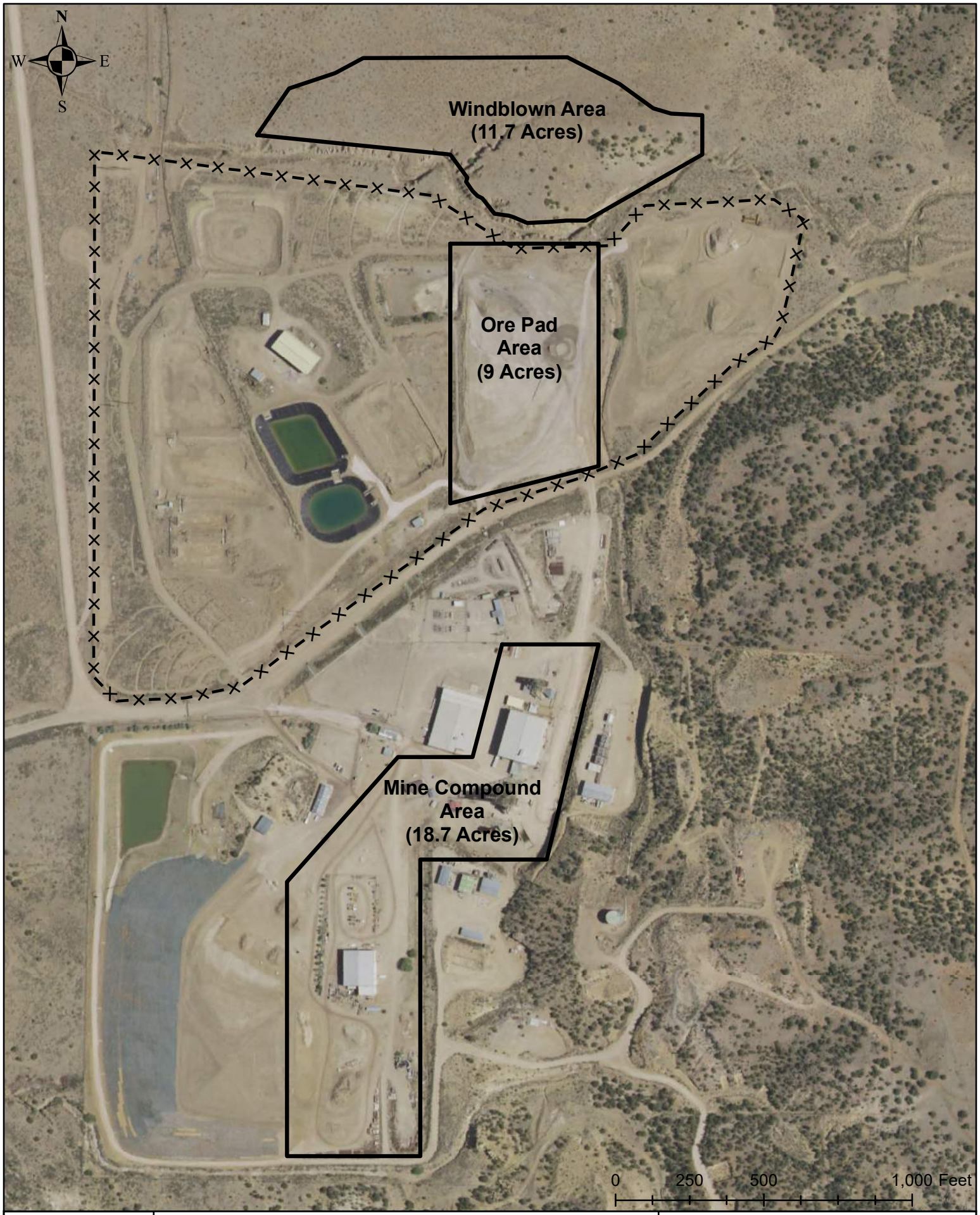
Prepared for:

Rio Grande Resource Corporation

PO Box 1150

Grants, NM 87020

August 14, 2023



AVM Environmental Services, Inc.

Figure 1
Mt. Taylor Mine Site
Soil Radiologic Characterization Areas

Legend

North Controlled Fence

Soil Radiologic Characterization Area

Table 2
Static Gamma Radiation Survey at Soil Sampling/Test Pit Locations

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD83 StatePlane NM West, Feet		Static Gamma Radiation Survey				Gamma Exposure Rate µR/hr
				Bare 2x2 NaI Detector		Collimated (0.5" Pb) 2x2 NaI Detector		
		Northing	Easting	CPM	Estimated Ra-226 pCi/g	CPM	Estimated Ra-226 pCi/g	
05/17/23	WBSB-01	1,581,413	2,782,866	26,897	6.1	6,297	1.7	33
05/17/23	WBSB-02	1,581,390	2,782,444	26,749	6.1	6,350	1.7	33
05/17/23	WBSB-03	1,581,356	2,783,329	24,529	4.9	6,073	1.3	31
05/17/23	WBSB-04	1,581,339	2,782,706	30,064	7.7	6,069	1.3	37
05/17/23	WBSB-05	1,581,329	2,783,062	31,828	8.6	6,945	2.7	41
05/17/23	WBSB-06	1,581,271	2,782,942	35,410	10.4	7,288	3.3	47
05/17/23	WBSB-07	1,581,187	2,783,253	37,965	11.7	8,183	4.7	47
05/17/23	WBSB-08	1,581,164	2,782,988	55,849	20.6	11,042	9.3	70
05/31/23	WBSB-09	1,581,254	2,782,870	36,491	10.9	6,599	2.1	44
05/31/23	WBSB-10	1,581,263	2,783,140	34,898	10.1	7,286	3.2	48
05/31/23	WBSB-11	1,581,277	2,783,335	29,002	7.2	6,602	2.2	34
05/31/23	WBSB-12	1,581,228	2,782,908	40,341	12.9	7,153	3.0	55
05/31/23	OPSB-01	1,580,834	2,782,884	2,328,550	1157	716,621	1138	2,100
05/31/23	OPSB-02	1,580,812	2,783,138	505,097	245	160,357	248	650
05/31/23	OPSB-03	1,580,599	2,783,013	700,063	343	247,434	387	900
05/31/23	OPSB-04	1,580,328	2,782,874	408,698	197	133,199	205	450
05/31/23	OPSB-05	1,580,386	2,783,136	446,083	216	156,044	241	450
05/30/23	MCSB-01	1,579,585	2,783,019	35,807	10.6	10,538	8.5	41
05/30/23	MCSB-02	1,579,573	2,783,167	34,096	9.7	9,678	7.1	39
05/30/23	MCSB-03	1,579,343	2,782,883	34,019	9.7	9,832	7.3	39
05/30/23	MCSB-04	1,579,317	2,783,098	34,656	10.0	10,811	8.9	40
05/24/23	MCSB-05	1,579,183	2,782,702	52,231	18.8	14,892	15	65
05/24/23	MCSB-06	1,579,162	2,783,064	31,976	8.7	8,548	5.3	37
05/24/23	MCSB-07	1,579,040	2,783,010	52,974	19.2	18,511	21	65
05/23/23	MCSB-08	1,578,849	2,782,249	107,010	46.2	39,626	55.0	125
05/23/23	MCSB-09	1,578,850	2,782,582	28,188	6.8	8,193	4.7	33
05/23/23	MCSB-10	1,578,758	2,782,444	39,814	12.6	12,984	12	43
05/22/23	MCSB-11	1,578,611	2,782,258	53,106	19.2	18,055	20	60
05/22/23	MCSB-12	1,578,521	2,782,569	29,299	7.3	9,090	6.1	33
05/22/23	MCSB-13	1,578,301	2,782,557	21,952	3.7	6,254	1.6	25
05/23/23	MCSB-14	1,578,278	2,782,258	21,642	3.5	6,366	1.8	25
05/18/23	MCSB-15	1,578,214	2,782,398	48,059	16.7	15,633	17	51
05/18/23	MCSB-16	1,578,084	2,782,313	30,445	7.9	11,069	9.3	33
05/18/23	MCSB-17	1,578,085	2,782,599	18,059	1.7	5,891	1.0	19
05/18/23	MCSB-18	1,578,071	2,782,424	17,170	1.3	5,046	<0.6	19
05/31/23	MCSB-19	1,578,837	2,782,317	69,850	27.6	24,522	31	80
05/31/23	MCSB-20	1,578,650	2,782,298	55,167	20.3	18,497	21	65

WB
Sum = 117.2
Mean = 9.8
n = 12
SD = 4.2

OPA
Sum = 2158
Mean = 431.6
n = 5
SD = 409.4

MCA
Sum = 261.5
Mean = 13.1
n = 20
SD = 10.5

ATTACHMENT E-1.2
AVM 2024 – TREAMENT POND

Treatment Pond Radiologic Characterization

Mt. Taylor Mine Site
San Mateo, NM

Prepared by:
AVM Environmental Services, Inc.
1717 Del Norte Blvd.
Grants, NM 87020

Prepared for:
Rio Grande Resource Corporation
PO Box 1150
Grants, NM 87020

June 4, 2024

Figure 1
Mt. Taylor Mine Site
Treatment Pond Characterization
Areas and Concrete Structure Locations

Legend

- Concrete Structure
- North Controlled Fence
- Treatment Pond Characterization Area

AVM Environmental Services, Inc.

Table 1
Typical Gamma Scan Data Exported from the Scan System Data Logger

ID	Time	Northing[1] (feet)	Easting[1] (feet)	MSL Elevation (feet)	CPM 2x2 Bare NaI Detector	Ra-226 pCi/g[2]	Zone_ID
1	10/18/2023 8:12	1579902.54	2781775.10	7300	24761	5.06	Treatment_Ponds
2	10/18/2023 8:12	1579903.88	2781775.74	7300	23724	4.54	Treatment_Ponds
3	10/18/2023 8:12	1579904.17	2781778.02	7300	25456	5.41	Treatment_Ponds
4	10/18/2023 8:12	1579903.99	2781781.66	7300	25463	5.41	Treatment_Ponds
5	10/18/2023 8:12	1579904.34	2781785.64	7300	24786	5.07	Treatment_Ponds
6	10/18/2023 8:12	1579904.46	2781790.40	7300	23246	4.30	Treatment_Ponds
7	10/18/2023 8:12	1579903.97	2781795.09	7301	23822	4.59	Treatment_Ponds
8	10/18/2023 8:12	1579903.49	2781800.02	7300	25694	5.53	Treatment_Ponds
9	10/18/2023 8:12	1579904.14	2781805.18	7301	31410	8.39	Treatment_Ponds
10	10/18/2023 8:12	1579904.09	2781810.07	7301	28672	7.02	Treatment_Ponds
11	10/18/2023 8:12	1579904.27	2781814.71	7301	25935	5.65	Treatment_Ponds
12	10/18/2023 8:12	1579904.36	2781819.65	7301	26984	6.17	Treatment_Ponds
13	10/18/2023 8:12	1579904.09	2781821.94	7301	26902	6.13	Treatment_Ponds
14	10/18/2023 8:12	1579903.77	2781822.84	7301	28593	6.98	Treatment_Ponds
15	10/18/2023 8:12	1579903.22	2781827.06	7301	28036	6.70	Treatment_Ponds
16	10/18/2023 8:12	1579902.15	2781831.73	7302	27870	6.62	Treatment_Ponds
17	10/18/2023 8:12	1579902.11	2781836.90	7302	26062	5.71	Treatment_Ponds
18	10/18/2023 8:13	1579902.06	2781842.31	7302	27827	6.59	Treatment_Ponds
19	10/18/2023 8:13	1579903.05	2781848.05	7302	27534	6.45	Treatment_Ponds
20	10/18/2023 8:13	1579902.68	2781853.78	7302	25994	5.68	Treatment_Ponds
21	10/18/2023 8:13	1579903.18	2781859.71	7302	26539	5.95	Treatment_Ponds
22	10/18/2023 8:13	1579903.39	2781865.09	7302	28415	6.89	Treatment_Ponds
23	10/18/2023 8:13	1579903.06	2781874.06	7302	26264	5.81	Treatment_Ponds
24	10/18/2023 8:13	1579902.23	2781879.73	7303	23133	4.25	Treatment_Ponds
25	10/18/2023 8:13	1579903.30	2781885.83	7303	24734	5.05	Treatment_Ponds
26	10/18/2023 8:13	1579903.75	2781891.77	7303	22704	4.03	Treatment_Ponds
27	10/18/2023 8:13	1579903.75	2781897.38	7303	22324	3.84	Treatment_Ponds
28	10/18/2023 8:13	1579902.96	2781902.73	7303	20758	3.06	Treatment_Ponds
29	10/18/2023 8:13	1579899.92	2781907.85	7303	19594	2.48	Treatment_Ponds
30	10/18/2023 8:13	1579899.78	2781914.18	7304	20910	3.14	Treatment_Ponds
31	10/18/2023 8:13	1579900.82	2781919.94	7304	20171	2.77	Treatment_Ponds
32	10/18/2023 8:13	1579901.72	2781925.63	7304	22063	3.71	Treatment_Ponds
33	10/18/2023 8:13	1579901.53	2781931.45	7304	20831	3.10	Treatment_Ponds
34	10/18/2023 8:13	1579901.71	2781937.44	7305	22406	3.88	Treatment_Ponds
35	10/18/2023 8:13	1579904.08	2781942.73	7305	22237	3.80	Treatment_Ponds
36	10/18/2023 8:13	1579903.40	2781948.33	7305	21049	3.20	Treatment_Ponds
37	10/18/2023 8:13	1579903.70	2781954.27	7305	20684	3.02	Treatment_Ponds
38	10/18/2023 8:13	1579904.71	2781959.77	7306	19715	2.54	Treatment_Ponds
39	10/18/2023 8:13	1579904.25	2781965.50	7306	19402	2.38	Treatment_Ponds
40	10/18/2023 8:13	1579903.80	2781971.03	7306	19788	2.57	Treatment_Ponds

(1) projection: StatePlane NAD 1983 NM West - Feet

(2) Ra-226 pCi/g determined from surface soil gamma radiation scan using 2x2 NaI detector and Site-specific gamma radiation level (cpm) correlation

PA
Sum = 193.6
Mean = 4.8
n = 40
SD = 1.6

ATTACHMENT E-1.3
AVM 2025 – NORTH CONTROLLED AREA

North Controlled Area Soil Radiologic Characterization

Mt. Taylor Mine Site
San Mateo, NM

Prepared by:
AVM Environmental Services, Inc.
1717 Del Norte Blvd.
Grants, NM 87020

Prepared for:
Rio Grande Resource Corporation
PO Box 1150
Grants, NM 87020

June 5, 2025

N
W E
S

Environmental Services, Inc.

Figure 1
Mt. Taylor Mine Site
North Controlled Area Soil Radiologic Characterization Area

June 2025

Legend

- NCA Soil Radiologic Characterization Area
- Previously Characterized Area
- Active Treatment Ponds
- North Controlled Fence

Table 2
Mt. Taylor Mine Site - North Controlled Area Soil Radiological Characterization
Static Gamma Radiation Survey at Data Point/Soil Sample Locations

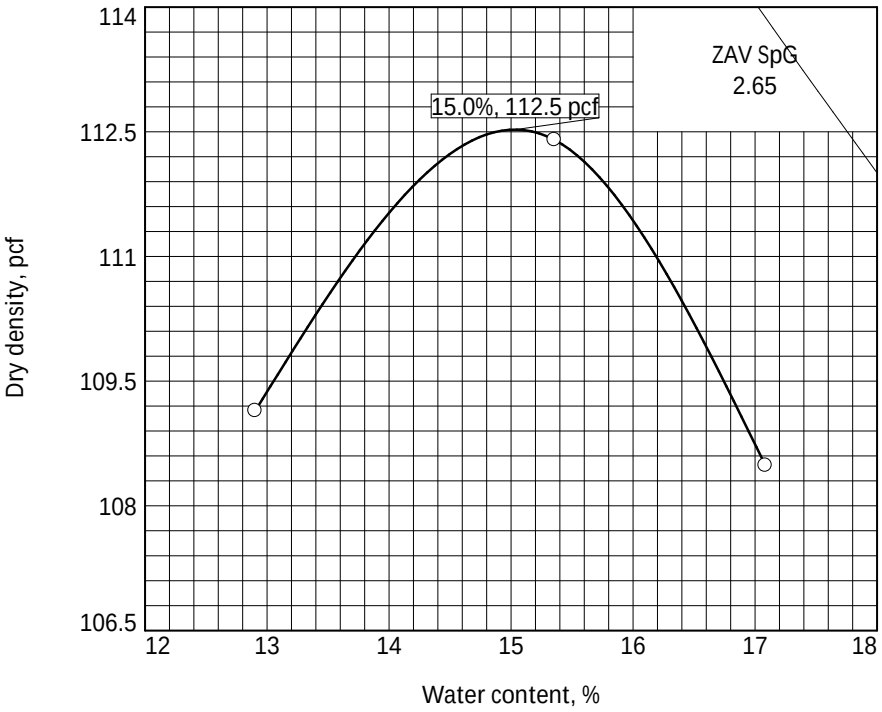
Data Point ID	Survey Date	Data Point Coordinate NAD83 StatePlane NM West, Feet		Static Gamma Radiation Survey Collimated (0.5" PB) 2x2 Detector	
		Northing	Easting	Static Gamma CPM	Surface Soil Static Gamma Estimated Ra-226 pCi/g
TP-01	9/19/2024	1580186.76	2781641.72	74549	111.8
TP-02	9/19/2024	1581347.96	2781655.87	23242	29.7
TP-03	9/19/2024	1581200.16	2781928.52	12217	12.0
TP-04	9/19/2024	1580830.01	2781918.97	11677	11.2
TP-05	9/19/2024	1580644.14	2781961.31	7643	4.7
TP-06	9/19/2024	1579534.44	2782004.83	28795	38.6
TP-07	9/19/2024	1580612.66	2782033.15	7755	4.9
TP-08	9/19/2024	1580712.40	2782055.84	9500	7.7
TP-09	11/25/2024	1579887.40	2782299.57	26878	35.5
TP-10	9/19/2024	1580089.57	2782156.92	10215	8.8
TP-11	9/19/2024	1580893.36	2782211.56	17075	19.8
TP-12	9/19/2024	1580498.58	2782193.94	7687	4.8
TP-13	9/19/2024	1581025.34	2782214.93	25917	34.0
TP-14	9/19/2024	1581007.22	2782310.10	31693	43.2
TP-15	9/19/2024	1580839.32	2782323.98	10771	9.7
TP-16	9/19/2024	1580514.25	2782350.77	20877	25.9
TP-17	11/22/2024	1581231.06	2782360.91	9788	8.2
TP-18	9/19/2024	1580678.19	2782412.82	23920	30.8
TP-19	9/19/2024	1581111.05	2782512.59	108929	166.8
TP-20	9/19/2024	1580575.91	2782540.15	42042	59.8
TP-21	1/27/2025	1580826.78	2782605.83	189626	295.9
TP-22	9/19/2024	1580005.97	2782577.72	27679	36.8
TP-23	10/28/2024	1580933.72	2782615.38	11721	11.3
TP-24	9/19/2024	1580664.84	2782653.22	184511	287.7
TP-25	11/22/2024	1581176.90	2782660.86	15304	17.0
TP-26	12/12/2024	1580859.02	2782663.51	154801	240.2
TP-27	9/19/2024	1580481.71	2782702.25	116173	178.4
TP-28	9/19/2024	1581078.62	2782722.31	69269	103.3
TP-29	9/19/2024	1580104.95	2782715.01	37349	52.3
TP-30	12/2/2024	1581088.55	2782875.42	7362	4.3
TP-31	11/25/2024	1580996.95	2783152.31	76057	114.2
TP-32	12/12/2024	1580437.62	2783254.26	11869	11.5
TP-33	11/25/2024	1581081.58	2783299.76	11765	11.3
TP-34	12/12/2024	1580838.74	2783312.73	18951	22.8
TP-35	10/23/2024	1580623.09	2783328.09	31729	43.3
TP-36	10/23/2024	1580793.59	2783353.65	12576	12.6
TP-37	10/23/2024	1580494.41	2783389.94	9058	7.0
TP-38	10/23/2024	1581073.21	2783415.97	13769	14.5
TP-39	10/23/2024	1580478.54	2783504.44	9606	7.9
TP-40	10/23/2024	1581112.23	2783628.43	13072	13.4
Inv-01	9/19/2024	1580780.75	2781697.35	14304	15.4
Inv-02	9/19/2024	1579936.57	2781697.29	9200	7.2
Inv-03	9/19/2024	1581223.91	2781793.57	13157	13.6
Inv-04	9/19/2024	1580827.72	2782178.60	36695	51.2
Inv-05	10/23/2024	1580653.58	2783716.79	7441	4.4
Inv-06	10/23/2024	1581080.53	2783861.07	19774	24.1
Inv-07	9/19/2024	1580754.28	2781792.25	10142	8.7

NCA
Sum = 2278.2
Mean = 47.1
n = 47
SD = 71.9

ATTACHMENT E-2
EA LABORATORY MATERIAL TESTING RESULTS

COMPACTION TEST REPORT

Curve No.



Test Specification:
ASTM D 698-12 Method A Standard

Preparation Method: Moist
Hammer Wt.: 5.5 lb.
Hammer Drop: 12 in.
Hammer Type: Manual
Layers: three Blows/Layer: 25
Mold Size: 0.03333 cu. ft.
Test Performed on Material Passing: #4 Sieve

NM: LL: NV PI: NP
Sp.G. (Assumed): 2.65
%>#4: %<No.200:
USCS: AASHTO:
Date Sampled:
Date Received:
Date Tested: 4/16/25
Tested By: SY

TESTING DATA	1	2	3	4	5	6
WM + WS	6114.4	6211.7	6171.7			
WM	4251.4	4251.4	4251.4			
WW + T #1	1015.2	1106.6	897.9			
WD + T #1	933.6	1009.1	810.6			
TARE #1	301.0	374.0	299.9			
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	12.9	15.4	17.1			
DRY DENSITY	109.1	112.4	108.5			

TEST RESULTS

Maximum dry density = 112.5 pcf

Optimum moisture = 15.0 %

Material Description: Sand

Remarks:

Project No. Client:
Project:

○ Source of Sample: EA-BSB04 Depth: 2' - 3' Sample Number: A

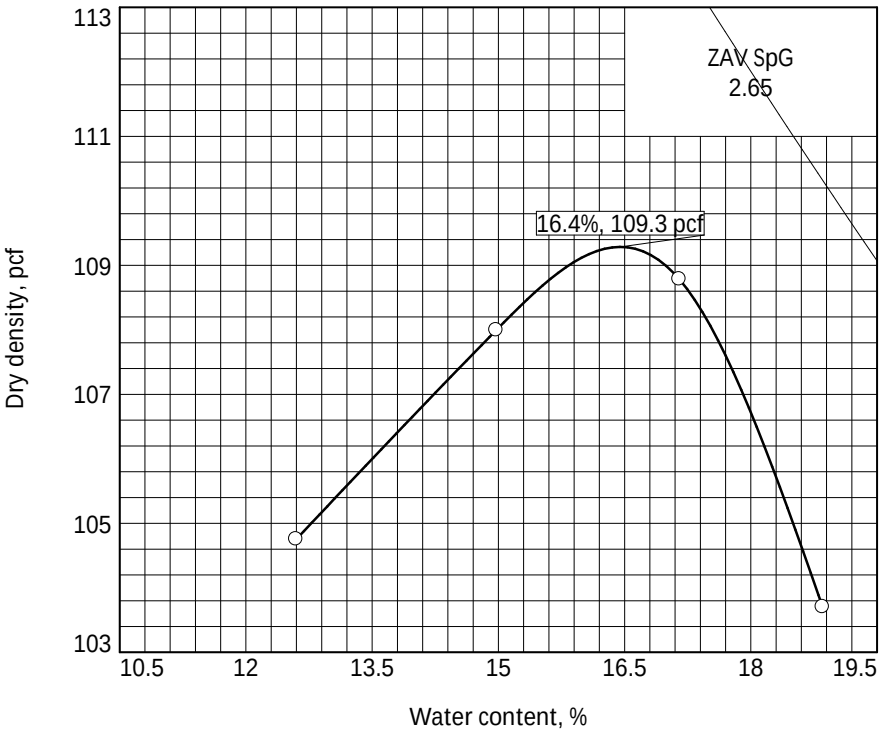
Checked by: AW
Title:

ENGINEERING ANALYTICS, INC.

Figure

COMPACTION TEST REPORT

Curve No.



Test Specification:
ASTM D 698-12 Method A Standard

Preparation Method: Moist
Hammer Wt.: 5.5 lb.
Hammer Drop: 12 in.
Hammer Type: Manual
Layers: three Blows/Layer: 25
Mold Size: 0.03333 cu. ft.

Test Performed on Material
Passing: #4 Sieve

NM: LL: NV PI: NP
Sp.G. (Assumed): 2.65
%>#4: %<No.200:
USCS: AASHTO:
Date Sampled:
Date Received:
Date Tested: 4/10/25
Tested By: SY

TESTING DATA	1	2	3	4	5	6
WM + WS	6033.2	6176.7	6127.2	6113.4		
WM	4250.0	4250.0	4250.0	4250.0		
WW + T #1	1060.2	1080.7	1199.7	864.2		
WD + T #1	986.7	981.3	1095.7	774.7		
TARE #1	402.9	402.0	400.9	299.8		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	12.6	17.2	15.0	18.9		
DRY DENSITY	104.8	108.8	108.0	103.7		

TEST RESULTS

Maximum dry density = 109.3 pcf

Optimum moisture = 16.4 %

Material Description: Sandy Clay

Remarks:

Project No. Client:
Project:

○ Source of Sample: EA-BSC12 Depth: 2' - 3' Sample Number: A

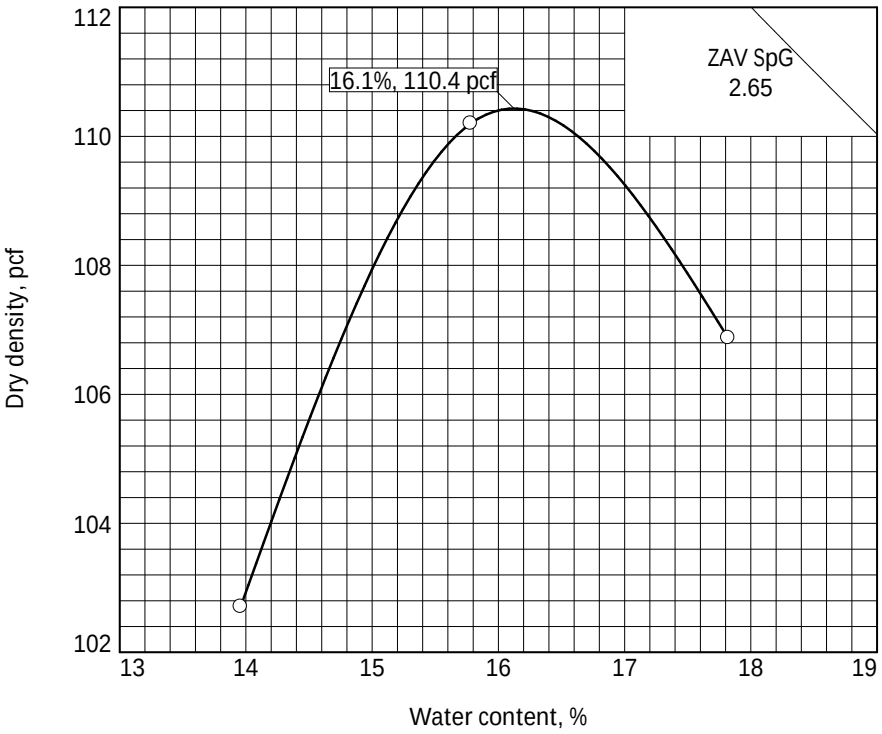
Checked by: AW
Title:

ENGINEERING ANALYTICS, INC.

Figure

COMPACTION TEST REPORT

Curve No.



Test Specification:
ASTM D 698-12 Method A Standard

Preparation Method	Moist
Hammer Wt.	5.5 lb.
Hammer Drop	12 in.
Hammer Type:	Manual
Layers	three
Blows/Layer	25
Mold Size	0.03333 cu. ft.

Test Performed on Material
Passing #4 Sieve

NM LL 26 PI 8
Sp.G. (Assumed): 2.65
%>#4 %<No.200
USCS AASHTO
Date Sampled
Date Received
Date Tested 4/16/2025
Tested By SY

TESTING DATA	1	2	3	4	5	6
WM + WS	6020.3	6179.7	6154.5			
WM	4250.8	4250.8	4250.8			
WW + T #1	1243.0	1130.4	1178.8			
WD + T #1	1136.1	1027.5	1056.4			
TARE #1	370.5	375.5	369.7			
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	14.0	15.8	17.8			
DRY DENSITY	102.7	110.2	106.9			

TEST RESULTS

Maximum dry density = 110.4 pcf

Optimum moisture = 16.1 %

Material Description

Silty Clay

Remarks:

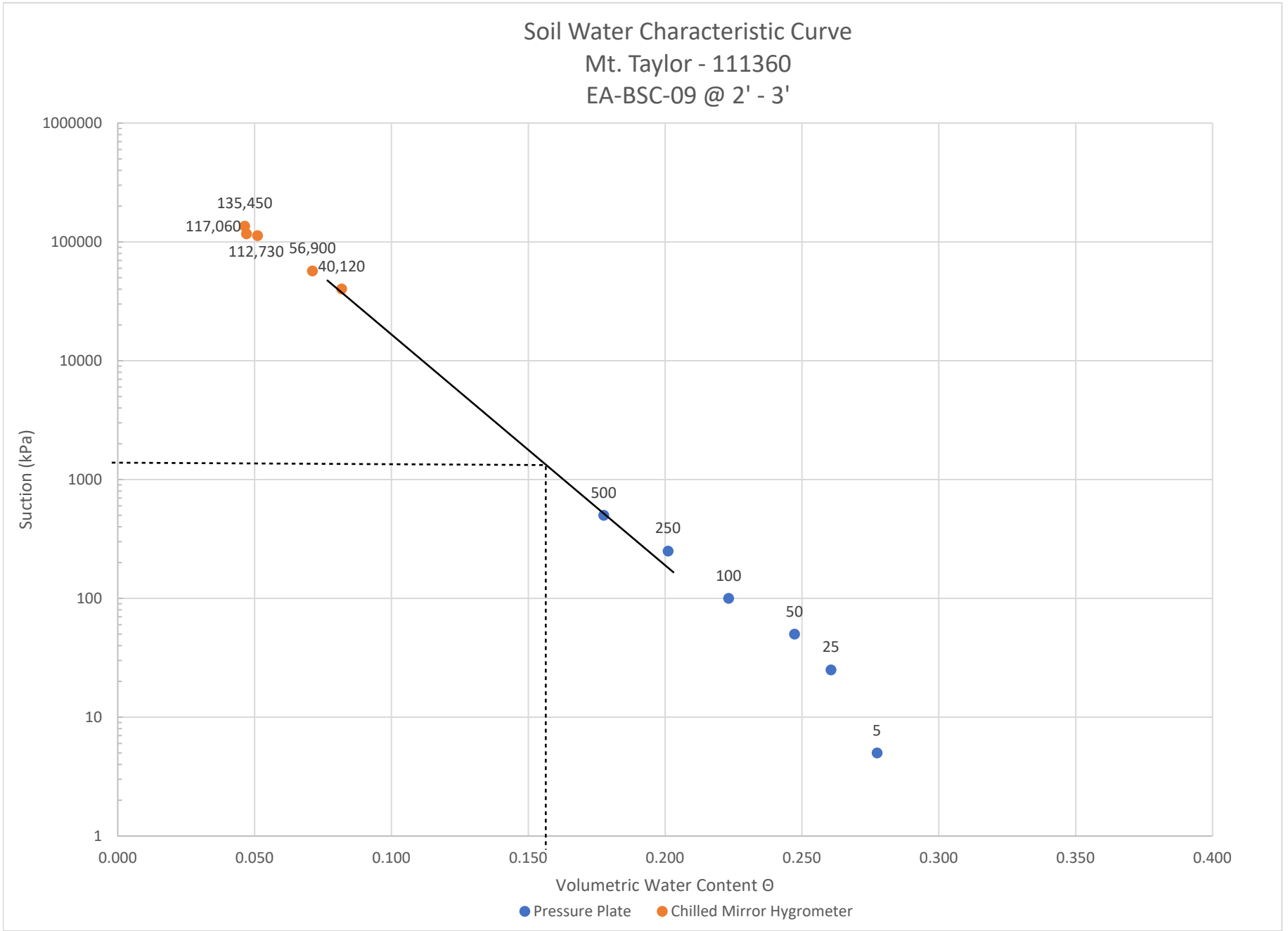
Project No. Client:
Project:

○ Source of Sample: EA-BSC09 Depth: 2' - 3' Sample Number: A

Checked by: KG
Title:

ENGINEERING ANALYTICS, INC.

Figure


Soil Water Characteristic Curve
Mt. Taylor - 111360
EA-BSC-09 @ 2' - 3'
1000000
100000
10000
1000
100
10
1
Suction (kPa)
135,450
117,060
112,730
56,900
40,120
500
250
100
50
25
5
0.000
0.050
0.100
0.150
0.200
0.250
0.300
0.350
0.400
Volumetric Water Content Θ
Pressure Plate
Chilled Mirror Hygrometer

ATTACHMENT E-3
RADON MODEL OUTPUT

Layer Data HELP

Layer No.	Thickness [m]	Ra-226 Activity Conc. [pCi/g]	Rn-222 Emanation Fraction	Porosity	Moisture Cont. [dry wt_%]	Fraction Passing #200 Mesh (75 µm) *)	Rn-222 Eff. Diff.Coeff *) [m^2/s]
1	5	101	0.35	0.35	15.1		
2	.30	0	.35	.38	15.1		
3	.84	0	.35	.35	6		
4	.30	0	.35	.35	6		
5							
6							
7							
8							

Options HELP

- Entrance Radon flux to Layer 1 [pCi/m^2s] *)
- Surface Radon conc. at top of system [pCi/L] *)
- Layer No. to be optimized *)
- Surface flux constraint for optimization [pCi/m^2s] *)
- Surface flux convergence criterion (fraction) *)
- Annual Precipitation [cm] *)
- Annual Lake Evaporation [cm] *)
- Depth to Water Table [m] *)

*) optional

Calculate Reset Form HELP

Results

```
 No.     [m]     [pCi/g]  Fract            [dry wt_%]  [m2/s]
  1    5         101      0.35     0.35      15.1       169.1E-9
  2    0.3       0        .35      0.38      15.1       462.0E-9
  3    0.84      0        .35      0.35      6          2.013E-6
  4    0.3       0        .35      0.35      6          2.013E-6


--------  Results of Radon Diffusion Calculation  --------

Layer  Thickness   Exit Flux  Exit Conc.     MIC
 No.      [m]      [pCi/m2s]   [pCi/L]
  1     5           27.35       46.12E3     0.440
  2     0.3         19.49       14.55E3     0.508
  3     0.84        11.61       4.796E3     0.777
  4     0.3         11.09       0E0         0.777

Total cover radon retention: 70.01%
```

Layer Data HELP

Layer No.	Thickness [m]	Ra-226 Activity Conc. [pCi/g]	Rn-222 Emanation Fraction	Porosity	Moisture Cont. [dry wt_%]	Fraction Passing #200 Mesh (75 µm) *)	Rn-222 Eff. Diff.Coeff *) [m^2/s]
1	5	101	0.35	0.35	15.1		
2	.46	0	.35	.38	15.1		
3	.84	0	.35	.35	6		
4	.30	0	.35	.35	6		
5							
6							
7							
8							

Options HELP

- Entrance Radon flux to Layer 1 [pCi/m^2s] *)
- Surface Radon conc. at top of system [pCi/L] *)
- Layer No. to be optimized *)
- Surface flux constraint for optimization [pCi/m^2s] *)
- Surface flux convergence criterion (fraction) *)
- Annual Precipitation [cm] *)
- Annual Lake Evaporation [cm] *)
- Depth to Water Table [m] *)

*) optional

Calculate Reset Form HELP

Results

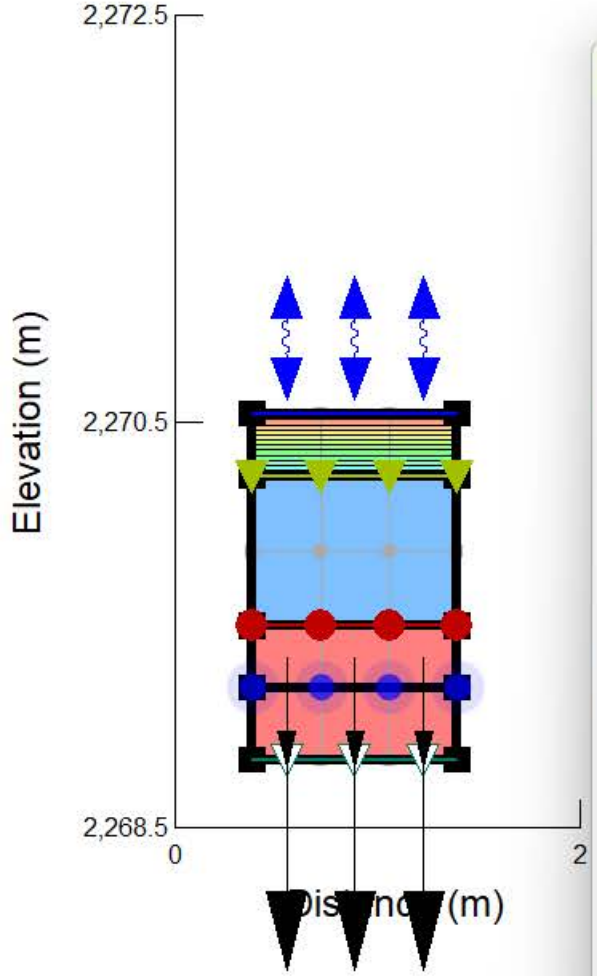
No.	[m]	[pCi/g]	Fract		[dry wt_%]	[m2/s]
1	5	101	0.35	0.35	15.1	169.1E-9
2	0.46	0	.35	0.38	15.1	462.0E-9
3	0.84	0	.35	0.35	6	2.013E-6
4	0.3	0	.35	0.35	6	2.013E-6

-------- Results of Radon Diffusion Calculation --------

Layer No.	Thickness [m]	Exit Flux [pCi/m2s]	Exit Conc. [pCi/L]	MIC
1	5	26.19	51.69E3	0.440
2	0.46	14.22	10.61E3	0.508
3	0.84	8.474	3.499E3	0.777
4	0.3	8.091	0E0	0.777

Total cover radon retention: 78.12%

APPENDIX F
Selected Results of Infiltration Analysis



Draw Graph

Add | Delete

Name	Y	X
water balance - transpi...	Cumulative Tra...	Time
Water Balance Error: C...	Rel Water Balan...	Time
Water Flux	Water Total Head	Dista...
Water Flux From Clay t...	Water Y Flux	Time

Name: Water Flux From Clay to Waste

Kind: Mesh

Set Locations...

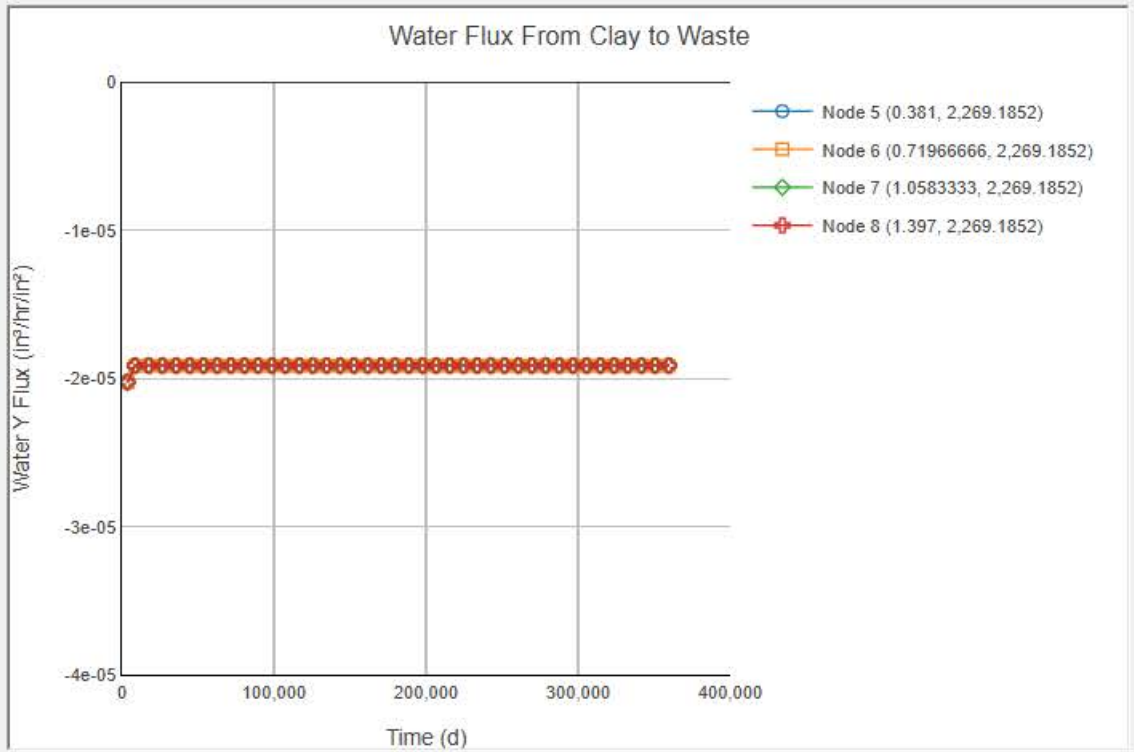
Water Flow | Water Y Flux

vs. Time | d

Select Steps: All

Step	Elapsed Time ...	Analysis Name
0	3,650	Transient Seepage (1000)
500	8,650	Transient Seepage (1000)
1400	17,650	Transient Seepage (1000)
2300	26,650	Transient Seepage (1000)
3200	35,650	Transient Seepage (1000)
4100	44,650	Transient Seepage (1000)

Sum (Y) vs. Average (X) Values

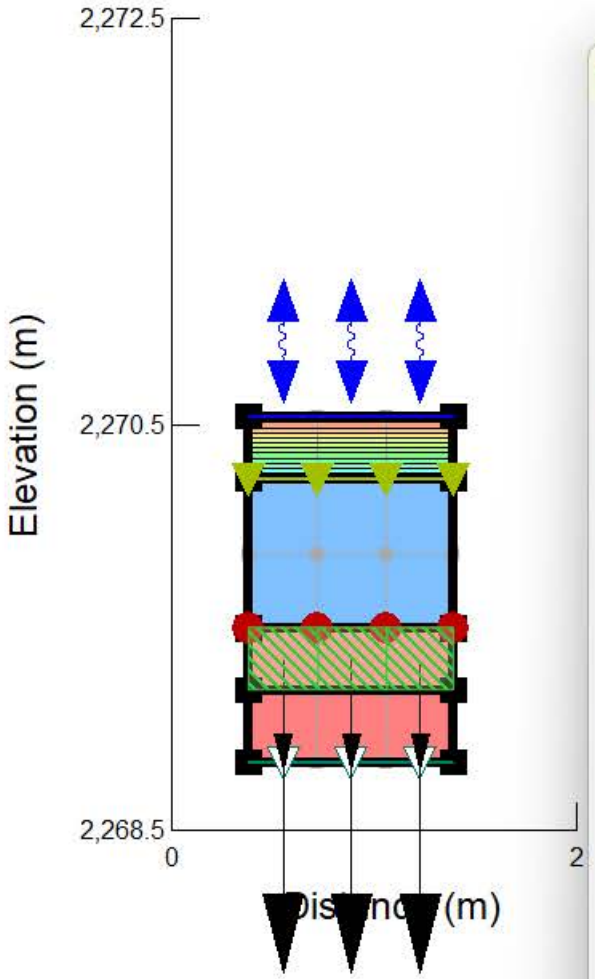


Legend | Use Auto Scale

Auto Refresh | X Axis Range:

Refresh | to

Undo | Redo | Help | More | Close



Draw Graph

Add | Delete

Name	Y	X
VWC vs Time	VWC	Time
water balance - transpi...	Cumulative Tra...	Time
water balance - transpi...	Cumulative Tra...	Time
Water Balance Error: C...	Water Balance Err	Time

Name: Water Balance Error: Clay

Kind: Mesh

Set Locations...

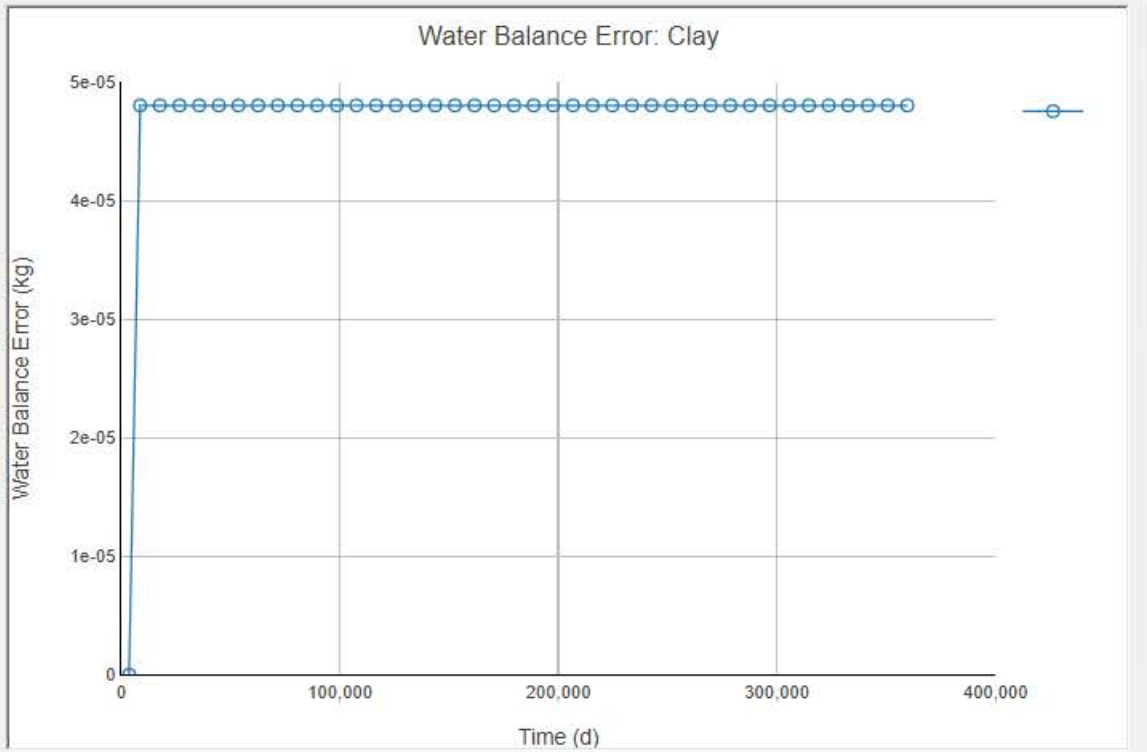
Water Mass Balance | Water Balance Error

vs. Time | Default

Select Steps: All

Step	Elapsed Time ...	Analysis Name
0	3,650	Transient Seepage (1000)
500	8,650	Transient Seepage (1000)
1400	17,650	Transient Seepage (1000)
2300	26,650	Transient Seepage (1000)
3200	35,650	Transient Seepage (1000)
4100	44,650	Transient Seepage (1000)

Sum (Y) vs. Average (X) Values

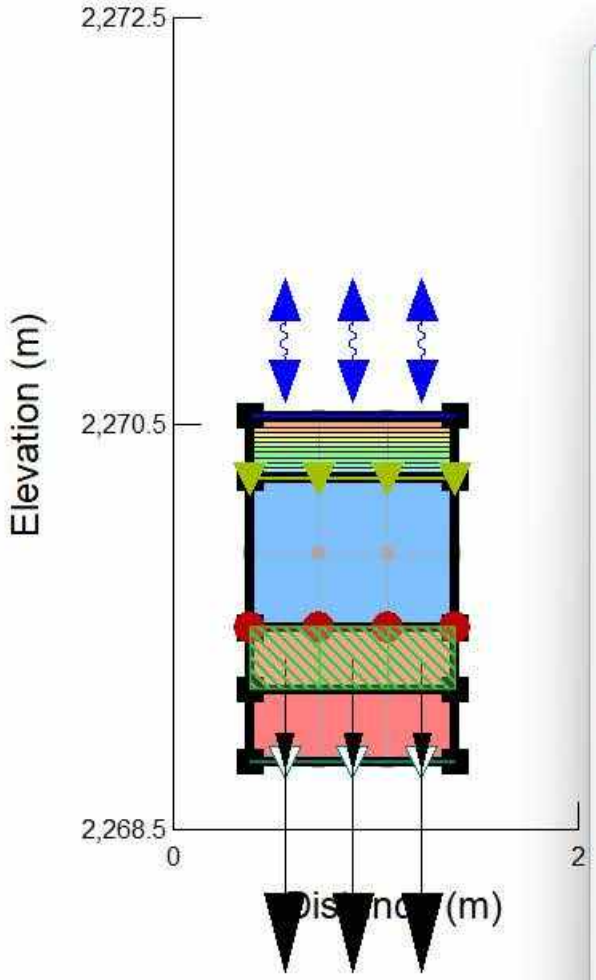


Legend | Use Auto Scale

Auto Refresh | X Axis Range:

Refresh | to

Undo | Redo | Help | More | Close



Draw Graph

Add | Delete

Name	Y	X
Water Balance Error: C...	Water Balance Err	Time
Water Flux	Water Total Head	Dista...
Water Flux From Clay t...	Water Y Flux	Time
water storage: clay	Domain Water ...	Time

Name: water storage: clay

Kind: Mesh

Set Locations...

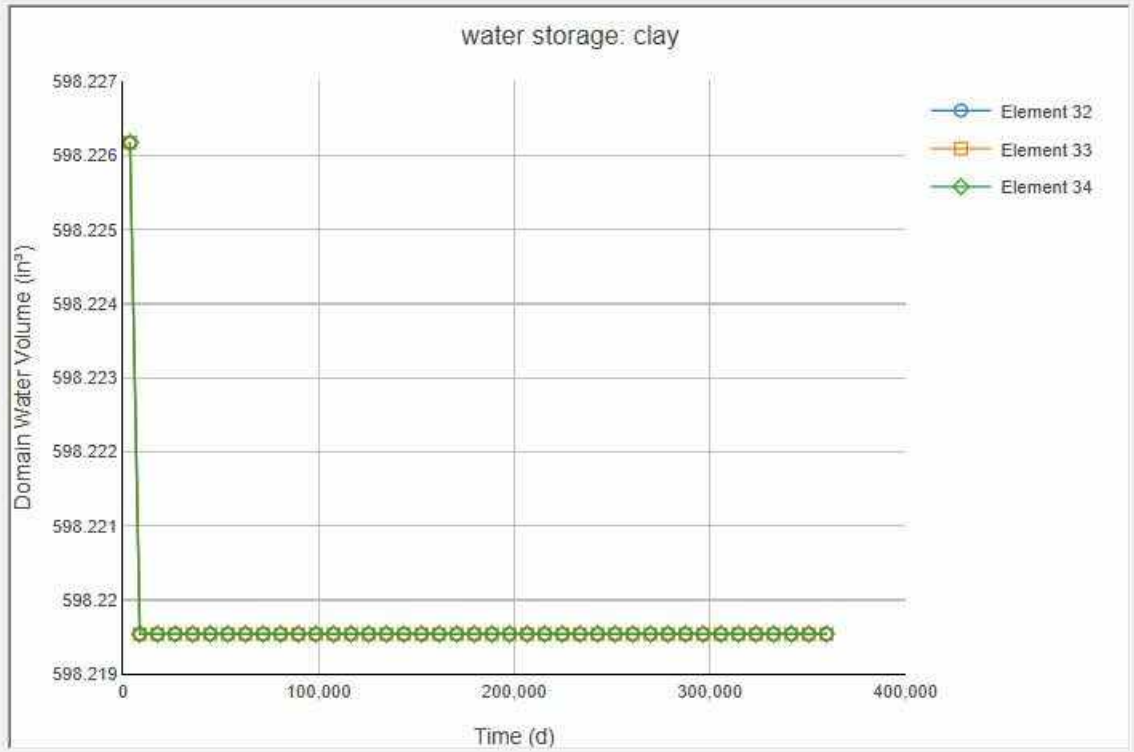
Water Mass Balance | Domain Water Volume

vs. Time | d

Select Steps: All

Step	Elapsed Time ...	Analysis Name
0	3,650	Transient Seepage (1000)
500	8,650	Transient Seepage (1000)
1400	17,650	Transient Seepage (1000)
2300	26,650	Transient Seepage (1000)
3200	35,650	Transient Seepage (1000)
4100	44,650	Transient Seepage (1000)

Sum (Y) vs. Average (X) Values

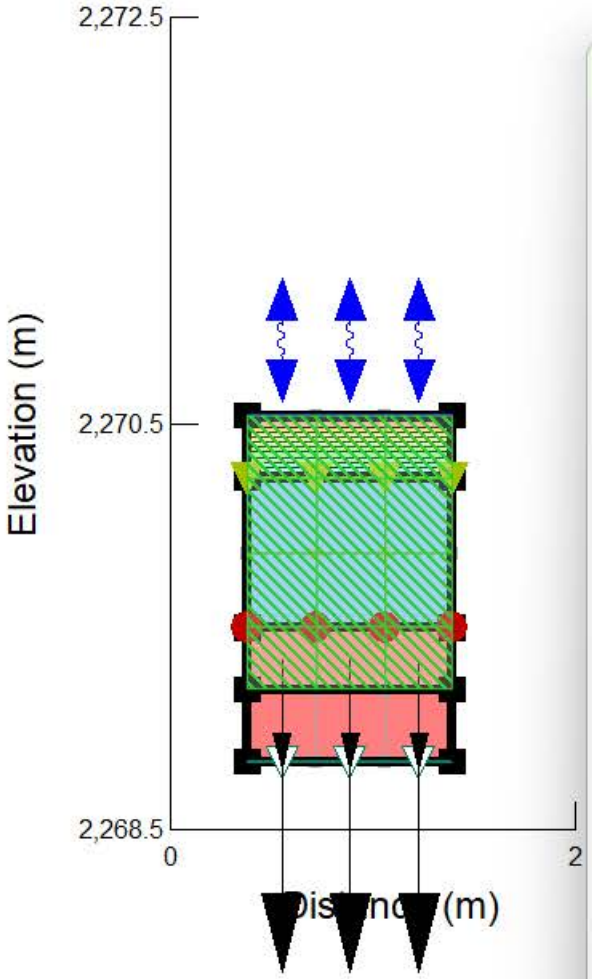


Legend | Use Auto Scale

Auto Refresh | X Axis Range: to

Refresh

Undo | Redo | Help | More | Close



Draw Graph

Add | Delete

Name	Y	X
(2024)water balance - ...	Cumulative Runoff	Time
(2024)water balance - ...	Cumulative Pote...	Time
(2024)water balance: d...	Cum Water Vol...	Time
Cummulative Change in...	Cumulative Cha...	Time

Name: ative Change in Water Volume (Cover System)

Kind: Mesh

Set Locations...

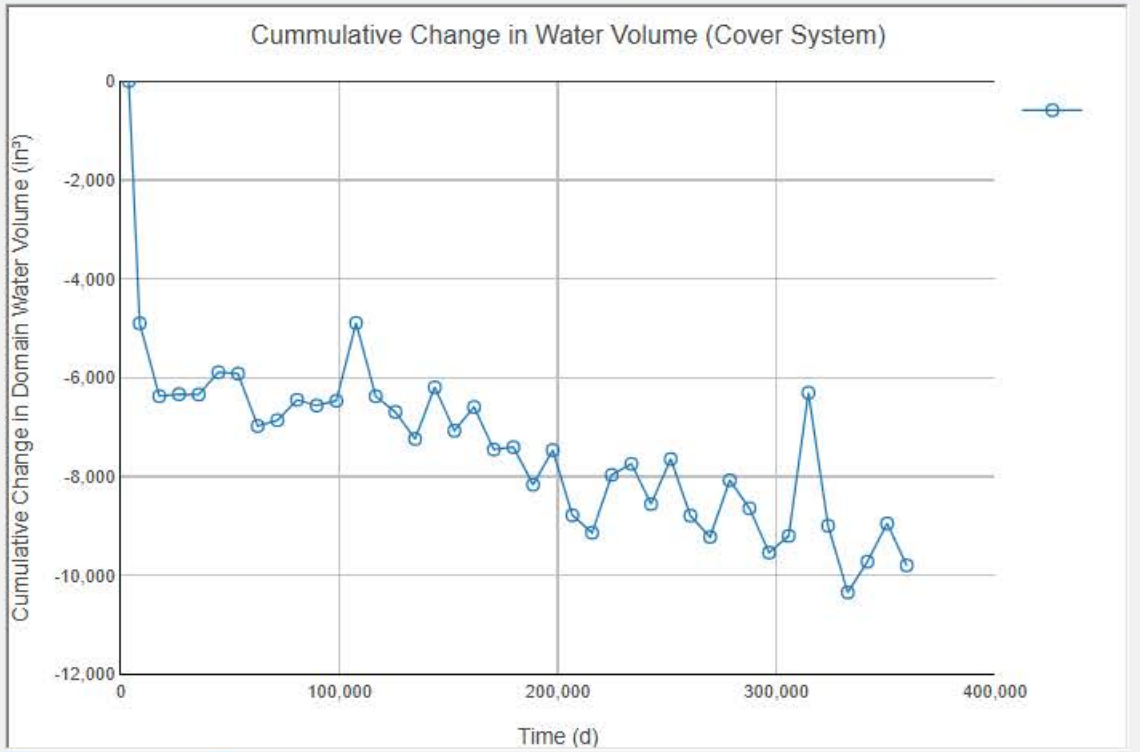
Water Mass Balance | Cumulative Change in Domain

vs. Time | Default

Select Steps: All

Step	Elapsed Time ...	Analysis Name
0	3,650	Transient Seepage (1000)
500	8,650	Transient Seepage (1000)
1400	17,650	Transient Seepage (1000)
2300	26,650	Transient Seepage (1000)
3200	35,650	Transient Seepage (1000)
4100	44,650	Transient Seepage (1000)

Sum (Y) vs. Average (X) Values

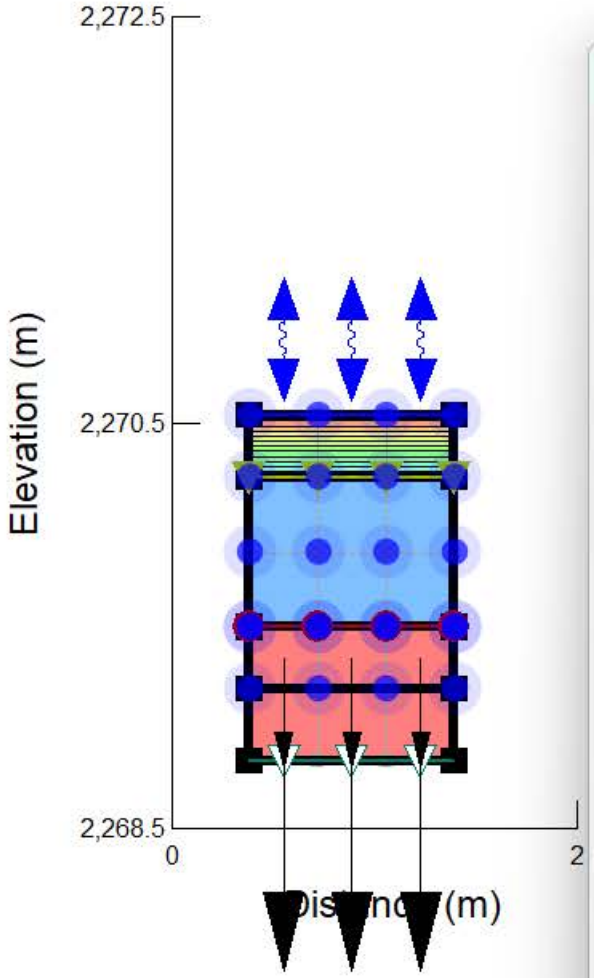


Legend | Use Auto Scale

Auto Refresh | X Axis Range:

Refresh | to

Undo | Redo | Help | More | Close



Draw Graph

Add | Delete

Name	Y	X
Water Balance Error: C...	Water Balance Err	Time
Water Flow Through C...	Cum Water Vol...	Time
Water Flux	Water Total Head	Dista...
Water Flux From Clay t...	Water Y Flux	Time

Name: Water Flow Through Cover System

Kind: Mesh

Set Locations...

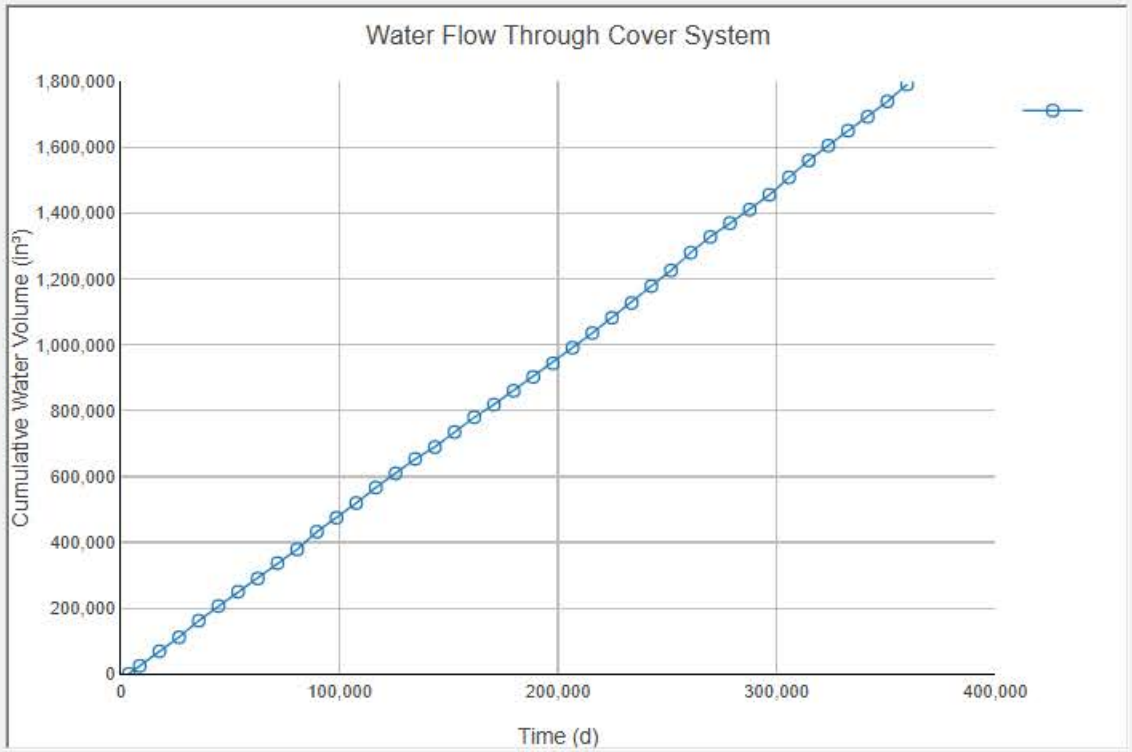
Water Flow | Cumulative Water Volume

vs. Time | Default

Select Steps: All

Step	Elapsed Time ...	Analysis Name
0	3,650	Transient Seepage (1000)
500	8,650	Transient Seepage (1000)
1400	17,650	Transient Seepage (1000)
2300	26,650	Transient Seepage (1000)
3200	35,650	Transient Seepage (1000)
4100	44,650	Transient Seepage (1000)

Sum (Y) vs. Average (X) Values

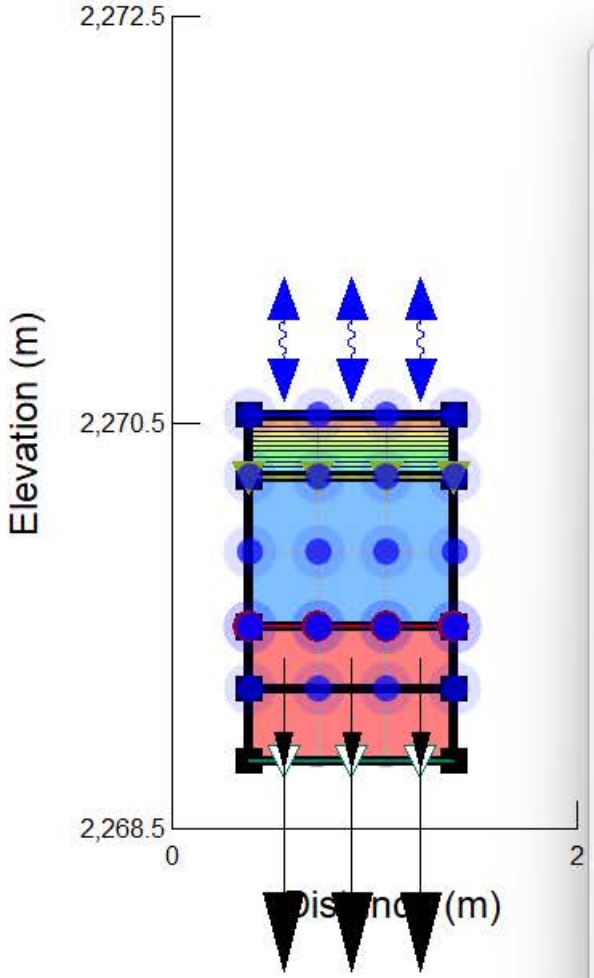


Legend | Use Auto Scale

Auto Refresh | X Axis Range:

Refresh | to

Undo | Redo | Help | More | Close



Draw Graph

Add | Delete

Name	Y	X
cumulative change in m...	Cumulative Cha...	Time
error: cumulative	Water Balance Err	Time
Fkux Section	Water Y Flux	Time
Flux Through Cover Syt...	Water Y Flux	Time

Name: Flux Through Cover Sytem

Kind: Mesh

Set Locations...

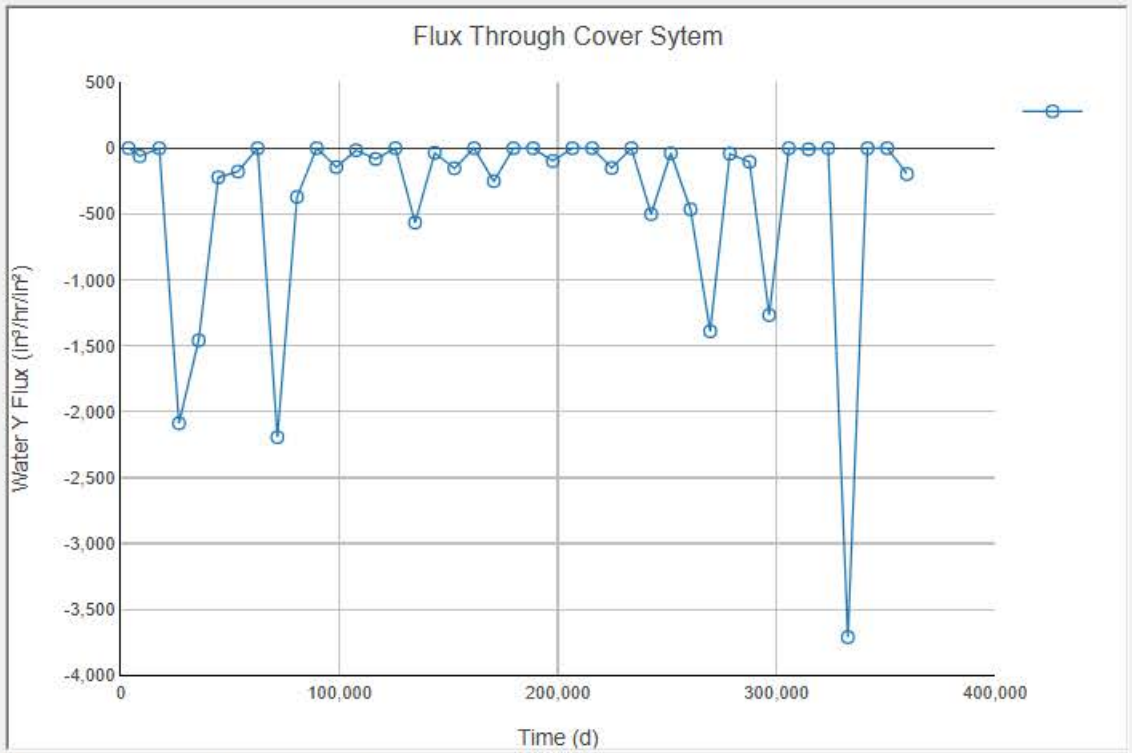
Water Flow | Water Y Flux

vs. Time | Default

Select Steps: All

Step	Elapsed Time ...	Analysis Name
0	3,650	Transient Seepage (1000)
500	8,650	Transient Seepage (1000)
1400	17,650	Transient Seepage (1000)
2300	26,650	Transient Seepage (1000)
3200	35,650	Transient Seepage (1000)
4100	44,650	Transient Seepage (1000)

Sum (Y) vs. Average (X) Values



Legend | Use Auto Scale

Auto Refresh | X Axis Range:

Refresh | to

Undo | Redo | Help | More | Close

APPENDIX G
CLIMATE DATA COMPARISON

Engineering Analytics, Inc.
Now Part of MacKay

Fort Collins Office
1600 Specht Point Road, Suite 209, Fort Collins, CO 80525
970.488.3111 / GoMacKay.com

Technical Memorandum

To:	Rio Grande Resources	**From:**	Jason Andrews, PE Olu Iwakun, P.Eng
Company:	Rio Grande Resources	**Date:**	August 5, 2026
EA No.:	111360		
Re:	Statistical Comparison of 2018–2025 Climate Data to Historical and Regional Design-Support Datasets – Mt. Taylor / San Mateo Area		
Cc:			

1.0 INTRODUCTION

The Mt. Taylor Uranium Mine is in the San Mateo area of west-central New Mexico, at an elevation of approximately 7,400 feet above mean sea level. An on-site automated weather station has collected continuous meteorological data since October 2017. This memorandum uses complete calendar years (January through December 2018–2025) for annual statistical comparisons.

This memorandum presents a statistical comparison of recent climate conditions (2018–2025) to the broader historical record used for Mt. Taylor disposal cell design support near San Mateo and Grants, New Mexico. The analysis focuses on three climate variables critical to long-term cover performance and design: annual precipitation, mean annual temperature, and the Air Freezing Index (AFI). Unless otherwise noted, references to AppD3-1, AppD3-2, and AppD3-3 refer to Appendices D3-1 through D3-3 of the 2025 *Mt. Taylor Disposal Cell Design Report* prepared by Engineering Analytics, Inc. for Rio Grande Resources, Project No. 111360. The primary goal is to assess whether the regional meteorological data and design-basis climate inputs, including the Gallup 1981–2010 precipitation normal, the AppD3-1 temperature comparison dataset, the AppD3-2 AFI comparison dataset, and the NCEI NM3422 long-term temperature trend record is statistically consistent with the recent, onsite, climate period (2018–2025).

1.1 Data Sources

Recent site climate data (2018–2025) were obtained from the San Mateo station dataset. Long-term regional precipitation context is based on the Gallup Municipal Airport 30-year climate normal, which provides the most appropriate standardized annual precipitation baseline for the Mt. Taylor area because it is a published NCDC/NCEI climate normal, covers the standard 1981–2010 climatological averaging period, represents the same regional semi-arid precipitation regime, and provides a complete annual normal where the NM3422 Grants dataset does not provide a complete annual precipitation series suitable for this comparison. Rice Park SNOTEL is used separately for high-elevation snowpack, snow water equivalent (SWE), winter precipitation, frost penetration, accumulated freezing index (AFI), snowmelt infiltration, and Rio San Jose Integrated Hydrologic Model (RSJIHM) calibration. These datasets are complementary but not interchangeable.

1.2 Analytical Approach

This analysis is structured to determine whether the complete San Mateo on-site climate record for 2018–2025 is consistent with the historical and regional datasets used to support the Mt. Taylor disposal cell design basis. The comparison is not intended to prove that separate datasets are identical or interchangeable. Instead, it evaluates whether recent site observations fall within the range of conditions represented by the applicable design-support datasets. This distinction is important because each dataset serves a different technical purpose: Gallup provides the long-term annual precipitation normal, AppD3-1 and AppD3-2 from EA's 2025 *Mt. Taylor Disposal Cell Design Report* provide historical temperature and AFI comparison datasets, NCEI NM3422 provides long-term regional temperature trend context, and Rice Park SNOTEL supports winter hydrology, snowpack, SWE, frost penetration, AFI calibration, snowmelt infiltration, and RSJIHM calibration.

The analytical approach combines descriptive statistics, targeted hypothesis testing, and visual diagnostics. Descriptive statistics summarize the San Mateo annual record for precipitation, mean annual temperature, and AFI using the mean, standard deviation, range, and observed minimum and maximum values. The San Mateo summary statistics are then compared with the appropriate design-support benchmarks: the Gallup 1981–2010 annual precipitation normal, AppD3-1 temperature values, the historical-only AppD3-2 AFI values, and NCEI NM3422 long-term temperature trend data. A one-sample t-test is used for San Mateo precipitation against the Gallup annual normal, while Welch's two-sample t-tests are used for mean annual temperature and AFI because those comparisons involve samples with unequal sizes and variances. The results are interpreted in terms of design relevance, with emphasis on whether the recent site record supports continued use of the existing precipitation, temperature, AFI, water-balance, and frost-penetration assumptions.

2.0 SITE DESCRIPTION, CLIMATE SETTING, AND DATA SOURCES

2.1 Site Setting and Regional Climate Context

The Mt. Taylor Uranium Mine disposal cell area is in the San Mateo Mountains of Cibola County, New Mexico, within the southern Colorado Plateau physiographic province at an elevation of approximately 7,400 feet above mean sea level. The climate is semi-arid continental, characterized

by low humidity, high solar radiation, large diurnal temperature swings, and a pronounced North American Monsoon precipitation pattern during July through September.

For historical context, this analysis references NCEI station NM3422 (Grants, New Mexico), regional precipitation normals from Gallup Municipal Airport, Rice Park SNOTEL winter hydrology data, and summary statistics from the Mt. Taylor Mine design report. Gallup is used as the regional mean annual precipitation baseline because it is the nearest appropriate standardized 30-year climate normal with a published annual precipitation value, represents the same broad semi-arid regional precipitation setting, and provides a defensible long-term reference where NM3422 does not provide a complete annual precipitation series suitable for this comparison. Rice Park is used for SWE, snowpack, winter precipitation, AFI, frost penetration, snowmelt infiltration, and RSJIHM calibration because those processes cannot be evaluated from the Gallup climate normal.

2.2 Regional Climate Overview

Mean annual temperature in the region ranges from approximately 48°F to 54°F depending on elevation and period of record. NCEI Station NM3422 at Grants, New Mexico, records a mean annual temperature of approximately 49.93°F for the 1975–2025 period, with a statistically significant warming trend of +0.033°F per year ($R^2 = 0.37$, $p < 0.001$). Precipitation is bimodal, with a dominant monsoon contribution in summer and a secondary winter precipitation season. The 1981–2010 climate normal at Gallup Municipal Airport (NCDC Station 293422) gives an average annual precipitation of 11.65 inches.

The Gallup normal is used in this memo for annual precipitation comparison because it is a published 30-year climatological normal rather than a short-term site record, and it therefore provides a stable regional benchmark for evaluating whether the 2018–2025 San Mateo record is anomalous. Its use is limited to annual precipitation context and statistical comparison; it is not used to characterize site-specific storm intensity, snowpack, SWE, or winter hydrologic processes.

2.3 Instrumentation and Station Description

The on-site San Mateo weather station provides automated recording of temperature (maximum, minimum, and mean), precipitation (tipping bucket rain gauge), wind speed and direction, and derived parameters including heating and cooling degree days. Data collection began in October 2017. Only complete calendar years (2018–2025) are used for annual analyses.

3.0 HYDROLOGIC AND THERMAL CHARACTERIZATION

This section characterizes the site's hydrologic regime, thermal profile, and precipitation frequency using data from the San Mateo station, NCEI NM3422 (Grants, NM), and regional frequency analyses.

3.1 Monthly Precipitation and Evapotranspiration

Site monthly precipitation exhibits a pronounced summer monsoon pattern, with precipitation elevated during May through September and strongest during July through September. July has the highest San Mateo monthly average of 2.05 inches. Potential evapotranspiration (PET), estimated via the Thornthwaite method, peaks in July at 5.26 inches. On an annual basis, PET substantially exceeds precipitation; monthly PET exceeds precipitation during the primary warm-season moisture-demand period, while several winter months show small monthly precipitation surpluses. Table 3-1 and Figure 3-1 present the monthly comparison.

Table 3-1 Monthly Precipitation and Potential Evapotranspiration (PET) Summary

Month	Precipitation (in)	Potential ET (in)	Monthly Deficit (in)
January	0.38	0.00	−0.38
February	0.26	0.16	−0.10
March	0.48	0.69	0.21
April	0.28	1.76	1.48
May	0.71	3.15	2.44
June	0.94	4.74	3.80
July	2.05	5.26	3.21
August	1.71	4.70	2.99
September	1.45	3.46	2.01
October	0.86	1.83	0.97
November	0.59	0.57	−0.02
December	0.30	0.13	−0.17
Annual Total	**10.01**	**26.45**	**16.44**

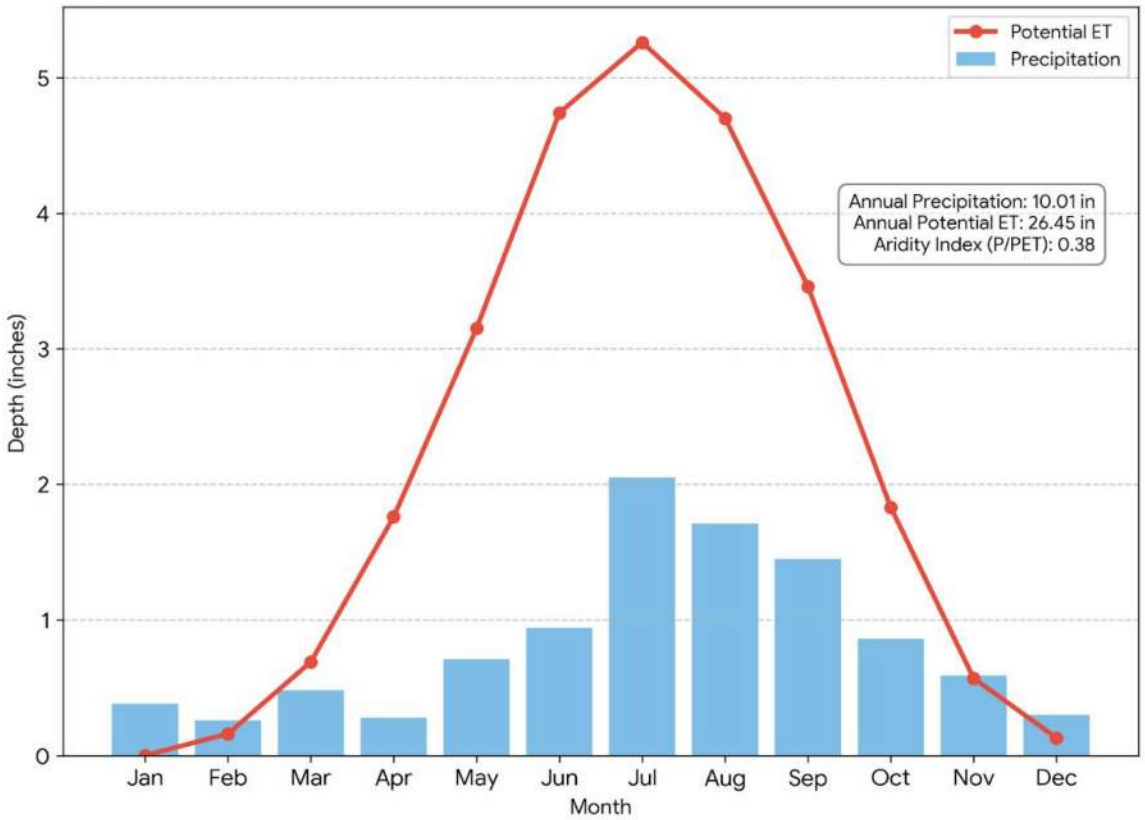


Figure 3-1 Monthly Precipitation and Potential Evapotranspiration

3.2 Precipitation Depth-Duration-Frequency

Table 3-2 and Figure 3-2 summarize precipitation depth-duration-frequency data for the site, using regional frequency analysis. Table 3-2 lists precipitation depths for various return periods (2 to 100 years) and durations (1-hour to 24-hour), showing that longer return periods correspond to higher rainfall amounts; for example, the 24-hour depth for a 2-year event is 1.2 inches, increasing for rarer storms. These values inform stormwater management design.

Table 3-2 Precipitation Depth-Duration-Frequency Summary (inches)

Return Period (years)	1-Hour	6-Hour	12-Hour	24-Hour
2	0.72	0.94	1.05	1.20
5	0.96	1.19	1.32	1.50
10	1.14	1.39	1.53	1.74
25	1.39	1.66	1.82	2.06
50	1.58	1.88	2.04	2.31
100	1.78	2.10	2.27	2.56

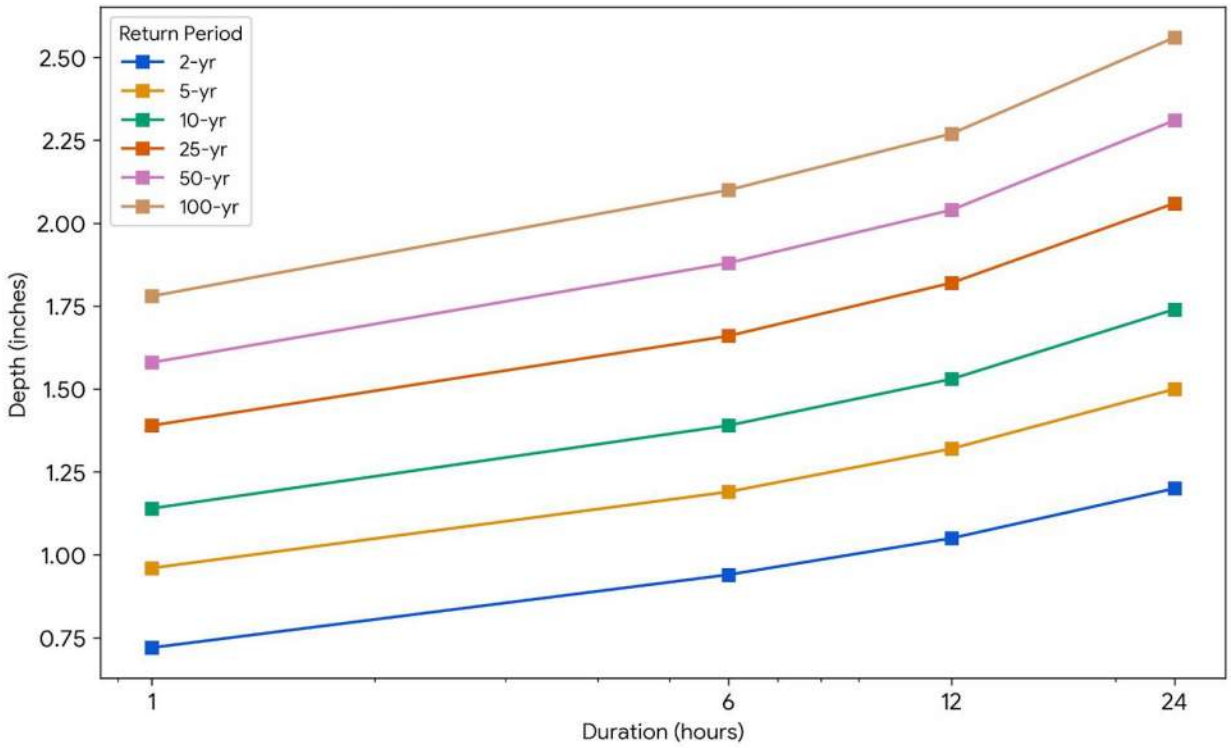


Figure 3-2 Precipitation Depth-Duration-Frequency (DDF) Curves

Figure 3-2 compares precipitation depths across durations and return periods. The curves show increasing depth with both longer duration and rarer recurrence intervals, including the 100-year, 24-hour storm depth of 2.56 inches. These values support stormwater conveyance, erosion protection, and run-on/runoff control design.

3.3 Cumulative Water Balance

Figure 3-3 shows cumulative water-year precipitation of 10.01 inches and PET of 26.45 inches, producing an annual moisture deficit of 16.44 inches. The aridity index of 0.38 classifies the site as semi-arid under the UNESCO definition (AI < 0.50) and confirms that annual evapotranspiration demand substantially exceeds precipitation.

Table 3-3 Annual Water Balance Summary

Component	Value (inches/year)	Source
Annual Precipitation (P)	10.01	San Mateo station 2018–2025 monthly means
Estimated Annual PET	26.45	Thornthwaite method (site temperatures at 35°N)
Annual Moisture Deficit (PET − P)	16.44	Calculated
Aridity Index (P/PET)	0.38	Calculated (semi-arid classification)
Gallup Annual Normal Precipitation	11.65	NCDC 1981–2010 normals

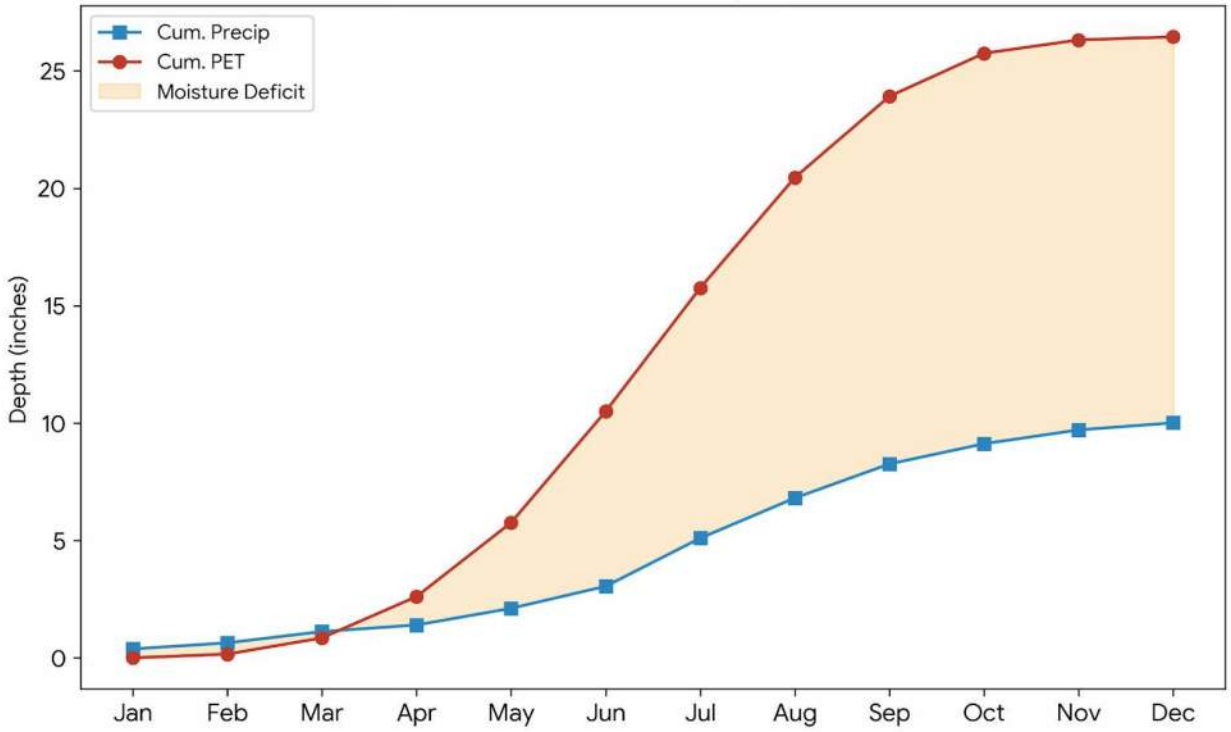


Figure 3-3 Cumulative Water Year Precipitation and PET Analysis

Table 3-3 summarizes the annual water-balance components supporting Figure 3-3. Annual precipitation is based on San Mateo monthly means, while PET is estimated using the Thornthwaite method. The annual precipitation total of 10.01 inches is substantially lower than the estimated annual PET of 26.45 inches, resulting in a persistent annual moisture deficit. Together, Table 3-3 and Figure 3-3 confirm the site's semi-arid hydrologic setting and support use of evapotranspiration-based cover-system design assumptions

3.4 Regional Temperature Trend

Analysis of NCEI Station NM3422 (Grants, NM) mean annual temperature data for 1975–2025 reveals a statistically significant warming trend of +0.033°F per year ($R^2 = 0.37$, $p < 0.001$), corresponding to approximately 1.7°F of total warming over 51 years. The San Mateo on-site temperatures (2018–2025) plot consistently above the NCEI station values, reflecting station exposure, instrumentation, and local microclimate differences between the Grants station and the mine site. This regional warming trend provides context for interpreting the site-to-historical temperature comparison in Section 6. The time series and trend line are presented in Figure 3-4.

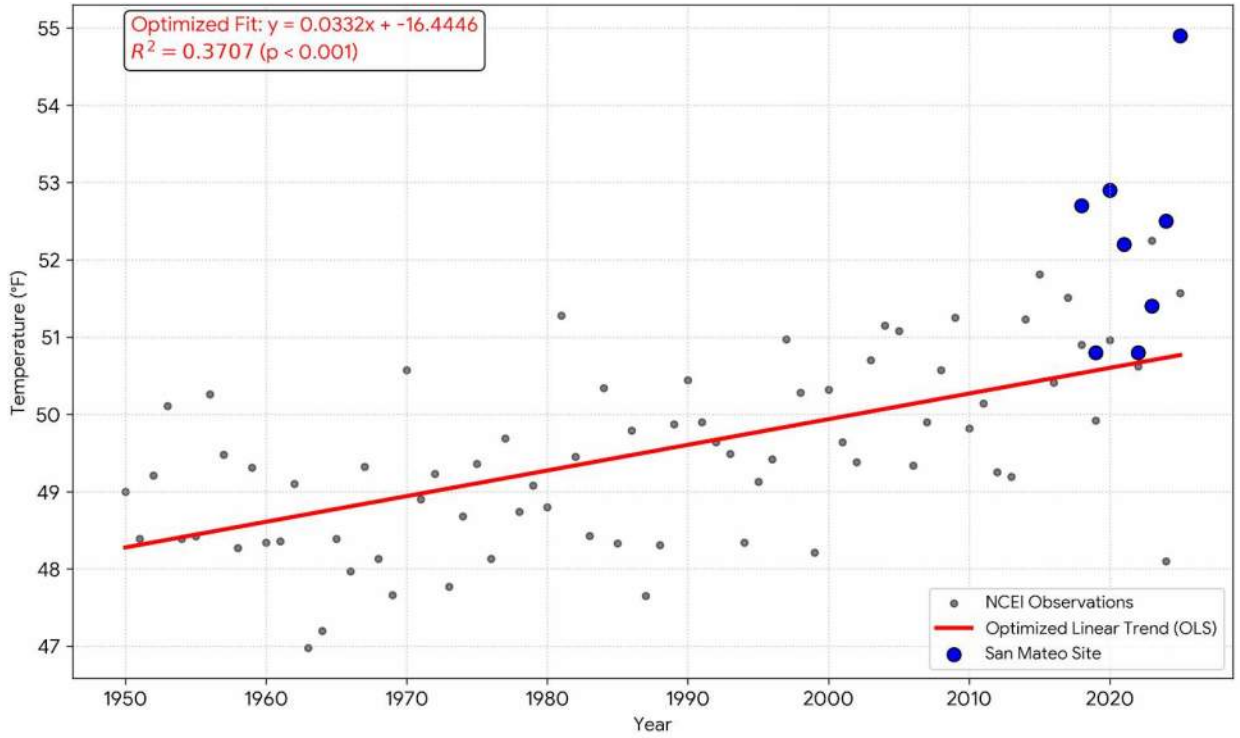


Figure 3-4 Mean Annual Temperature Trend (NCEI Station NM3422, Grants, NM)

4.0 METHODOLOGY AND STATISTICAL FRAMEWORK

The comparative analysis uses a multi-tiered statistical framework designed to answer the regulatory and engineering question raised in review: whether the recent San Mateo site record is consistent with the climate datasets used to support Mt. Taylor design assumptions. Each method below is included to show what was calculated, why it matters, and how the result informs use of the Gallup precipitation normal, the AppD3 temperature and AFI appendix datasets from EA's 2025 *Mt. Taylor Disposal Cell Design Report*, and Rice Park winter hydrology information.

4.1 Descriptive Statistics

For each applicable dataset, the mean, standard deviation, variance, minimum, and maximum were computed where the underlying annual values were available. These statistics matter because they show both the central tendency and the spread of the record; a recent site mean that falls within normal historical variability supports continued use of the existing design-basis climate inputs.

$$\bar{x} = \frac{\sum x_i}{n}, s = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n-1}}$$

Where a dataset is represented only by a published climatological normal, such as the Gallup annual precipitation normal, the analysis uses that value as the long-term regional mean rather than treating it as a full annual distribution.

4.2 Hypothesis Testing Framework

Mean annual temperature and AFI were compared between the recent period (2018–2025) and the historical baseline (1975–2024) using Welch's two-sample t-test, which does not assume equal variances or equal sample sizes. This method is appropriate because the historical and recent datasets have unequal variances and sample sizes. The test statistics are:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}},$$

with $\bar{x}_1, s_1, n_1$ and $\bar{x}_2, s_2, n_2$ denoting the means, standard deviations, and sample sizes for the recent and historical periods, respectively. A Welch-type t-test (unequal variances) is appropriate given the differing standard deviations. Effect sizes are summarized using Cohen's d, defined as:

$$d = \frac{\bar{x}_1 - \bar{x}_2}{s_{\text{pooled}}},$$

Where s_{pooled} is the pooled standard deviation. Effect sizes were interpreted using conventional screening thresholds of $|d| \approx 0.2$, 0.5, and 0.8 for small, medium, and large effects, respectively. These thresholds were used only to describe practical magnitude; statistical decisions were based on the two-tailed p-values at $\alpha = 0.05$. The tests are complemented by visual diagnostics (boxplots, histograms, and time series) to help reviewers see whether the recent San Mateo record plots within the historical or regional comparison range.

San Mateo precipitation is compared to the Gallup NCDC 30-year normal using a one-sample t-test because Gallup provides the applicable long-term regional annual precipitation mean and the available historical precipitation baseline is represented by a climatological normal rather than a complete annual distribution. Gallup is used for this test because it supplies a published, standardized, 30-year annual precipitation benchmark for the same regional semi-arid climate setting, whereas NM3422 lacks a complete annual precipitation series for direct annual comparison

and Rice Park is intended for SWE and winter hydrology applications. For a one-sample test, the test statistics are:

$$t = \frac{\bar{x} - \mu_0}{s/\sqrt{n}},$$

where $\bar{x}$is the sample mean, $s$is the sample standard deviation, $n$is the sample size, and $\mu_0$is the hypothesized population mean. The null hypothesis $H_0$is that the recent mean equals the historical mean; the alternative $H_A$is that they differ (two-sided test). Degrees of freedom are $n - 1$, and p-values are obtained from the t distribution.

This method is applicable because the historical precipitation dataset is represented by a single climatological normal, not a full distribution. This test evaluates whether the San Mateo mean differs from the long-term regional mean.

4.3 Recurrence-Interval and Extremal Analysis

AFI values were ranked within the historical distribution to determine exceedance probabilities and recurrence intervals. This analysis is included because frost penetration and cover-system performance are controlled by infrequent severe freezing years rather than average annual conditions alone; therefore, AFI return-period estimates provide the design context for comparing recent San Mateo observations with the conservative design-basis AFI.

4.4 Non-Parametric Considerations

A Mann–Whitney U test is typically used for precipitation when comparing two full distributions. However, because the historical precipitation dataset is represented by a single normal (not a full annual series), the one-sample t-test is the appropriate method for this analysis.

Table 4-1 San Mateo Station Annual Climate Summary (2018–2025)

Year	Annual Precipitation (in)	Mean Annual Temperature (°F)	Air Freezing Index (degree-days)
2018	10.86	52.7	401
2019	11.90	50.8	330
2020	7.84	52.9	311
2021	8.56	52.2	307
2022	15.33	50.8	524
2023	8.42	51.4	312
2024	10.46	52.5	236
2025	6.81	54.9	83

5.0 DATA SOURCES AND COMPARATIVE DATASETS

5.1 On-Site Data (San Mateo Station, 2018–2025)

Table 5-1 presents the complete annual climate summary from the San Mateo on-site weather station for all eight years of complete record. The data show year-to-year variability in precipitation, temperature, and Air Freezing Index, providing a basis for comparative climate analysis.

5.2 Historical Baseline Sources

The historical and regional baseline relies on the San Mateo site record, regional NCEI and Gallup datasets, the AppD3 appendices from the Mt. Taylor disposal cell design report, and Rice Park SNOTEL winter hydrology data. These sources are used for different technical purposes and should not be treated as interchangeable.

NCEI Station NM3422 at Grants, New Mexico, provides the regional mean annual temperature record used to evaluate long-term temperature trends from 1975 through 2025. The NM3422 trend record provides climate context, while Appendix D3-1 of the 2025 *Mt. Taylor Disposal Cell Design Report* provides the historical comparison statistics used for the Section 6 temperature test.

Appendices D3-1 through D3-3 are appendices to Engineering Analytics, Inc.'s 2025 *Mt. Taylor Disposal Cell Design Report* for Rio Grande Resources, Project No. 111360. They are not separate monitoring stations or independent source documents. Appendix D3-1 provides the mean annual temperature distribution used for the historical temperature comparison. Appendix D3-2 provides the Air Freezing Index distribution used for the AFI comparison and return-period analysis; for statistical testing, San Mateo site values embedded in the combined AppD3-2 population were removed to create an independent historical-only subset. Appendix D3-3 is retained as part of the same design-support appendix set and should be cited with the other D3 appendices when referencing the underlying design report.

The Gallup Municipal Airport climate normals for NCDC Station 293422 provide the standardized 1981–2010 regional annual precipitation normal used as the long-term precipitation benchmark. The 11.65-inch annual normal is appropriate for statistical comparison because it is a published 30-year climatological normal, represents the broader semi-arid precipitation regime around the Mt. Taylor area, and provides a complete annual precipitation benchmark where NM3422 does not provide a suitable annual precipitation series. Gallup is used only for annual precipitation context and is not used to represent SWE, snow accumulation, or winter hydrologic processes.

Table 5-2 presents the Gallup monthly climate normals to document the source of the 11.65-inch annual precipitation benchmark used in the comparison with the San Mateo annual precipitation record. Its inclusion does not imply that Gallup replaces site-specific San Mateo monitoring or Rice Park winter hydrology data.

Rice Park SNOTEL is used as a separate, complementary high-elevation winter hydrology dataset. It supports SWE, snowpack, winter precipitation, snowmelt infiltration, frost penetration, AFI calibration, and RSJIHM calibration. Because Gallup and Rice Park represent different climate processes and elevation settings, Gallup establishes the regional annual precipitation baseline while Rice Park supplies winter hydrologic information needed for model support where snow accumulation and melt timing affect seasonal infiltration.

Table 5-1 1981–2010 Monthly Climate Normals — Gallup Municipal Airport (NCDC 293422)

Month	Avg Max Temp (°F)	Avg Min Temp (°F)	Avg Total Precipitation (in)
January	44.7	13.3	0.80
February	49.5	18.4	0.72
March	56.8	22.7	0.79
April	65.0	28.3	0.61
May	74.9	36.7	0.54
June	84.6	45.1	0.53
July	87.8	53.4	1.73
August	84.9	52.7	2.07
September	78.7	43.5	1.29
October	67.6	30.7	0.94
November	53.1	19.7	0.83
December	45.1	13.7	0.81
Annual	**66.2**	**31.6**	**11.65**

5.3 Historical Baseline Statistics

Table 5-3 summarizes the historical baseline statistics used in the hypothesis testing in Section 6. As noted in Section 1, AppD3-1, AppD3-2, and AppD3-3 refer to appendices in the 2025 *Mt. Taylor Disposal Cell Design Report* prepared by Engineering Analytics, Inc. For the Air Freezing Index, the AppD3-2 distribution contains San Mateo site values (2018–2024) embedded within the combined population. To ensure an independent comparison, the historical-only subset was isolated by removing the seven known site values, yielding n = 34 independent historical observations.

Table 5-2 Historical Baseline Statistical Summary

Parameter	Source	Period	n	Mean	Standard Deviation
Mean Annual Temperature (°F)	AppD3-1 (NCEI NM3422)	1975–2021	42	51.52	2.37
Annual Precipitation (in)	Gallup NCDC 30-yr Normal	1981–2010	30	11.65	—
Air Freezing Index (degree-days)	AppD3-2 (historical only)	1975–2017	34	225.15	169.27

Note: AppD3-2 historical-only subset excludes San Mateo site AFI values (2018–2024) from the combined n = 50 population to ensure statistical independence.

5.4 Descriptive Statistics Comparison

Table 5-4 shows descriptive statistics for the Gallup normal and San Mateo datasets, allowing direct comparison of annual precipitation from 2018–2025 against a long-term regional precipitation benchmark. Gallup is used for this comparison because it provides a standardized 30-year annual normal rather than a short-term record, giving reviewers a stable basis for determining whether recent site precipitation is outside expected regional conditions. The comparison is therefore intended to evaluate consistency with the regional annual precipitation design basis, not to substitute Gallup for site-specific monitoring or Rice Park winter hydrology data.

Gallup Normal's annual precipitation averages 11.65 inches over the 1981–2010 climatological normal period. Because the normal is used as a published annual benchmark rather than a complete annual distribution, only the mean is used in the one-sample precipitation comparison. The San Mateo record provides recent site-specific annual variability, while Gallup provides the long-term regional annual precipitation reference.

Table 5-4 illustrates how San Mateo's recent precipitation and climate statistics compare to the applicable historical or regional benchmarks used for Mt. Taylor Mine design support. These comparisons support evaluation of cover-system performance, infiltration model inputs, stormwater design assumptions, and frost-penetration design criteria.

Table 5-3 Descriptive Statistics Comparison — Historical vs. San Mateo (2018–2025)

Parameter	Dataset	n	Mean	SD	Variance	Min	Max
Annual Precip (in)	Gallup Normal	30	11.65	—	—	—	—
Annual Precip (in)	San Mateo	8	10.02	2.74	7.48	6.81	15.33
Mean Temp (°F)	AppD3-1 Historical	42	51.52	2.37	5.62	46.66	57.71
Mean Temp (°F)	San Mateo	8	52.27	1.34	1.81	50.80	54.90
AFI (degree-days)	AppD3-2 Historical	34	225.15	169.27	28,652	46	786
AFI (degree-days)	San Mateo	8	313.00	126.17	15,918	83	524

6.0 STATISTICAL TESTING

6.1 Analysis Basis

As discussed in Section 4, three statistical hypothesis tests were conducted to determine whether the San Mateo site record for 2018–2025 (n = 8) differs significantly from the historical climate population. All tests were performed as two-tailed analyses at the $\alpha = 0.05$ significance level, corresponding to 95% confidence.

Section 4 outlines the methodology for evaluating annual precipitation. This assessment compares the San Mateo site mean precipitation to the Gallup NCDC 30-year normal of 11.65 inches, treating the Gallup normal as the regional population mean for annual precipitation. EA selected this benchmark because it is a published 1981–2010 30-year climate normal, represents the same broad semi-arid precipitation regime, and provides a complete annual precipitation normal suitable for statistical comparison, whereas NM3422 does not provide a complete annual precipitation record for this purpose. Rice Park SNOTEL is not used as the annual precipitation baseline; instead, it supports evaluation of SWE, snowpack, winter precipitation, snowmelt infiltration, frost penetration, AFI behavior, and RSJIHM calibration.

Following the approach outlined in Section 4, we used Welch's two-sample t-test to compare mean annual temperature because the site and historical samples had unequal variances and sample sizes. The San Mateo site sample (n = 8, SD = 1.34°F) had lower variance than the historical population (n = 42, SD = 2.37°F), so the standard pooled-variance t-test would not be appropriate. To evaluate differences in AFI values between the San Mateo site and the historical-only subset of AppD3-2 (n = 34), we also applied Welch's two-sample t-test. Before testing, we ensured statistical independence by removing San Mateo AFI values from the AppD3-2 combined population.

6.2 Test Inputs

Table 6-1 summarizes the input parameters for the three hypothesis tests, including sample sizes, means, standard deviations, and test types. Presenting these inputs together supports reproducibility and allows direct review of the statistical basis for the results in Table 6-2.

Table 6-1 Statistical Test Input Parameters

Parameter	Sample	n	Mean	Standard Deviation	Test Type
Temperature (°F)	San Mateo (site)	8	52.27	1.34	Welch's two-sample t-test
Temperature (°F)	AppD3-1 (historical)	42	51.52	2.37	Welch's two-sample t-test
Precipitation (in)	San Mateo (site)	8	10.02	2.74	One-sample t-test
Precipitation (in)	Gallup Normal (population mean)	30	11.65	—	One-sample t-test
AFI (degree-days)	San Mateo (site)	8	313.00	126.17	Welch's two-sample t-test
AFI (degree-days)	AppD3-2 (historical only)	34	225.15	169.27	Welch's two-sample t-test

6.3 Hypothesis Test Results

Table 6-2 presents the complete results for all three hypothesis tests. In each case, the null hypothesis states that the site mean equals the historical mean, or the known population parameter for precipitation. The results are used to determine whether observed differences are large enough to affect design-basis interpretation.

Because all three p-values exceed 0.05, none of the tests rejects the null hypothesis. The results therefore indicate statistical consistency between the recent San Mateo record and the applicable comparison benchmarks, while recognizing that the short eight-year site record limits the ability to detect smaller long-term shifts.

Table 6-2 Hypothesis Test Results Summary

Parameter	Null Hypothesis (H_0)	Mean Difference	t-Statistic	Degrees of Freedom	p-Value (two-tailed)	Decision at $\alpha = 0.05$
Mean Annual Temperature	Site mean = Historical mean	+0.75°F	1.26	16.76	0.224	Fail to reject H_0
Annual Precipitation	Site mean = 11.65 in	−1.63 in	−1.68	7	0.136	Fail to reject H_0
Air Freezing Index	Site mean = Historical mean	+87.85 dd	1.65	13.67	0.122	Fail to reject H_0

6.4 Variance Analysis

Table 6-3 presents variance ratios between the site and historical datasets. Ratios below 1.0 indicate that the site record has lower observed variability than the corresponding historical comparison dataset. This result is expected in part because the San Mateo record is limited to eight complete years, whereas the historical datasets span multiple decades.

Table 6-3 Variance Ratio Summary

Parameter	Site Variance	Historical Variance	F-Ratio	Interpretation
Temperature (°F²)	1.81	5.62	0.32	Site variance substantially lower; narrower range of annual means
AFI (dd²)	15,918	28,652	0.56	Site variance moderately lower; compressed range relative to historical

6.5 Interpretation of Results

The site's mean annual precipitation (10.02 inches) is 1.63 inches below the Gallup 30-year normal (11.65 inches), but this deficit is not statistically significant ($t = -1.68$, $p = 0.136$). Because the p-value is greater than 0.05, the analysis does not provide sufficient evidence to conclude that the recent San Mateo precipitation record differs from the long-term regional annual precipitation benchmark. The result should be interpreted as a finding of statistical consistency, not as proof that future site precipitation will remain unchanged. Interannual variability is high (SD = 2.74 inches), driven by the contrast between the 2022 wet anomaly (15.33 inches) and the 2025 drought year (6.81 inches). The wide confidence interval associated with $n = 8$ limits the power to detect moderate departures from the long-term normal, so continued monitoring remains important.

Use of the Gallup normal is appropriate for this interpretation because the question being tested is whether recent site precipitation is statistically consistent with the regional long-term annual precipitation design basis. The Gallup dataset provides that regional annual benchmark; it is not used to replace San Mateo monitoring data or to evaluate snowpack-driven processes better represented by Rice Park SNOTEL.

From an engineering standpoint, the precipitation result supports continued use of the Gallup normal as the long-term regional annual precipitation baseline for comparison and model-input justification. The San Mateo record is site-specific and recent, while the Gallup value represents a

standardized climatological normal. The two datasets serve different purposes: San Mateo documents current site observations, and Gallup provides the regional long-term annual benchmark. This distinction is important because a short site record can be strongly influenced by a few wet or dry years, whereas the climatological normal provides a more stable design-support reference.

Figure 6-1 compares the recent San Mateo annual precipitation distribution with the Gallup 30-year annual precipitation normal used as the regional benchmark. Because Gallup is represented by a climatological normal rather than a full annual distribution in this analysis, the figure should be interpreted as a visual comparison of the San Mateo record against the long-term regional mean, not as a two-distribution test. Overall, Figure 6-1 supports the conclusion that the recent site mean is below, but not statistically different from, the Gallup regional normal.

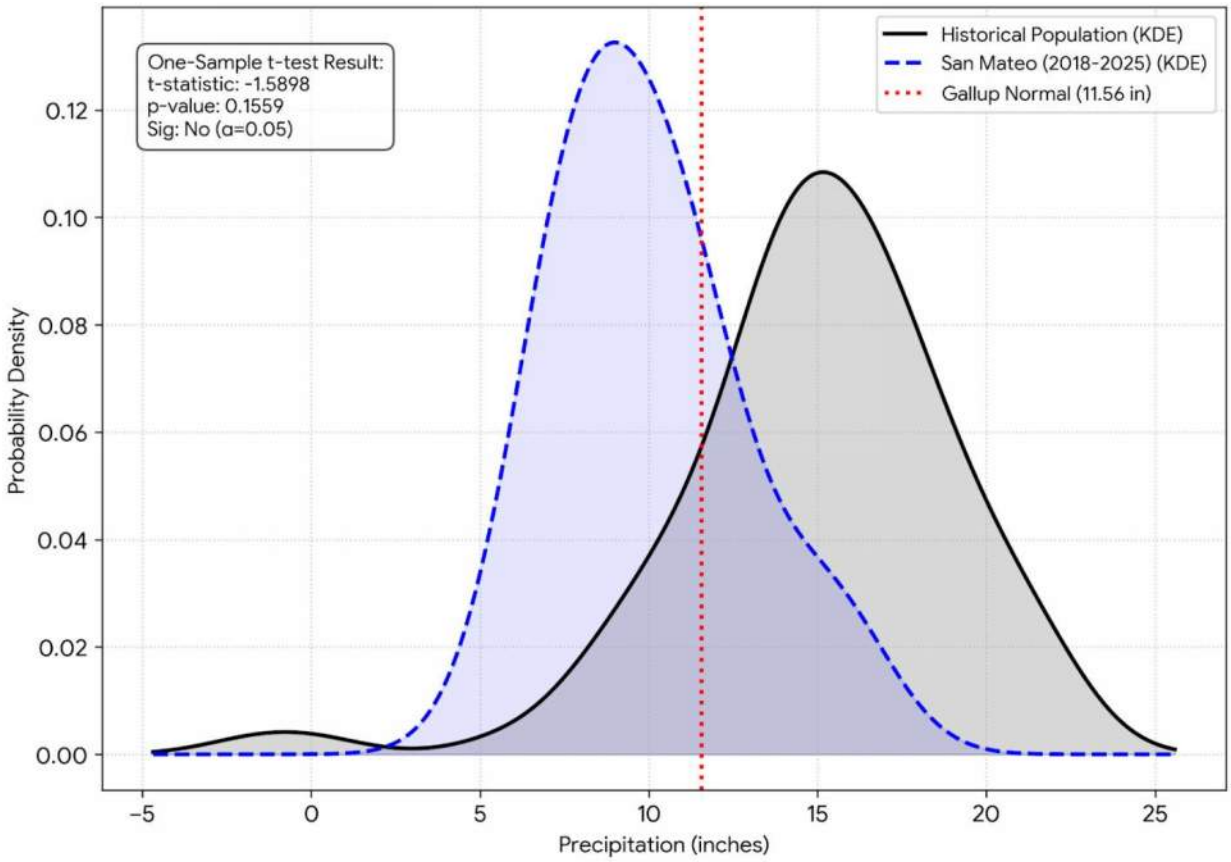


Figure 6-1 Annual Precipitation Probability Density Function

The San Mateo mean annual temperature is 52.27°F, which is 0.75°F above the AppD3-1 historical mean of 51.52°F. This difference is not statistically significant ($t = 1.26$, $p = 0.224$) and is consistent with normal interannual variability. The result indicates that the recent site temperature record is not statistically distinguishable from the AppD3-1 historical comparison population at the 95% confidence level. The site record also shows lower variance than the historical dataset, which is expected given the short eight-year observation period and the fact that a short record is less likely to include the full range of warm and cool years captured by a multi-decade dataset.

Figure 6-2 compares the San Mateo and historical temperature distributions and supports the conclusion that the recent site record falls within the historical comparison range.

The temperature result should also be interpreted alongside the regional warming trend discussed in Section 3.4. Although the San Mateo mean is higher than the AppD3-1 historical mean, the difference is small relative to historical variability and does not meet the statistical threshold for a significant departure. Therefore, the available record does not justify changing the temperature design basis at this time. However, because the regional record indicates a long-term warming trend, continued comparison of site data to the historical baseline is recommended as the San Mateo record lengthens.

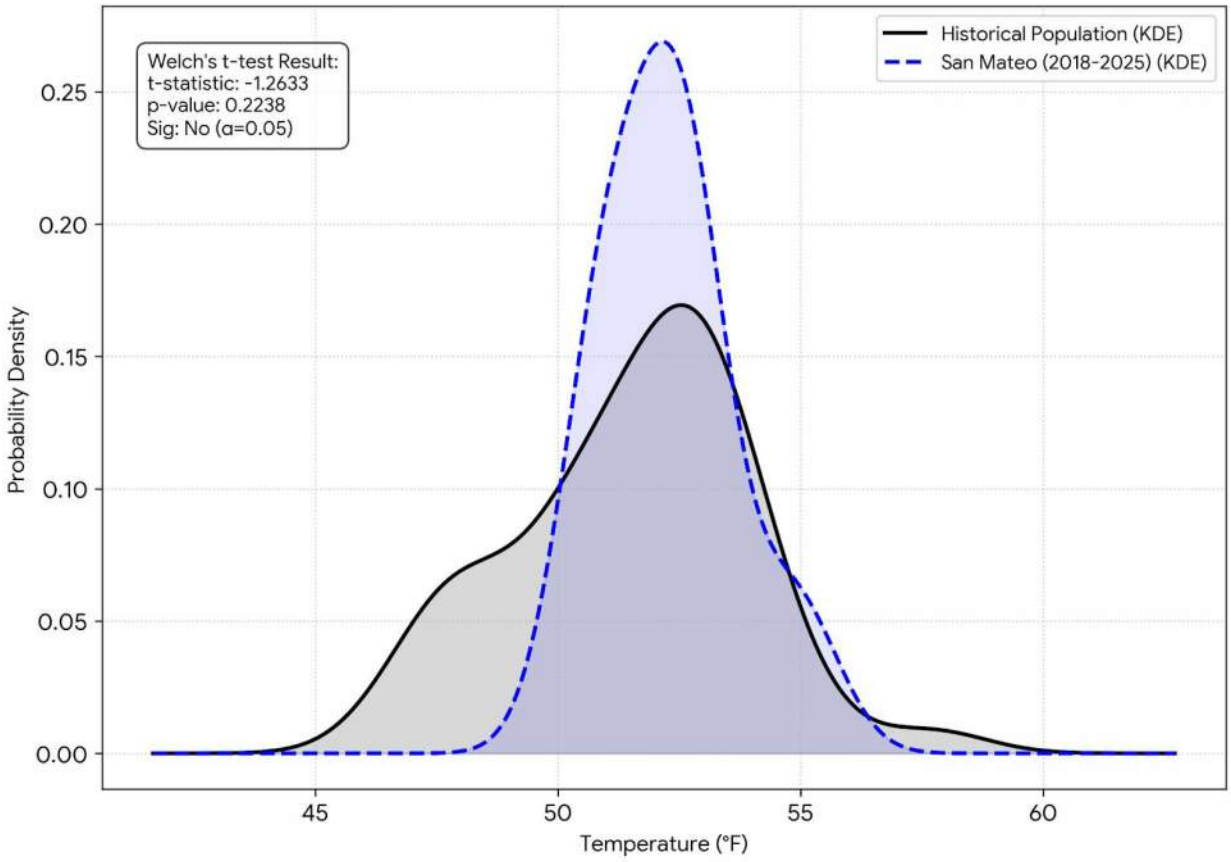


Figure 6-2 Mean Annual Temperature Distribution Comparison

Figure 6-3 compares the Air Freezing Index (AFI) distribution at the San Mateo site (2018–2025) with the historical-only AppD3-2 comparison dataset. San Mateo's AFI values cluster near a higher mean (313.0 degree-days) than the historical-only mean (225.15 degree-days), but they remain within the regional range, which includes both severe and mild freezing events. Welch's two-sample t-test indicates that the difference is not statistically significant at the 0.05 significance level ($t = 1.65$, $p = 0.122$). Therefore, the recent AFI record does not demonstrate a statistically significant shift away from the historical comparison population.

Figure 6-3 illustrates the non-normal, heavy-tailed nature of AFI distributions, which is typical of datasets influenced by rare severe freezing events. Recent San Mateo AFI values include both a relatively severe winter in 2022 (524 degree-days) and a mild winter in 2025 (83 degree-days), demonstrating substantial interannual variability within the short site record.

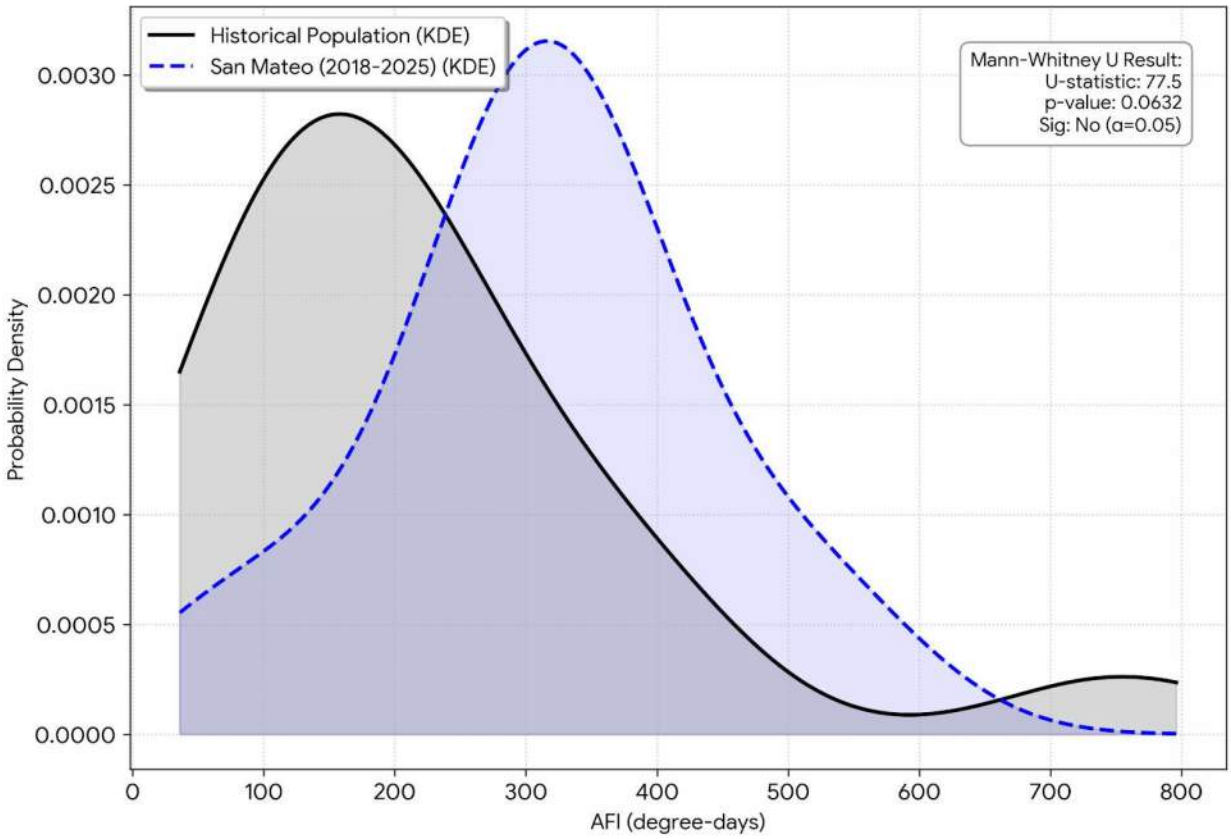


Figure 6-3 Air Freezing Index (AFI) Distribution Comparison

For the Mt. Taylor design basis, the AFI (approximately 927.5°F·days for a 200-year return period; rounded to 928°F·days in Table 7-2) has been conservatively established above recorded historical data. Figure 6-3 illustrates that San Mateo's AFI values display a narrower recent distribution than the historical dataset, while still showing substantial annual variation. This variability remains important for frost-penetration evaluation and cover-system design verification.

The practical implication is that the recent site record supports, rather than undermines, the existing design-basis AFI. The highest San Mateo AFI value in the recent record is 524 degree-days, which is below both the historical maximum of 786 degree-days and the 200-year design-basis AFI of approximately 927.5°F·days. This confirms that the design basis remains conservative relative to the available observed record. At the same time, the AFI dataset is controlled by rare severe freezing years, so a short recent record should not be used to reduce the design basis or narrow the expected range of future freezing conditions.

Overall Interpretation: Taken together, the statistical tests show no significant difference between the recent San Mateo record and the applicable historical or regional comparison datasets for precipitation, mean annual temperature, or AFI. The results support the conclusion that the 2018–2025 site observations remain compatible with the climate assumptions used for Mt. Taylor design support. The findings do not eliminate uncertainty, particularly because the site record includes only eight complete calendar years, but they do indicate that the available evidence does not require revision of the current precipitation, temperature, or frost-index design basis.

The principal limitation of the analysis is record length. With only eight complete years of site data, the tests have limited statistical power and are sensitive to individual years such as the wet 2022 year, dry 2025 year, severe 2022 freezing season, and mild 2025 freezing season. For this reason, the results should be used as a current validation check rather than a final long-term climatological determination. Continued on-site monitoring will improve confidence, reduce uncertainty around the site mean and variance estimates, and provide a stronger basis for future updates.

7.0 FREQUENCY ANALYSIS OF EXTREMES

7.1 Temperature Return Periods

Table 7-1 presents return-period estimates for mean annual temperature using the AppD3-1 best-fit linear regression. These values provide screening-level context for evaluating unusually warm annual mean temperature conditions relative to the historical comparison dataset. The recurrence interval indicates how often a temperature value may be equaled or exceeded; longer recurrence intervals correspond to rarer conditions.

Table 7-1 Temperature Return Period Estimates (AppD3-1 Best-Fit: Y = 2.6549x + 48.992)

Recurrence Interval (years)	Standard Variate	Estimated Mean Annual Temperature (°F)
42	3.73	58.9
50	3.90	59.4
75	4.31	60.4
100	4.60	61.2
125	4.82	61.8
150	5.01	62.3
175	5.16	62.7
200	5.30	63.1

These estimates should be interpreted with caution and used alongside ongoing monitoring and regional trend information because the site record is short and interannual variability remains substantial.

7.2 Air Freezing Index Return Periods

Table 7-2 presents return-period estimates for the Air Freezing Index derived from the AppD3-2 best-fit linear regression (Y = 153.82x + 112.93). The 200-year return-period AFI of approximately 927.5°F·days, rounded to 928°F·days in Table 7-2, serves as the design-basis frost penetration parameter for the Mt. Taylor cover system, consistent with the 200- to 1,000-year design-life context under 10 CFR Part 40, Appendix A.

Table 7-2 AFI Return Period Estimates (AppD3-2 Best-Fit: Y = 153.82x + 112.93)

Recurrence Interval (years)	Standard Variate	Estimated AFI (°F·days)
42	3.73	686
50	3.90	713
75	4.31	776
100	4.60	821
125	4.82	855
150	5.01	883
175	5.16	907
200	5.30	928

7.3 Observed Extreme Event Summary

Table 7-3 presents a summary of extreme events recorded at the San Mateo station and selected historical comparison values. The wettest San Mateo year was 2022, with 15.33 inches of precipitation, while the driest year was 2025, with 6.81 inches. These observed values provide context for interpreting return period estimates in Tables 7-1 and 7-2 and for evaluating cover-system water balance, stormwater controls, and frost-penetration design assumptions.

Table 7-3 Extreme Event Summary

Parameter	Value	Year / Period
Wettest Year (San Mateo)	15.33 in	2022
Driest Year (San Mateo)	6.81 in	2025
Warmest Year (San Mateo)	54.9°F	2025
Coolest Year (San Mateo)	50.8°F	2019 and 2022
Highest AFI (San Mateo)	524 degree-days	2022
Lowest AFI (San Mateo)	83 degree-days	2025
Historical Maximum AFI (AppD3-2)	786 degree-days	1976
Historical Maximum Temperature (AppD3-1)	57.71°F	2012
100-Year 24-Hour Precipitation	2.56 in	NOAA Atlas 14 Vol. 1 Ver. 5

7.4 Freeze-Thaw Considerations

The design-basis AFI for the Mt. Taylor cover system is 927.5°F·days, corresponding to the 200-year return period estimate from the AppD3-2 best-fit frequency analysis (Table 7-2). This value exceeds the historically observed maximum of 786 °F·days (1976) by approximately 18%, reflecting the additional conservatism required for facilities designed to a 200- to 1,000-year performance life under 10 CFR Part 40, Appendix A. No year in the San Mateo record has

approached the design value; the most severe recent winter (2022, AFI = 524 °F·days) is 43% below the design basis. The 50-year return period AFI is estimated at 713 degree-days, and the 100-year value at 821 °F·days (Table 7-2). These return period estimates, rather than the historical maximum alone, inform frost penetration depth calculations for the engineered liner and cover system, ensuring that the design accommodates freezing events more severely than any observed in the instrumental record.

8.0 WATER BALANCE AND COVER SYSTEM IMPLICATIONS

8.1 Annual Moisture Deficit

The annual moisture deficit of 16.44 inches (PET of 26.45 inches minus precipitation of 10.01 inches), as documented in Table 3-3, confirms that evapotranspiration substantially exceeds precipitation on an annual basis. The aridity index of 0.38 places the site firmly in the semi-arid classification zone (UNESCO: AI < 0.50), supporting the viability of evapotranspiration-based cover system designs.

8.2 Implications for Cover System Performance

The monsoon-influenced precipitation pattern means that a substantial portion of annual moisture input occurs during the warmest months, when PET rates are highest. This seasonal coincidence supports cover system performance by increasing the potential for moisture removal during the wettest period. As shown in Figure 3-3, the cumulative annual deficit grows through the water year, confirming that annual evapotranspiration demand substantially exceeds precipitation. The monthly data presented in Table 3-1 show that small winter monthly surpluses occur, but these are outweighed by the large annual moisture deficit.

These findings support the continued adequacy of evapotranspiration-based cover designs for the Mt. Taylor Mine disposal cell. The persistent annual moisture deficit provides a substantial margin of safety against percolation through the engineered cover, even during anomalously wet years such as 2022 (15.33 inches, as shown in Table 5-1).

9.0 REGULATORY COMPLIANCE ASSESSMENT

9.1 Compliance with 40 CFR Parts 264/265

The regulatory relevance of this analysis is limited to supporting the technical basis for climate-related design inputs and long-term cover-system performance assumptions. The statistical testing in Section 6 confirms that recent site conditions do not depart significantly from the historical or regional comparison datasets used in existing facility designs. The precipitation depth-duration-frequency analysis presented in Table 3-2 provides stormwater design context, while the AFI frequency analysis supports frost-penetration and cover-system design review.

9.2 Compliance with CDPHE Regulation 61

The demonstrated aridity index of 0.38 and the documented annual moisture deficit of 16.44 inches (see Table 3-3) provide technical support for evapotranspiration-based cover-system performance claims. Continued on-site monitoring will extend the data record and further strengthen future regulatory and engineering reviews with additional site-specific evidence.

9.3 NRC and UMTRCA Considerations

For uranium mill tailings disposal, climatological data provide technical support for long-term stability and cover-system performance evaluations. The 100-year, 24-hour precipitation depth of 2.56 inches (Table 3-2) and the design-basis AFI of approximately 927.5°F·days (Table 7-2, 200-year return period) represent the primary climate-related design inputs for stormwater, frost-penetration, erosion protection, and radon-barrier performance assessments. The design AFI exceeds the historical observed maximum of 786°F·days (1976) by approximately 18%, providing an appropriate margin of conservatism for long-term design-life evaluations.

Together, the conservative precipitation and AFI design inputs support long-term cover-system stability, erosion protection, frost-penetration assessment, and radon-barrier performance. Continued monitoring and periodic technical review will further strengthen the basis for demonstrating long-term regulatory compliance.

10.0 CONCLUSIONS AND RECOMMENDATIONS

10.1 Key Findings

This memorandum evaluates whether the recent San Mateo site record is statistically consistent with the historical and regional climate information used to support Mt. Taylor Mine disposal cell design. The analysis confirms that the available site record does not indicate a statistically significant departure from the established regional design basis, while also clarifying the appropriate role of each supporting dataset. The principal findings are as follows:

- All three hypothesis tests (temperature, precipitation, and Air Freezing Index) yield p-values above 0.05, confirming that the 2018–2025 site record is statistically consistent with the historical baseline at the 95% confidence level (see Table 6-2).
- Mean annual temperature at the San Mateo site (52.27°F) shows a modest, non-significant increase of +0.75°F relative to the AppD3-1 historical population mean of 51.52°F ($p = 0.224$).
- Mean annual precipitation at the site (10.02 inches) is 1.63 inches below the Gallup 30-year normal of 11.65 inches, but this deficit is not statistically significant ($p = 0.136$). Interannual variability is high (SD = 2.74 inches), as documented in Table 5-4.
- The Air Freezing Index shows recent winters ranging from very mild (83°F·days in 2025) to moderately severe (524°F·days in 2022), all well within the design envelope. The site's mean AFI of 313°F·days is not significantly different from the historical-only mean of 225°F·days ($p = 0.122$), as presented in Table 6-2. The design-basis AFI of 927.5°F·days (200-year return period, Table 7-2) exceeds the historical observed maximum of 786°F·days (1976) by 18%, confirming that additional conservatism is built into the design parameter.
- The annual moisture deficit of 16.44 inches and aridity index of 0.38 confirm the semi-arid classification and support evapotranspiration-based cover system designs

- Gallup and Rice Park serve different technical purposes. Gallup provides the appropriate long-term regional precipitation baseline for annual precipitation comparisons, while Rice Park SNOTEL provides high-elevation SWE, snowpack, winter precipitation, snowmelt infiltration, frost penetration, AFI, and RSJIHM calibration support. The datasets are therefore complementary, not interchangeable.

10.2 Engineering Implications

The statistical results support continued use of the current Mt. Taylor disposal cell climate design basis. The recent San Mateo observations do not indicate a statistically significant departure from the historical or regional comparison datasets, and the applicable design inputs remain conservative for cover-system performance, frost penetration, stormwater control, and infiltration modeling.

For frost penetration and cover design, the design-basis AFI of approximately 927.5°F·days should continue to be used for liner and cover calculations. This value corresponds to the 200-year return period from AppD3-2, exceeds the historical maximum of 786°F·days by approximately 18%, and remains well above the highest San Mateo value observed during 2018–2025, which was 524°F·days in 2022. The design basis therefore retains an appropriate margin of conservatism for long-term performance evaluations.

The engineering use of each climate dataset should remain distinct in future design reviews and regulatory submittals. The Gallup NCDC 30-year precipitation normal of 11.65 inches remains the appropriate long-term regional annual precipitation benchmark for statistical comparison and model-input justification because it is a published climatological normal and fills the annual precipitation baseline role that NM3422 cannot support with a complete annual series. The San Mateo station record should continue to document recent site conditions and test whether site observations remain consistent with the regional design basis; however, the current eight-year record should not be used by itself to replace longer-term regional benchmarks.

Rice Park SNOTEL should continue to support SWE, snowpack, winter precipitation, snowmelt infiltration, frost penetration, AFI calibration, and RSJIHM calibration because those snowpack-driven processes are not represented by the Gallup precipitation normal. Cover-system performance modeling may continue to rely on the demonstrated semi-arid setting, including the aridity index of 0.38 and annual moisture deficit of 16.44 inches, which show that evapotranspiration demand substantially exceeds precipitation over the water year. Stormwater and erosion-control design should continue to use the DDF values in Table 3-2, including the 100-year, 24-hour precipitation depth of 2.56 inches, for drainage channels, spillways, run-on/runoff controls, and erosion protection features.

Overall, the existing climate-related design parameters for the Mt. Taylor Mine disposal cell remain technically defensible. No statistical result from the 2018–2025 San Mateo record requires revision of the annual precipitation, mean annual temperature, AFI, water-balance, or stormwater design inputs at this time. Taken together, the San Mateo site record, Gallup regional precipitation normal, Rice Park winter hydrology data, and AppD3 historical temperature and AFI datasets provide a consistent technical basis for cover-system design, infiltration modeling, frost-penetration evaluation, stormwater controls, and long-term regulatory demonstrations.

10.3 Recommendations

The following recommendations are intended to preserve the technical distinction among the San Mateo site record, the Gallup regional precipitation normal, and Rice Park SNOTEL winter hydrology data while improving the statistical basis for future reviews.

1. Continue on-site meteorological monitoring at the San Mateo station to extend the site-specific record toward a target of $n \geq 15$ years, which will substantially improve statistical power for future comparisons.
2. Update this climatological comparison on a recurring basis, recommended every 5 years or when the site record doubles in length, whichever occurs first.
3. In future revisions, explicitly state that Gallup is the long-term annual precipitation baseline and Rice Park is the SWE/winter hydrology calibration dataset to avoid confusion during regulatory review.
4. Evaluate the potential effects of regional climate trends (the observed warming rate of +0.033°F/year at NCEI NM3422, as discussed in Section 3.4) on design-life performance when the site record exceeds 15 years.
5. Maintain the design-basis AFI of 927.5°F·days (200-year return period from AppD3-2) for frost penetration depth calculations until superseded by an updated frequency analysis incorporating additional years of record. Periodically evaluate whether the 1,000-year return period estimate should be adopted as the design basis as the dataset grows and statistical confidence improves.
6. Consider augmenting the precipitation baseline with site-specific frequency analysis once the on-site record exceeds 20 years of continuous data.

In conclusion, the 2018–2025 San Mateo record is statistically consistent with the regional design basis at the 95% confidence level, and the existing cover-system climate inputs remain defensible. Gallup should continue to define the long-term regional annual precipitation baseline because it provides the published 30-year normal needed for regional comparison and model input justification. Rice Park should continue to support SWE and winter hydrologic calibration, while San Mateo should continue to provide site-specific monitoring context as the record lengthens.

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APPENDIX H
SLOPE STABILITY

Engineering Analytics, Inc.
Now Part of MacKay

Fort Collins Office
1600 Specht Point Road, Suite 209, Fort Collins, CO 80525
970.488.3111 / GoMacKay.com

Technical Memorandum

To:	Rio Grande Resources, Ltd.	From:	Jason Andrews, P.E.
Company:	Rio Grande Resources, Ltd.	Date:	August 5, 2026
EA No.:	111360		
Re:	Mt. Taylor Uranium Mine – Slope Stability Analysis		

APPENDIX H — SLOPE STABILITY ANALYSIS

1.0 INTRODUCTION

Rio Grande Resources, Ltd. (RGR) retained Engineering Analytics, Inc. (EA) to evaluate the long-term slope stability of the proposed expanded disposal cell at the Mt. Taylor Mine, located in Cibola County, New Mexico. The disposal cell will receive consolidated mine waste material and will be capped with a three-layer engineered cover system designed to meet the performance requirements of 10 CFR Part 40, Appendix A, and 40 CFR Part 192. Long-term physical stability of the cover and waste mass — including resistance to geomorphic, seismic, and gravity-induced failure — is a core design requirement under 10 CFR Part 40, Appendix A, Criterion 4.
Slope stability analyses were performed using the limit-equilibrium method implemented in GEO-SLOPE International's SLOPE/W software (Version 11, GEO-SLOPE International Ltd., 2021). Two cross-sections — the left flank and the right flank of the disposal cell — were analyzed under static and pseudostatic (seismic) loading conditions. No deformation analysis and no formal liquefaction assessment were performed, as the compacted waste and cover materials are not susceptible to liquefaction under the site's seismic regime.

This appendix is organized as follows:

- Section H.2 provides background on the disposal cell and site setting.
- Section H.3 provides reference materials relevant to the stability evaluation.
- Section H.4 describes the geotechnical characterization of the site materials.
- Section H.5 discusses regional seismicity and the basis for the pseudostatic seismic coefficient.
- Section H.6 presents the slope stability analyses, including loading conditions, stability criteria, material properties, and results.
- Section H.7 presents conclusions.

Graphical output from the SLOPE/W analyses is included at the end of this appendix as Figures H-1 through H-4.

2.0 SITE BACKGROUND AND DISPOSA CELL DESCRIPTION

The Mt. Taylor Mine is an inactive uranium mine located approximately 17 miles northeast of Grants, New Mexico, in Cibola County (T.13N., R.8W., Sections 1, 2, 11, and 12, New Mexico Principal Meridian). The site lies on the southern flank of Mt. Taylor, a Quaternary stratovolcano and the highest peak of the Datil Section of the Colorado Plateau, at a site elevation of approximately 7,400 feet above mean sea level (AMSL). The mine was operated by Rio Grande Resources, Ltd. under NRC Source Materials License SUA-1473 and is subject to reclamation and closure requirements administered jointly by the NRC and the New Mexico Environment Department (NMED).

The expanded disposal cell consolidates mine waste — including low-grade ore, mineralized waste rock, and uranium-contaminated soil — from multiple source areas at the site. The cell occupies a natural topographic depression and is bounded on all flanks by engineered slopes at a 5H:1V (20%) gradient. The cell is designed to a maximum height of approximately 200 feet above the original ground surface. The engineered cover system, described in detail in Part 2 of this report, consists of (from top to bottom): 12 inches of rock mulch, 28 inches of in-situ soil cover, and 12 inches of compacted clay radon barrier, for a total cover thickness of 52 inches.

3.0 GEOTECHNICAL CHARACTERIZATION

3.1 Geology

Regional Geology

The Mt. Taylor Mine site is situated on the Colorado Plateau physiographic province, within the Acoma Basin — a broad structural embayment formed during Late Cretaceous to Paleogene time. The region is underlain by a thick Mesozoic sedimentary sequence deposited in fluvial, deltaic, and shallow marine environments. The Westwater Canyon Member of the Morrison Formation (Upper Jurassic), the primary uranium ore host in the Grants Uranium District, is the principal economic formation at depth.

Overlying the Morrison Formation are Cretaceous units of the Crevasse Canyon and Gallup Sandstone members, and younger Tertiary and Quaternary volcanic deposits derived from the Mt. Taylor volcanic field. The Mt. Taylor stratocone consists of Pliocene-to-Quaternary basaltic and andesitic lavas, pyroclastic deposits, and associated volcaniclastic aprons. The site is situated on a pediment surface underlain by a thin veneer of alluvial fan and eolian deposits over the Tertiary volcanic substrate.

Regional fault structures include the Zuni Uplift fault system to the south and the Rio Grande Rift bounding faults to the east. Active faults within the immediate site vicinity have not been mapped by the USGS Quaternary Fault and Fold Database; however, the broader Rio Grande Rift is a recognized zone of ongoing extensional seismicity.

Local Geology

At the disposal cell site, subsurface investigations confirm that the foundation materials consist primarily of medium-dense to dense silty sand and sandy silt with gravel (SM/ML) derived from the volcanic pediment apron, underlain by competent basaltic and andesitic volcanic rock. The upper 10 to 20 feet of the profile consists of reworked pediment soil and minor eolian deposits. No significant clay lenses or groundwater-saturated zones were encountered within the depth of interest for the stability cross-sections.

The waste material placed within the disposal cell consists of consolidated mine waste: low-grade uranium ore, mineralized waste rock, and uranium-contaminated soil sourced from the Windblown Area, Ore Pad Area, Mine Compound, and adjacent source zones. The material is heterogeneous but broadly characterized as granular to silty sand with variable uranium mineral content, compacted during cell construction to a uniform state.

3.2 Climate

The Mt. Taylor Mine site experiences a semi-arid continental climate at approximately 7,400 feet elevation. Mean annual precipitation (MAP) is 10.01 inches per year, as established from the 2018–2025 San Mateo NOAA station record (Appendix H of the main report). Precipitation is bimodal: winter snowfall (October through March; seasonal mean Pw = 2.87 inches) and summer convective monsoon events (April through September; seasonal mean Ps = 7.14 inches). Mean annual potential evapotranspiration (PET) is 26.45 inches per year, yielding an aridity index (PET/P) of 2.64 — confirming strongly water-limited, semi-arid conditions.

The site is subject to freeze-thaw cycling, with a design frost depth of 28 inches established using the Modified Berggren method (Section 4.3 of the main report). Snow loading on the completed cover is not a stability concern given the shallow snowpack depths characteristic of this elevation and regional climate.

3.3 Subsurface Conditions and Groundwater

Available boring logs and geotechnical data indicate that the native foundation soils are medium-dense to dense and competent. The water table is located at depths well below the base of the disposal cell in this semi-arid upland environment. No artesian pressures, perched water tables, or saturated foundation zones were identified during site investigations. Accordingly, pore water pressures were set to zero in the stability analyses — a conservative representation consistent with the site's hydrologic regime and the extremely low infiltration through the engineered cover system (design percolation of 0.45 in/yr; Section 4.6 of the main report).

3.4 Laboratory and Field Testing Results

Laboratory testing and field characterization of the cover and waste materials were performed as part of the expanded disposal cell design program. Testing included classification testing (grain size analysis, Atterberg limits), standard Proctor compaction testing, and direct shear testing for

determination of effective shear strength parameters. The results inform the material properties assigned to each zone in the stability model, as summarized in Table H-2 (Section H.6.3).

The compacted clay radon barrier (12-inch CL layer) was tested to confirm achievement of a saturated hydraulic conductivity of ksat ≤ 1×10−7 cm/s (= 1×10−9 m/s), consistent with 40 CFR 192 requirements. The in-situ soil cover material (CL-ML) exhibits an available water-holding capacity (AWHC) of 0.10 in/in, as documented in Section 4.6 of the main report.

3.5 Representative Geologic Cross-Section

Two representative cross-sections through the disposal cell were developed for stability analysis: the left flank and the right flank. Each cross-section spans a horizontal distance of approximately 1,300 feet. Elevations range from approximately 7,280 feet AMSL at the toe to approximately 7,480 feet AMSL at the crest, corresponding to a vertical relief of approximately 200 feet. The 20% (5H:1V) cover slopes are modeled explicitly in the SLOPE/W geometry. The three cover layers (rock mulch, in-situ soil cover, compacted clay radon barrier), the compacted waste mass, and the native foundation are represented as discrete material zones. Figures H-1 through H-4 show the SLOPE/W output for each loading condition on each cross-section.

4.0 SEISMICITY

The Mt. Taylor Mine site is located within the tectonically active Colorado Plateau–Rio Grande Rift transition zone. The Rio Grande Rift is an active extensional province extending from southern New Mexico northward through central Colorado, capable of generating moderate-magnitude earthquakes on bounding and interior normal faults. The Jemez Mountains Volcanic Field, located approximately 75 miles northeast of the site, is a Quaternary volcanic center with associated structural complexity. The Socorro Seismic Anomaly, centered approximately 80 miles south of the site, is an area of elevated seismicity attributed to a mid-crustal magma body.

Historical seismicity records for Cibola County and the surrounding region document numerous events of Richter magnitude M 3.0 to 5.0, with larger events possible on regional fault structures. The USGS 2023 National Seismic Hazard Model (NSHM) was used to assess the probabilistic seismic hazard at the site. For site conditions representative of firm soil to soft rock (Site Class C/D), the 2,475-year return period peak ground acceleration (PGA) at the site is approximately 0.20g. This return period (2% probability of exceedance in 50 years) is consistent with the hazard level used for critical facility design.

For the pseudostatic slope stability analysis, the horizontal seismic coefficient (kh) was determined as follows: kh = 0.5 × PGA/g = 0.5 × 0.20 = 0.10.

A horizontal seismic coefficient of kh = 0.14 was adopted for the pseudostatic analyses. This value is conservative, exceeding the kh = 0.10 value (= 0.5 × PGA/g = 0.5 × 0.20) that would result from standard NUREG-1623 practice, and provides additional margin against seismic loading. The vertical seismic coefficient was conservatively set to zero.

No active faults were mapped within the immediate site footprint by the USGS Quaternary Fault and Fold Database. The nearest mapped active fault is located at sufficient distance that fault rupture through the disposal cell is not a credible scenario.

5.0 SLOPE STABILITY ANALYSES

5.1 Loading Conditions Modeled

Two loading conditions were analyzed for each cross-section:

Condition 1 — Static Analysis (Long-Term Drained): Gravity loading only, using effective (drained) shear strength parameters for all material zones and zero pore water pressure. This condition represents the permanent, long-term post-closure state of the disposal cell under ambient gravitational loading.

Condition 2 — Pseudostatic Analysis (Seismic): Static gravity loading plus a horizontal pseudostatic force equivalent to kh = 0.14 times the total weight of each soil slice. Effective shear strength parameters and zero pore water pressure are retained from Condition 1. This condition represents the response of the slope to the design seismic event.

A post-liquefaction analysis was not performed, as the compacted granular and cohesive materials comprising the disposal cell cover and waste mass are not susceptible to static or cyclic liquefaction. The cover materials and waste are not saturated under normal operating conditions, and the fine-grained clay barrier and in-situ soil cover materials are plasticity-controlled and not liquefiable per standard criteria (Boulanger and Idriss, 2004).

5.2 Stability Criteria

The minimum acceptable factors of safety (FS) for the Mt. Taylor disposal cell slope stability analyses are based on NRC guidance in NUREG-1620 and NUREG-1623, and on the requirements of 10 CFR Part 40, Appendix A, Criterion 4, which mandates long-term physical stability of the disposal cell. Table H-1 presents the adopted stability criteria.

Table H-1 . Summary of Slope Stability Criteria for the Mt. Taylor Disposal Cell

Loading Condition	Minimum Acceptable FS	Regulatory Basis
Static (long-term drained)	1.50	NUREG-1620; 10 CFR 40, App. A, Criterion 4
Pseudostatic (seismic, kh = 0.14)	1.10	NUREG-1623; 10 CFR 40, App. A, Criterion 4

The static minimum FS of 1.50 ensures adequate stability against gravity-induced failure over the 200- to 1,000-year design life. The pseudostatic minimum FS of 1.10 provides a margin above unity under the design seismic event, consistent with the understanding that limited permanent

displacement is tolerable during rare seismic loading provided the slope does not experience a flow-type failure.

5.3 Material Properties

The effective shear strength parameters and unit weights assigned to each material zone are based on laboratory direct shear testing, standard Proctor compaction data, and engineering judgment consistent with the materials' classification and placement specifications. All materials are treated as cohesionless ($c' = 0$ psf) in effective stress, which is conservative for the compacted clay barrier and in-situ soil cover materials, which exhibit some drained cohesion. Table H-2 presents the material properties used in all analyses.

The cohesionless assumption for all materials is conservative because: (1) the clay barrier and in-situ soil cover both exhibit measurable drained cohesion at field moisture contents; (2) pore water pressures are zero throughout the model; and (3) using $c' = 0$ for all layers ensures that the stability margin is derived entirely from frictional resistance. This approach is consistent with guidance in NUREG-1620 for long-term stability assessments of uranium disposal cells.

Table H-2 Material Properties Used for Slope Stability Analyses

Material / Zone	Unit Weight, γ (pcf)	Cohesion, c' (psf)	Friction Angle, φ' (degrees)
Rock mulch cover	115	0	35
In-situ soil cover	110	0	25
Compacted clay radon barrier	120	0	24
Compacted disposal-cell fill / waste	102	0	25
Foundation soil / overburden	122	0	25

The critical failure surface in each analysis was located using a Monte Carlo search routine in SLOPE/W, evaluating several thousand candidate slip surfaces per analysis. The Morgenstern-Price method of slices was employed, satisfying both moment and force equilibrium. Rotational circular slip surfaces were considered for the deep-seated failure mode, and non-circular (composite) surfaces were also evaluated to capture potential sliding along stratigraphic contacts between material zones.

5.4 Results

The results of the four SLOPE/W analyses are summarized in Table 6-3. Graphical output for each analysis, showing the critical slip surface and associated minimum FS, is presented in Figures H-1 through H-4 at the end of this appendix.

Table H-3. Summary of Slope Stability Results — Mt. Taylor Disposal Cell

Analysis	Cross-Section	Loading Condition	Minimum FS (SLOPE/W)	Minimum Required FS	Compliance
Left flank — static	Left flank	Static (gravity)	2.25	1.50	Compliant
Left flank — pseudostatic	Left flank	Pseudostatic (kh = 0.14)	1.28	1.10	Compliant
Right flank — static	Right flank	Static (gravity)	2.20	1.50	Compliant
Right flank — pseudostatic	Right flank	Pseudostatic (kh = 0.14)	1.27	1.10	Compliant

5.4.1 *Static Analysis*

Static analysis of the left flank cross-section yields a minimum factor of safety of FS = 2.25, substantially exceeding the 1.50 criterion. The critical slip surface is a shallow rotational failure engaging primarily the rock mulch and in-situ soil cover layers on the 20% outslope. The high friction angle of the rock mulch layer ($\varphi' = 35°$) relative to the slope angle (approximately 11.3°) produces a large stability margin for this geometry.

Static analysis of the right flank cross-section yields a minimum factor of safety of FS = 2.20, substantially exceeding the 1.50 criterion. The critical slip surface for the right flank engages a deeper rotational geometry that incorporates the compacted clay radon barrier ($\varphi' = 24°$) and the underlying waste mass interface. The computed FS = 2.20 demonstrates a large stability margin under static loading for this geometry, and the right flank is fully compliant with the static stability criterion.

5.4.2 *Pseudostatic Analysis*

Pseudostatic analysis of the left flank cross-section, applying kh = 0.14, yields a minimum factor of safety of FS = 1.28, exceeding the 1.10 criterion. The reduction from the static FS of 2.25 to the pseudostatic FS of 1.28 reflects the destabilizing effect of the horizontal seismic inertia force acting on the sliding mass, consistent with expectations for a shallow, friction-dominated slope at this seismic coefficient.

Pseudostatic analysis of the right flank cross-section, applying kh = 0.14, yields a minimum factor of safety of FS = 1.27, also exceeding the 1.10 criterion. The contrast between the right flank static FS of 2.20 and the pseudostatic FS of 1.27 reflects the significant destabilizing influence of the conservative seismic coefficient on the deeper, composite slip mass geometry governing this cross-

section. Despite this reduction, the pseudostatic FS of 1.27 comfortably exceeds the 1.10 minimum criterion, confirming that the right flank is seismically stable under the design earthquake.

The behavior of the right flank critical slip surface under pseudostatic loading is consistent with deep composite slip surfaces in which the additional seismic driving moment, applied at the conservative kh = 0.14, produces a meaningful but bounded reduction from the static factor of safety. Both the static and pseudostatic analyses for the right flank demonstrate compliance with their respective criteria.

6.0 CONCLUSIONS

Slope stability analyses were performed for the Mt. Taylor Mine expanded disposal cell using the limit-equilibrium method in SLOPE/W (Morgenstern-Price method of slices). Two cross-sections — left flank and right flank — were evaluated under static (long-term drained) and pseudostatic (seismic) loading conditions. The following conclusions are drawn:

1. Left flank — static: The left flank of the disposal cell is stable under static loading, with a computed FS of 2.25, substantially exceeding the minimum criterion of 1.50. The critical failure mode is a shallow rotational surface governed by the high-friction rock mulch layer.
2. Left flank — pseudostatic: The left flank is seismically stable under the design horizontal seismic coefficient of kh = 0.14, with a computed FS of 1.28, exceeding the minimum criterion of 1.10. The adopted seismic coefficient is conservative, exceeding the value that would result from standard NUREG-1623 practice, and is based on the 2,475-year return period PGA of approximately 0.20g per the USGS 2023 NSHM.
3. Right flank — static: The right flank of the disposal cell is stable under static loading, with a computed FS of 2.20, substantially exceeding the minimum criterion of 1.50. The critical failure mode engages a deeper rotational geometry through the compacted clay radon barrier and waste mass interface.
4. Right flank — pseudostatic: The right flank is seismically stable under the design earthquake, with a computed FS of 1.27, exceeding the minimum pseudostatic criterion of 1.10. The conservative seismic coefficient of kh = 0.14 produces a meaningful reduction from the static FS of 2.20, yet the resulting pseudostatic FS remains well above the 1.10 minimum requirement.
5. Liquefaction: No formal liquefaction assessment was performed. The compacted cover and waste materials are not susceptible to liquefaction under the site's semi-arid hydrologic conditions and the design seismic regime.
6. Overall finding: All four slope stability analyses — left flank static (FS = 2.25 ≥ 1.50), left flank pseudostatic (FS = 1.28 ≥ 1.10), right flank static (FS = 2.20 ≥ 1.50), and right flank pseudostatic (FS = 1.27 ≥ 1.10) — meet or exceed their respective minimum required factors of safety. The Mt. Taylor Mine expanded disposal cell cover slopes are stable under both static and pseudostatic loading conditions and satisfy the long-term physical stability requirements of 10 CFR Part 40, Appendix A, Criterion 4.

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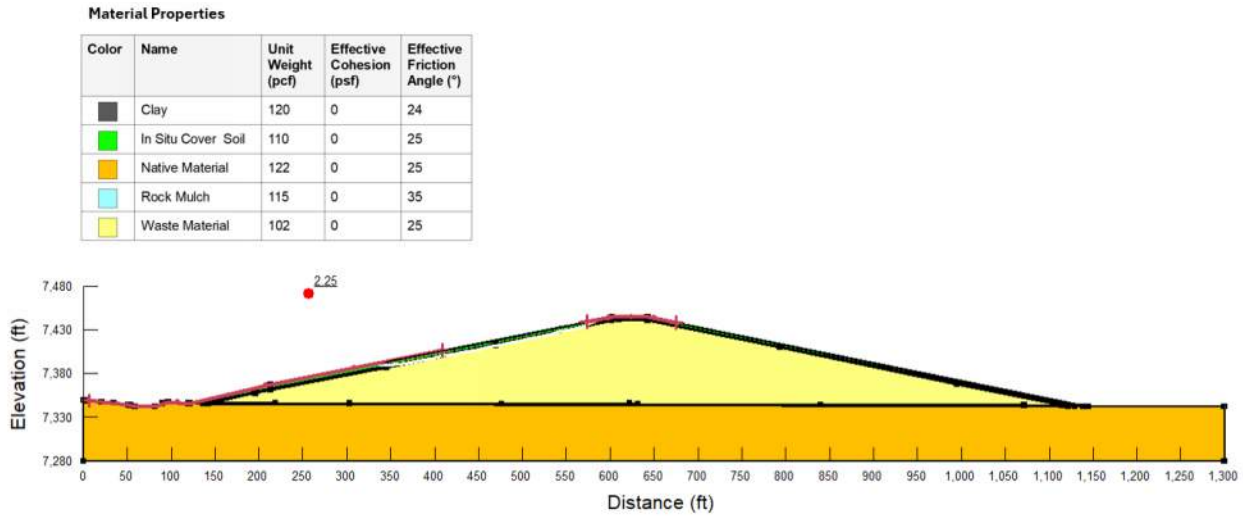

Figure H-1 — SLOPE/W Output Left Flank | Static Analysis | FS = 2.25

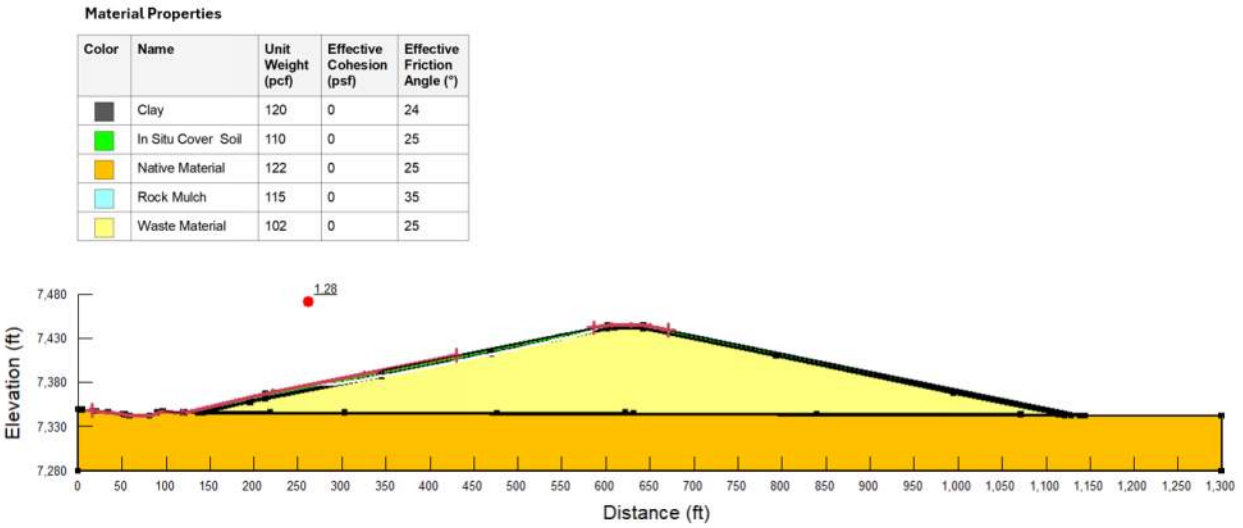

Figure H-2. SLOPE/W Output — Left Flank, Pseudostatic Analysis (kh = 0.14; FS = 1.28)

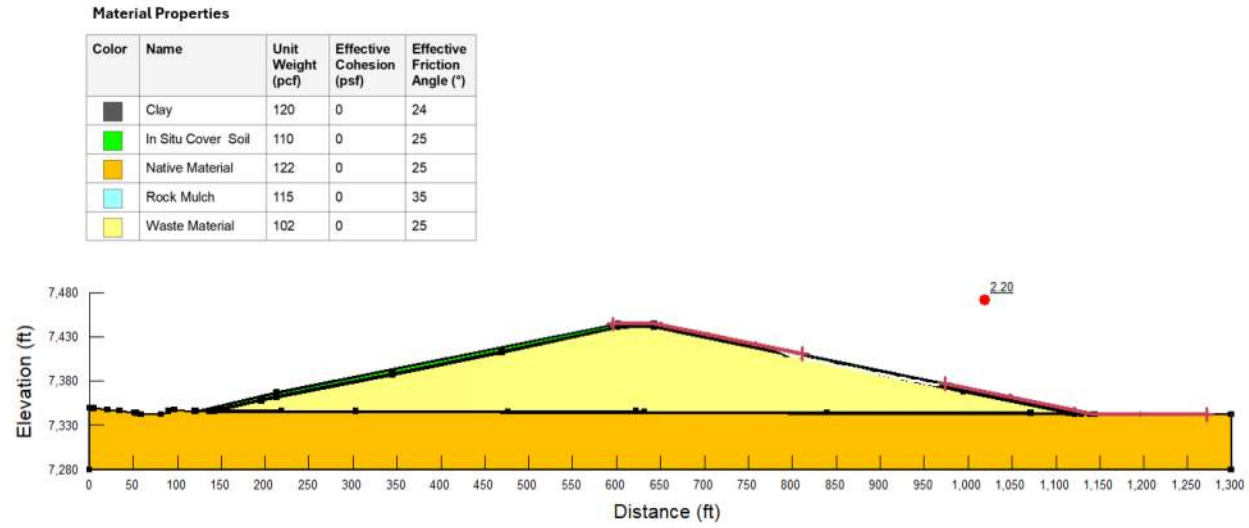

Figure H-3. SLOPE/W Output — Right Flank, Static Analysis (FS = 2.20)

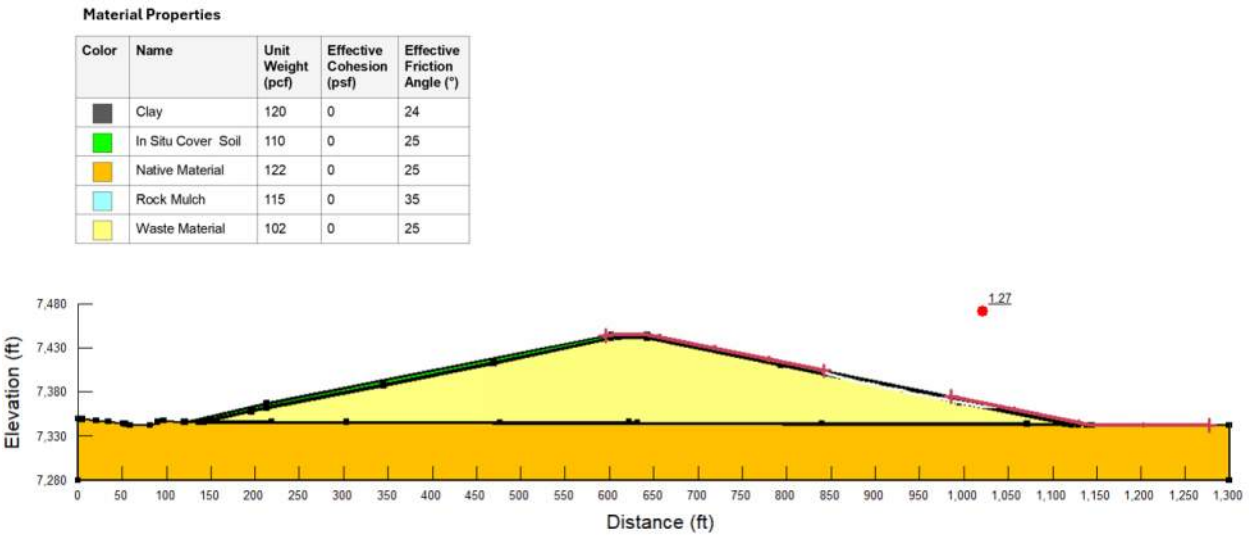

Figure H-4. SLOPE/W Output — Right Flank, Pseudostatic Analysis (kh = 0.14; FS = 1.27)

APPENDIX I
SURFACE WATER HYDROLOGY AND EROSION PROTECTION CALCULATIONS

Technical Memorandum

To:	Rio Grande Resources, Ltd.	**From:**	Jason Andrews, P.E. Olu Iwakun
Company:	Rio Grande Resources, Ltd.	**Date:**	August 5, 2026
EA No.:	111360		
Re:	Surface Water Hydrology and Erosion Protection Calculations		
Cc:			

I-1 INTRODUCTION

This appendix presents detailed calculations supporting the surface water hydrology and erosion protection design for the Mt. Taylor Mine expanded disposal cell, Cibola County, New Mexico. Calculations are organized as follows:

- I-1. Probable Maximum Precipitation (PMP) Determination
- I-2. Rock Mulch Cover Erosion Design — Unit-Width Analysis
- I-3. Leps (1973) Filter / Interstitial Velocity Check
- I-4. Gully Formation Analysis
- I-5. Diversion Channel Design
- 1-6. Wind Erosion Summary

Design parameters adopted for all calculations are listed in Table I-1.

Table I-1 Design Parameters for Surface Water and Erosion Calculations

Parameter	Value	Source
Site elevation	~7,400 ft above MSL	Topographic survey
Cover outslope	20% (5H:1V)	Design drawings
Rock mulch admixture	30% AASHTO No. 1 gravel/70% in-situ soil cover (by volume)	Cover design specification
D50 of gravel component	2.2 in (nominal AASHTO No. 1)	AASHTO M43 gradation
D75 of gravel component	~3.5 in	AASHTO M43 gradation
Manning's n (rock admixture)	0.035	NUREG/CR-4620, Table 3.1
Runoff coefficient C	0.80	NUREG/CR-4620, EA judgment
Flow concentration factor (CF)	3.0	NUREG-1623, Table 5.3
100-yr/24-hr precipitation	2.56 in	Appendix G DDF analysis
Unit weight of water	62.4 lb/ft^3	Standard
Specific gravity of rock	2.65	Standard

I-2 PROBABLE MAXIMUM PRECIPITATION (PMP) DETERMINATION

I-2.1 Base PMP – HMR-55A Method

The Probable Maximum Precipitation (PMP) for the Mt. Taylor site was determined following the procedure in NWS Hydrometeorological Report No. 55A (HMR-55A), which applies to the region west of the 103rd meridian. The site is located at approximately 35.2°N, 107.7°W, at an elevation of approximately 7,400 ft above mean sea level.

The base 1-hour, 1-square-mile PMP at a reference elevation of 5,000 ft was read from HMR-55A Figure 14.1:

Base 1-hr PMP (1 mi², 5,000-ft reference) = 9.94 inches

The maximum persisting 12-hour 1,000-mb dew point for July (the critical month for convective storms) was read from HMR-55A Figure 14.2:

W_0 (July, 1,000-mb, 12-hr persisting) = 72°F (Mt. Taylor site)

I-2.2 Elevation Adjustment

At 7,400 ft, the site elevation is above the 5,000-ft reference. The elevation adjustment factor was read from HMR-55A Figure 14.3 based on the site elevation and moisture profile:

Elevation adjustment factor = 0.87 (at 7,400 ft, W_0 = 72°F)

The elevation-adjusted 1-hour PMP is:

PMP1hr = 9.94 × 0.87 = 8.65 inches

I-2.3 6-Hour PMP and Duration Conversion

The 6-hour PMP was determined from HMR-55A for the site:

PMP6hr (unadjusted) = 12.91 inches

PMP6hr (elevation-adjusted) = 12.91 × 0.87 = 11.23 inches

The 6-hour to 1-hour ratio for the region east of the Continental Divide to the 103rd meridian is 1.35 per HMR-55A:

PMP1hr (from 6-hr) = 11.23 / 1.35 = 8.32 inches

The governing design 1-hour PMP is taken as the maximum of the two methods:

Design PMP (1-hr) = max(8.65, 8.32) = 8.65 inches ← GOVERNS

I-2.4 Sub-Hourly PMP Intensities

Sub-hourly PMP depth fractions were applied per NUREG/CR-4620 Table 2.1. Table I-2 summarizes the resulting depths and peak intensities.

Table I-2 (NUREG / CR-4620 Table 2.1, PMP $_{1hr}$ = 8.65 in)

Duration (min)	% of 1-hr PMP	PMP Depth (in)	Peak Intensity (in/hr)
2.5	33	2.855	68.51
5	45	3.893	46.71
10	60	5.190	31.14
15	70	6.055	24.22
20	78	6.747	20.24
30	88	7.612	15.22
60	100	8.650	8.65

I-3 ROCK MULCH COVER EROSION DESIGN – UNIT- WIDTH ANALYSIS

I-3.1 Time of Concentration – Kirpich (1940) Formula

The time of concentration (tc) for sheet flow across the 20% cover outslope was computed using the Kirpich (1940) formula:

$$tc = 0.0078 \times L0.770 \times S{-}0.385$$

Where tc is in minutes, L is the slope run length in feet, and S is the slope gradient (ft/ft).

For the design slope S = 0.20 ft/ft:

$$S{-}0.385 = 0.20{-}0.385 = 2.795$$

Table I-3 presents computed tc values at slope length increments from 50 to 500 feet.

TABLE I-3. Kirpich Time of Concentration — 20% Slope

L (ft)	T_c (calculated, min)	T_c (governing, min)	Basis
50	0.30	5.0	5-min minimum
100	0.50	5.0	5-min minimum
150	0.69	5.0	5-min minimum
200	0.86	5.0	5-min minimum
250	1.02	5.0	5-min minimum
300	1.17	5.0	5-min minimum
400	1.46	5.0	5-min minimum
500	1.74	5.0	5-min minimum

Note on Minimum t_c:
The calculated Kirpich t
c
at S = 0.20 ranges from 0.30 to 1.74 minutes for slope lengths of 50 to 500 ft. These values fall below the 2.5-minute minimum duration tabulated in NUREG/CR-4620 Table 2.1. Per NUREG/CR-4620 Section 3.2 and standard engineering practice, a minimum t
c
of 5 minutes is applied for concentrated flow calculations on small embankment areas. This minimum governs all slope length increments analyzed herein and yields a design PMP intensity of 46.71 in/hr. Extrapolation below the tabulated minimum is not performed.

I-3.2 Design PMP Intensity at t_c = 5 min

From Table I-2, at tc = 5 minutes:

PMP depth (5 min) = 45% × 8.65 = 3.893 in

Design intensity I = 3.893 in / (5 min ÷ 60 min/hr) = 46.71 in/hr

This single design intensity applies uniformly to all slope lengths analyzed, as t_c = 5 minutes governs throughout.

I-3.3 Rational Method – Peak Unit Discharge

Peak unit discharge was computed using the Rational Method:

$$Q = C \times I \times A$$

where C = 0.80 (runoff coefficient for rock mulch admixture), I = 46.71 in/hr, and A is the drainage area for a 1-ft-wide unit strip of slope length L.

$$A = (1\ ft \times L\ ft) / 43{,}560 = L / 43{,}560\ (acres\ per\ foot\ of\ width)$$

The design unit discharge including the NUREG-1623 flow concentration factor (CF = 3.0) is:

$$qCF = C \times I \times (L / 43{,}560) \times CF / (1\ ft\ width)$$

qCF increases with L because the contributing area scales with L while intensity is fixed. Table I-4 presents computed peak unit discharges at each slope length increment.

Table I-4 Rational Method – Peak Unit Discharge

L (ft)	A (acres/ft width)	Q (cfs/ft)	q_{CF} (cfs/ft)
50	0.001148	0.0429	0.1287
100	0.002296	0.0858	0.2574
150	0.003444	0.1287	0.3860
200	0.004591	0.1716	0.5417
250	0.005739	0.2145	0.6434
300	0.006887	0.2574	0.7721
400	0.009183	0.3431	1.0924
500	0.011478	0.4289	1.2868

I-3.4 Manning's Flow Depth and Velocity

Flow depth and mean velocity were computed using Manning's equation for a wide rectangular channel (unit width):

$$Q = (1.49 / n) \times d5/3 \times S1/2$$

Rearranging for flow depth:

$$d = [qCF \times n / (1.49 \times S1/2)]3/5$$

$$V = qCF / d$$

Where n = 0.035 (rock mulch admixture, NUREG/CR-4620) and S = 0.20.

Results are presented in Table I-5.

Table I-5 Manning's Flow Depth and Velocity

L (ft)	q_{CF} (cfs/ft)	Flow Depth d (ft)	Flow Depth d (in)	Mean Velocity V (fps)
50	0.1287	0.050	0.60	2.58
100	0.2574	0.076	0.91	3.40
150	0.3860	0.096	1.16	4.00
200	0.5147	0.115	1.38	4.49
250	0.6434	0.131	1.57	4.91
300	0.7721	0.146	1.75	5.28
400	1.0294	0.174	2.08	5.93
500	1.2868	0.199	2.38	6.48

I-3.5 Abt-Johnson Required D50 Sizing

The required median particle size (D50) for stability of the rock mulch admixture under concentrated flow was evaluated using the Abt-Johnson formula (Abt and Johnson, 1991):

$$D50req = 5.23 \times qCF0.56 \times S0.43$$

where D50req is in inches, q_{CF} is in cfs/ft, and S is the slope gradient (ft/ft).

For S = 0.20:

$$S0.43 = 0.200.43 = 0.501$$

The provided D50 of the AASHTO No. 1 gravel component is 2.2 inches. The factor of safety (FS) is:

$$FS = D50prov / D50req$$

Table I-6 presents the required D50 and computed FS at each slope length increment.

TABLE I-6. Abt-Johnson Required D50 and Factor of Safety (t_c = 5 min governing)

L (ft)	q_{CF} (cfs/ft)	$D50_{req}$(in)	$D50_{prov}$(in)	FS	Status
50	0.129	0.83	2.20	2.65	OK
100	0.257	1.22	2.20	1.80	OK
150	0.386	1.54	2.20	1.43	OK
200	0.515	1.80	2.20	1.22	OK
250	0.643	2.04	2.20	1.08	OK (marginal)
300	0.772	2.26	2.20	0.97	FS < 1.0
400	1.029	2.66	2.20	0.83	FS < 1.0
500	1.287	3.01	2.20	0.73	FS < 1.0

I-3.6 Critical Slope Run Length

By linear interpolation between L = 250 ft (FS = 1.08) and L = 300 ft (FS = 0.97), the critical slope run length at which FS = 1.0 is:

$$Lcrit = 250 + (300 - 250) \times (1.08 - 1.00) / (1.08 - 0.97) = 250 + 50 \times 0.73 \approx 286\ ft$$

The 30/70 AASHTO No. 1 gravel / in-situ soil cover admixture with D50 = 2.2 inches is stable under PMP conditions for slope run lengths up to approximately 286 feet on a 20% outslope. This finding governs the maximum unsupported slope face dimension between erosion-control berms or interceptor channels, as noted in the design discussion in Section I-8.

I-3.7 Shear Stress Stability Check

An independent shear stress stability check was performed using Shield's criterion for incipient particle motion:

$$\tau allow = 0.047 \times (Gs - 1) \times \gamma w \times (D50 / 12)$$

where Gs = 2.65 (specific gravity), γw = 62.4 lb/ft³, and D50 in feet.

$$\tau allow = 0.047 \times (2.65 - 1) \times 62.4 \times (2.2 / 12) = 0.89\ psf$$

The applied bed shear stress is:

$$\tau design = \gamma w \times d \times S$$

Table I-7 presents the applied and allowable shear stresses.

Table I-7 Shear Stress Stability Check

L (ft)	d (ft)	T_{desgin} (psf)	T_{allow} (psf)	FS_t	Note
50	0.050	0.62	0.89	1.43	OK
100	0.076	0.94	0.89	0.94	Marginal
150	0.096	1.20	0.89	0.74	See notes
200	0.115	1.43	0.89	0.62	See notes
250	0.131	1.64	0.89	0.54	See notes
300	0.146	1.82	0.89	0.49	See notes
400	0.174	2.17	0.89	0.41	See notes
500	0.199	2.48	0.89	0.36	See notes

Notes: Shield's criterion applies to individual non-cohesive particles in loose-poured beds. The rock mulch admixture is a compacted 30/70 gravel/in-situ soil cover blend. The interlocking matrix of fine in-situ soil cover material surrounding gravel particles substantially increases the effective resistance to particle mobilization beyond the Shield's criterion for isolated grains. The Abt-Johnson formula (Section I-2.5), which was specifically developed and empirically calibrated for rock mulch admixture surfaces on sloped embankments, is the appropriate design criterion for this application and yields a more reliable estimate of stability at the computed slope run lengths. The Shield's check is presented for completeness and transparency; the Abt-Johnson result governs.

I-4 LEPS (1973) FILTER/INTERSTITIAL VELOCITY CHECK

The Leps (1973) criterion evaluates whether interstitial flow through the interstices of the rock mulch layer is sufficient to mobilize fine particles from the underlying in-situ soil cover layer. The criterion is expressed as:

$$Vv = Wm0.5 \times i0.54$$

Where Vv is the interstitial flow velocity (ft/s), Wm0.5 is a rock size discharge factor from NUREG/CR-4620 Table 4.5, and i is the hydraulic gradient (taken equal to the slope gradient S for a surface layer on an embankment).

For D50 = 2.2 in, the rock size factor is:

$$Wm0.5 \approx 4.75 \quad \textit{(interpolated from NUREG/CR-4620 Table 4.5)}$$

The hydraulic gradient for the 20% outslope:

$$i = S = 0.20$$

The computed interstitial velocity:

$$Vv = 4.75 \times 0.200.54 = 4.75 \times 0.419 = 1.99\ ft/s$$

The Leps threshold is 1.0 ft/s. Because Vv = 1.99 ft/s exceeds 1.0 ft/s, this conservative Step 1 analysis — which treats the cover as open-graded rockfill using the gravel component D50 alone — nominally indicates that a filter check should be performed. A refined analysis using the blended admixture D50 is presented in Section I-3.2 below and governs the design conclusion.

Note on Step 1 Conservative Bias:
The Step 1 computation above uses only the D50 of the AASHTO No. 1 gravel component (2.20 in), treating the surface cover as open-graded rockfill. This assumption is not representative of the 30/70 gravel-to-in-situ-soil-cover admixture. The refined blended admixture analysis in Section I-4.2 demonstrates that no filter layer is required.

I-4.1 Refined Interstitial Velocity Analysis — Blended Admixture Properties

The conservative Step 1 analysis applies the Leps (1973) criterion using only the D50 of the AASHTO No. 1 gravel component (D50 = 2.20 in), implicitly treating the surface cover as open-graded rockfill. This assumption is not representative of the 30/70 gravel-to-in-situ-soil-cover admixture, in which 70% of the volume consists of compacted fine-grained in-situ soil cover material that occupies and effectively seals the interstitial voids between gravel particles. The Leps criterion was calibrated on open-graded rockfill; applying it to an admixture requires using the blended material D50, which governs the effective hydraulic resistance of the interstitial flow path.

I-4.1.1 Blended Admixture D50

The combined particle-size gradation of the 30/70 admixture was determined from Table 4-9a gradation data. Log-linear interpolation was applied to the blended gradation to identify the 50th percentile particle size:

D50,blend: bracketed between No. 40 sieve (56% passing, 0.0165 in) and No. 100 sieve (42% passing, 0.00587 in)

$$D50,blend = \exp(\ln(0.0165) + 0.429 \times (\ln(0.00587) - \ln(0.0165)))$$

D50,blend = 0.0106 in (0.269 mm) — fine sand / coarse silt range

This blended D50 is well below the Leps table minimum of 0.25 in and far below the 0.90-in threshold required for Vv = 1.0 ft/s at i = 0.20. The threshold D50 of 0.90 in was determined from the condition:

$$Vv = Wm0.5 \times i0.54 = 1.0\ ft/s$$

$$\rightarrow Wm,req0.5 = 1.0 / (0.200.54) = 1.0 / 0.4193 = 2.385$$

→ By interpolation from NUREG/CR-4620 Table 4.5: D50threshold ≈ 0.90 in

The gravel component D50 of 2.20 in exceeds this threshold by a factor of 2.4. Reducing the gravel D50 to 0.90 in or below would compromise erosion resistance and is inconsistent with the Abt-

Johnson stability analysis. Therefore, Vv < 1.0 ft/s cannot be achieved by modifying the gravel specification. The only physically defensible approach is to use the blended admixture D50.

I-4.1.2 Refined Leps Calculations

Using the blended admixture D50 of 0.0106 in (well below the tabulated range in NUREG/CR-4620 Table 4.5), the corresponding W 0.5 value was obtained by log-linear extrapolation below the table minimum:

Slope = (Wm0.5 at D50 = 0.50 in − Wm0.5 at D50 = 0.25 in) / (ln(0.50) − ln(0.25))
= (1.54 − 0.94) / 0.693 = 0.866

Wm,blend0.5 = 0.94 + 0.866 × (ln(0.0106) − ln(0.25)) = ∼0.010 (approximately 0)

Vv,blend = 0.010 × (0.20)0.54 = 0.010 × 0.4193 = 0.004 ft/s

The refined interstitial velocity of Vv = 0.004 ft/s is more than two orders of magnitude below the 1.0 ft/s threshold. A separate filter layer between the admixture cover and the in-situ soil cover subgrade is not required.

TABLE I-3a. Leps Interstitial Velocity Analysis Summary

Analysis Step	**D50 (in)**	**$W_m^{0.5}$**	**V_v (ft/s)**	**vs. 1.0 ft/s**	**Filter Required?**
Step 1 — Conservative (gravel component only)	2.20	4.75	1.99	Exceeds	Yes (if pure open-graded rockfill)
Threshold D50 for V_v = 1.0 ft/s	0.90	2.39	1.00	Equals	Marginal
Step 2 — Refined (blended admixture)	0.0106	∼0.010	0.004	Far below	**No**

Note: i = 0.20 (S = 5H:1V); i0.54 = 0.4193. Wm0.5 values from NUREG/CR-4620 Table (Leps, 1973); Step 2 value by log-linear extrapolation below table minimum.

I-4.1.3 Terzaghi Filter Compatibility Check

Although a separate filter layer is not required, the particle-size compatibility at the interface between the admixture cover and the in-situ soil cover subgrade was verified using the Terzaghi (1943) retention criterion:

$D15_{admixture} / D85_{subgrade} \leq 5$

From the blended gradation (Table 4-9a):

D15,blend: log-linear interpolation between No. 200 (17% passing, 0.00291 in) and No. 100 (42% passing, 0.00587 in)

D15,blend = 0.00275 in (0.070 mm)

From laboratory gradation of in-situ soil cover (CL-ML):

D85,subgrade = 0.0607 in (1.54 mm) (interpolated from laboratory gradation, Section 2.4)

Ratio = 0.00275 / 0.0607 = 0.045 ≤ 5.0 → COMPATIBLE

The Terzaghi retention criterion is satisfied by a large margin. No particle migration from the in-situ soil cover subgrade into the admixture voids is expected, and no separate filter is required between the admixture cover and the in-situ soil cover subgrade. Gradation compatibility at this interface should be confirmed during construction quality control.

I-4.2.4 Summary

The initial conservative Leps analysis using the gravel component D50 (2.20 in) yields Vv = 1.99 ft/s and would nominally indicate a filter requirement under the assumption of open-graded rockfill. However, the 30/70 gravel-to-in-situ-soil-cover admixture is not open-graded rockfill. The fine fraction fills the interstitial void space, and the effective flow-governing D50 is that of the blended material (0.0106 in). The refined Leps analysis yields Vv = 0.004 ft/s, which is far below the 1.0 ft/s criterion. The Terzaghi compatibility check (D15/D85 = 0.045) confirms that no separate filter layer is needed. This conclusion is consistent with the physical characteristics of a compacted admixture and with accepted practice for similar uranium mill tailings covers using rock-soil admixtures.

I-5. GULLY FORMATION ANALYSIS

I-5.1 Design Parameters

Gully formation potential was assessed using the approach of Pemberton and Lara (1984) following the methodology of EA (2024) and consistent with NUREG-1623 guidance. Calculations were performed at a representative slope length of L = 250 ft, corresponding to the maximum unsupported slope run established by the Abt-Johnson analysis (Section I-2.6).
The contributing width for concentrated flow is estimated as:

Wcontrib = L / 4 = 250 / 4 = 62.5 ft (EPA 2012 guidance)

I-5.2 Shield's Incipient Motion Particle Size

The Shield's incipient motion particle size (Dc) represents the particle size that will be mobilized under the computed shear stress:

$$\tau = \gamma w \times d \times S = 62.4 \times 0.131 \times 0.20 = 1.63 \text{ psf} \quad (\text{at } L = 250 \text{ ft})$$

$$Dc = \tau / [Fs \times (\gamma s - \gamma w)] = 1.63 / [0.047 \times (163 - 62.4)]$$

$$Dc = 1.63 / 4.728 = 0.345 \text{ ft} = 4.15 \text{ inches}$$

The gravel D50 of 2.2 inches is less than Dc = 4.15 inches, indicating that individual gravel particles are susceptible to mobilization by the PMP design flow at this slope length. However, as noted in Section I- 2.7, the interlocked admixture matrix provides resistance beyond that predicted by grain-by-grain Shield's criterion. The Abt-Johnson analysis (D50req = 2.04 in, FS = 1.08) governs for this slope length.

I-5.3 Pemberton-Lara Armor Scour Depth

The Pemberton-Lara (1984) method estimates the scour depth (Ys) required to develop a stable armor layer of gravel at the surface:

$$Ya = 2 \times D50prov = 2 \times 2.2 = 4.4 \text{ inches} \quad \text{(armor layer thickness)}$$

$$Ys = Ya \times (1/Pc - 1)$$

Where Pc = 0.30 (volume fraction of gravel in admixture).

$$Ys = 4.4 \times (1/0.30 - 1) = 4.4 \times 2.333 = 10.3 \text{ inches}$$

The computed scour depth Ys = 10.3 inches is less than the 12-inch admixture cover thickness. This result indicates that the gravel fraction can develop an armor layer within the depth of the admixture, providing a self-protecting surface under design flow conditions. The remaining cover thickness below the armor layer (12 − 10.3 = 1.7 inches) represents a conservative margin; the self-armoring process does not fully remove the admixture layer.

I-5.4 Summary of Gully Analysis

TABLE I-8. Gully Formation Analysis Summary — L = 250 ft

Parameter	Value
Representative slope length L	250 ft
Contributing width W	62.5 ft
PMP peak discharge Q_{PMF}	13.40 cfs
Mean annual discharge Q_{mean} (20% × Q_{PMF})	2.68 cfs
Design flow depth d	0.131 ft (1.57 in)
Applied shear stress τ	1.63 psf
Shield's incipient D_c	4.15 in
$D50_{prov}$ vs D_c	D50 = 2.2 in < D_c (individual grain mobilization possible under PMP)
Armor layer thickness Y_a	4.4 in
Gravel volume fraction P_c	0.30
Pemberton-Lara scour depth Y_s	10.3 in
Admixture cover thickness	12 in
Armor forms within cover?	**Yes** (Y_s = 10.3 in < 12 in cover)

I-6. DIVERSION CHANNEL DESIGN

I-6.1 Channel Geometry

Offsite drainage diverted by the perimeter diversion channel will be conveyed to a natural drainage southeast of the disposal cell. The diversion channel is designed for the Probable Maximum Flood (PMF), consistent with NRC/EPA guidance for permanent disposal cells. Channel geometry follows the precedent established in EA (2024):

Bottom width	**20 ft**
Longitudinal slope	0.5% (0.005 ft/ft)
Side slopes	3:1 (H:V)
Minimum depth	Variable, governed by PMF routing

Lining	Rock riprap (sized below)

A placeholder unit discharge of q = 5.0 cfs/ft is used for riprap sizing pending final HEC-HMS PMF routing. This value is conservative relative to the Shootaring Canyon precedent; the final design should substitute the HEC-HMS computed peak discharge.

I-6.2 Riprap Sizing — Abt-Johnson Method

For the diversion channel, the governing riprap D50 was computed using the Abt-Johnson formula adapted for channel applications:

$$D50ch = 10.46 \times Sch^{0.43} \times (CF \times q)^{0.56}$$

where Sch = 0.005, CF = 3.0, q = 5.0 cfs/ft.

$$0.005^{0.43} = 0.09310$$

$$15.0^{0.56} = 4.993$$

$$D50ch = 10.46 \times 0.09310 \times 4.993 = 4.88 \text{ inches}$$

I-6.3 Riprap Sizing — Shear Stress Method

The shear stress acting on the channel lining was computed as:

$\tau ch = Ks \times \gamma w \times y \times Sch$

where Ks = 0.75 (channel side slope factor, 3:1 side slopes), y = 4.0 ft (assumed design depth), Sch = 0.005.

$\tau ch = 0.75 \times 62.4 \times 4.0 \times 0.005 = 0.936$ psf

The corresponding required D50 from Shield's criterion:

$D50sh = (\tau ch / [0.04 \times (\gamma s - \gamma w)]) \times 12$

$D50sh = (0.936 / [0.04 \times 100.6]) \times 12 = 0.2328 \text{ ft} \times 12 = 2.79$ inches

I-6.4 Governing Channel Riprap

The Abt-Johnson result governs:

Governing D50 = max(4.88 in, 2.79 in) = 4.88 inches

Per NUREG-1623 Table 5.1, Type D riprap has a characteristic D50 of approximately 8 to 12 inches, D100 ≤ 18 inches. The computed D50 of 4.88 inches is less than the Type D characteristic D50, confirming that Type D riprap provides adequate stability with a substantial margin of safety. Channel lining specifications follow EA (2024) for the Shootaring Canyon facility:

- Primary riprap: 24-inch maximum, 12-inch nominal riprap layer
- Bedding layer: 4-inch granular bedding conforming to Leps and Terzaghi criteria
- Side slopes: 3:1 (H:V) adjacent to facility; 5:1 at TSF outslope interface

TABLE I-9. Diversion Channel Riprap Design Summary

Method	Computed D50 (in)	Governs?
Abt-Johnson (channel)	4.88	**Yes**
Shear stress (Shield's)	2.79	No
Governing D50	**4.88 in**	**→ Type D riprap (NUREG-1623)**

I-5.5 Bedding Filter Gradation

The bedding layer between the primary riprap and the channel subgrade must satisfy the Terzaghi filter compatibility criteria and the Leps interstitial velocity criterion. Bedding gradation shall be selected to satisfy:

$D15_{riprap} / D85_{bedding} \leq 40$ (Terzaghi permeability criterion)

$D15_{bedding} / D85_{subgrade} \leq 5$ (Terzaghi retention criterion)

Final bedding gradation shall be determined during construction drawings based on confirmed channel subgrade gradation from site borrow.

I-7. WIND EROSION SUMMARY

I-7.1 Method

Wind erosion from the rock mulch admixture surface was evaluated using the Wind Erosion Prediction System (WEPS), following the same methodology applied by EA (2022) for the Homestake Grants Reclamation Project.

I-7.2 Input Parameters

Surface material	30% AASHTO No. 1 gravel / 70% in-situ soil cover admixture
D50 of gravel	2.2 inches
Site elevation	~7,400 ft
Climate	Semi-arid, annual wind data from nearby ASOS station
Vegetation	Native grass (post-revegetation; shallow-rooted species)
Slope	5% on top deck; 20% on outslopes (analyzed separately)

I-7.3 Results and Compliance

The EA (2022) Homestake Grants analysis of a comparable 33/70 rock/soil admixture at a similar semi- arid New Mexico site yielded an estimated annual wind erosion rate of 0.2 ton/acre/year. The Mt. Taylor admixture contains 30% rock (versus 33% at Homestake), a slightly lower coarse fraction. Wind erosion from the Mt. Taylor cover is expected to be comparable to or slightly above the Homestake result, with an estimated range of 0.2 to 0.5 ton/acre/year.

This estimated range is well below the EPA erosion acceptability criterion of 2.0 ton/acre/year (EPA 2012). Final WEPS results using the site-specific wind record from the Grants-Milan Municipal Airport ASOS station will be presented in a future supplemental calculation set.

TABLE I-10. Wind Erosion Compliance Summary

Parameter	Value
Cover admixture	30% AASHTO No. 1 gravel / 70% in-situ soil cover
Estimated annual erosion rate	0.2–0.5 ton/ac/yr (WEPS, EA estimate)
EPA acceptable limit	< 2.0 ton/ac/yr
Compliance	**Meets limit with substantial margin**
Final WEPS run	Pending site wind record input

I-8. DESIGN DISCUSSION AND RECOMMENDED MITIGATION

I-8.1 Summary of Findings

The calculations in Sections I-2 through I-5 yield the following principal findings:

1. Under the 5-minute minimum tc (NUREG/CR-4620 Section 3.2), the design PMP intensity is 46.71 in/hr. This governs all slope length increments analyzed because the 20% outslope produces calculated Kirpich tc values less than 0.5 minutes even at 500-ft lengths.
2. The Abt-Johnson analysis indicates that the AASHTO No. 1 gravel component (D50 = 2.2 in) is stable under PMP conditions for slope run lengths up to approximately 286 feet (FS $\geq$ 1.0). Beyond this length, D50req exceeds D50prov. At the maximum analyzed slope length of 500 ft, FS = 0.73.
3. The conservative Leps Step 1 interstitial velocity (Vv = 1.99 ft/s) exceeds 1.0 ft/s when computed using the gravel component D50 alone. The refined Step 2 analysis using the blended admixture D50 (0.0106 in) yields Vv = 0.004 ft/s, which is far below the threshold. The Terzaghi compatibility check (D15/D85 = 0.045) confirms no separate filter layer is required at the admixture-in-situ soil cover interface.
4. The Pemberton-Lara gully analysis indicates that gravel armoring develops within the 12-inch admixture cover depth (Ys = 10.3 in < 12 in), providing protection against progressive gully incision under mean-annual flows.
5. The diversion channel is adequately designed with Type D riprap (governing D50 = 4.88 in from Abt-Johnson), providing margin above the shear-stress-based requirement.

TABLE I-11. Design Findings and Compliance Summary

Check	Method	Result	Status
PMP (1-hr, 7,400 ft)	HMR-55A	8.65 in	Established
Design intensity at t_c = 5 min	NUREG/CR-4620 Table 2.1	46.71 in/hr	Governs
Abt-Johnson FS at L = 50 ft	Abt-Johnson (1991)	FS = 2.65	**OK**
Abt-Johnson FS at L = 250 ft	Abt-Johnson (1991)	FS = 1.08	**OK (marginal)**
Abt-Johnson FS at L = 300 ft	Abt-Johnson (1991)	FS = 0.97	**FS < 1.0**
Critical slope run length	Interpolated	~286 ft	Design constraint
Leps interstitial velocity	Leps (1973)	Step 1: 1.99 ft/s (gravel D50); Step 2: 0.004 ft/s (blended D50)	**No filter required (refined analysis governs)**
Pemberton-Lara scour depth	Pemberton-Lara (1984)	Y_s = 10.3 in < 12 in	**Armor forms within admixture**
Channel riprap D50	Abt-Johnson / Shear	4.88 in (Type D)	**OK**
Wind erosion	WEPS (EA estimate)	0.2–0.5 ton/ac/yr	**Below 2.0 limit**

I-8.2 Recommended Design Measures

Based on the findings above, the following design measures are recommended:

1. **Maximum Slope Run Limit:** The 20% outslope face shall be interrupted by a drainage berm or interceptor channel at maximum intervals of 250 feet. This keeps the slope run within the FS ≥ 1.0 envelope under PMP conditions using the AASHTO No. 1 gravel admixture (D50 = 2.2 in). Where slope geometry precludes an intermediate berm at 250 ft, the gravel specification shall be upgraded to achieve D50 ≥ 2.30 in (e.g., AASHTO No. 1 with upper specification limit) or a supplemental riprap blanket shall be placed on the lower portion of the outslope.
2. **Filter Verification:** The refined Leps analysis (Section I-3.2) and Terzaghi compatibility check (D15/D85 = 0.045) confirm that no separate filter layer is required at the admixture-to-in-situ soil cover interface. Gradation compatibility at this interface shall be confirmed

duringconstruction quality control using the measured admixture base gradation and the in-situ soil cover D85.

3. **Diversion Channel:** Final riprap sizing shall be confirmed by substituting the HEC-HMS computed PMF unit discharge for the placeholder value of q = 5.0 cfs/ft. Type D riprap (D50 ≈ 10 in) is the specified gradation per NUREG-1623.
4. **Wind Erosion:** A final WEPS run using the site-specific wind record from the Grants-Milan Municipal Airport ASOS station shall be submitted as a supplemental calculation to confirm compliance with the EPA 2.0 ton/acre/year standard.

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APPENDIX J
EVALUATION OF DIESEL PLACEMENT IN PROPOSED EXPANDED DISPOSAL CELL

EVALUATION OF DIESEL PLACEMENT IN PROPOSED EXPANDED DISPOSAL CELL

Prepared for:

Rio Grande Resource Corporation

P.O Box 1150

Grants, NM 87020

Prepared by:

Engineering Analytics, Inc.
Now Part of MacKay

1600 Specht Point Road, Suite 209
Fort Collins, Colorado 80525
(970) 488-3111

Project No. 111360

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EXECUTIVE SUMMARY

This report presents a comprehensive, regulator-ready evaluation of the suitability of placing diesel-impacted soils and radiologically elevated soils within the expanded disposal cell at the Mt. Taylor Mine. The assessment integrates hydrocarbon and radiological soil data, groundwater monitoring results, engineering design criteria, and federal and state regulatory frameworks. The primary objective is to determine whether co-placement of these materials is technically feasible, environmentally protective, and compliant with the requirements of the New Mexico Environment Department (NMED), the Mining and Minerals Division (MMD), and applicable federal radiological standards. The evaluation concludes that diesel-impacted soils at the site do not meet the definition of hazardous waste under RCRA, and radiologically elevated soils do not coincide with elevated diesel concentrations in a manner that would trigger mixed-waste classification. As a result, the site does not contain mixed waste, and co-placement is permissible under state and federal regulations.

Hydrocarbon impacts are limited to a discrete diesel release area where TPH-DRO concentrations exceed the NMED industrial Soil Screening Level of 3,000 mg/kg. These soils contain weathered hydrocarbons, lack free-phase product, and exhibit physical properties compatible with engineered placement. Radiological impacts, which represent the primary driver for engineered containment, are more widespread and exceed site-specific investigation levels for Ra-226 across the North Controlled Area, Ore Pad, and several treatment ponds. The spatial analysis confirms that the diesel hotspot does not overlap with radiological hotspots, and areas where both contaminants occur contain diesel at concentrations far below regulatory thresholds. Engineering assessments show that the enlarged disposal cell, which features a low-permeability liner, a radon-blocking cover, and long-term monitoring systems, can effectively isolate both types of waste.

Groundwater protection is ensured by the substantial vertical separation between the disposal cell and the deep groundwater table, which lies 70 to 95 feet below ground surface. Localized detections of benzene and uranium in seepage do not alter the regulatory classification of the soils and underscore the need for source removal and engineered containment. The co-placement strategy reduces long-term environmental risk by consolidating waste into a single engineered unit, minimizing the number of areas requiring institutional controls, and simplifying long-term stewardship obligations. Based on the integrated evaluation, co-placement is recommended as the most technically sound, environmentally protective, and regulatorily compliant approach for achieving long-term closure objectives at the Mt. Taylor Mine.

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LIST OF ACRONYMS

Acronym	Definition
AVM	AVM Environmental Services, Inc.
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
DOE	U.S. Department of Energy
DP	Discharge Permit
DRO	diesel-range organics
EA	(As used in this report) Environmental Analysis, Inc.
EPA	U.S. Environmental Protection Agency
HDPE	high-density polyethylene
HWA	Hazardous Waste Act (New Mexico)
IAEA	International Atomic Energy Agency
MCL	Maximum Contaminant Level
MMD	Mining and Minerals Division (New Mexico)
NCA	North Controlled Area
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NRC	U.S. Nuclear Regulatory Commission
OCD	Oil Conservation Division (New Mexico)
ORP	Ore Retention Pond
pCi/g	picocuries per gram
PNNL	Pacific Northwest National Laboratory
PRG	Preliminary Remediation Goal
RAGS	Risk Assessment Guidance for Superfund
RCRA	Resource Conservation and Recovery Act
RFAI	request for additional information
RGR	Rio Grande Resources (Rio Grande Resource Corporation)
RSL	Regional Screening Level
SSL	Soil Screening Level
TCLP	Toxicity Characteristic Leaching Procedure
TPH	total petroleum hydrocarbons
TPH-DRO	total petroleum hydrocarbons – diesel range organics
UMTRA	Uranium Mill Tailings Remedial Action
USGS	U.S. Geological Survey
UST	underground storage tank
VSP	Visual Sample Plan

1.0 INTRODUCTION AND PROJECT OBJECTIVES

1.1 Purpose and Scope of Evaluation

The primary purpose of this report is to assess the technical, regulatory, and environmental suitability of placing diesel-impacted soils within the expanded on-site disposal cell for radionuclide waste at Mt. Taylor Mine. As Rio Grande Resources (RGR) progresses from standby to active reclamation and closure, the strategy for managing legacy contamination must centralize waste to minimize long-term environmental impact. This evaluation integrates site-specific hydrocarbon and radiological soil data, groundwater results, engineering design requirements, and regulatory frameworks. The report aims to determine whether the chemical and radiological properties of these materials are compatible with engineered controls, ensuring that co-placement does not compromise the containment system's integrity or environmental safety over the required performance period, while meeting New Mexico Environment Department (NMED) Discharge Permit DP-61, Mining and Minerals Division (MMD) Permit C1002RE, and federal radiological standards.

This assessment also addresses regulatory expectations that RGR demonstrate a comprehensive understanding of contaminant nature and distribution across the mine property. The presence of both petroleum hydrocarbons and radionuclides does not automatically constitute a mixed-waste designation; regulators require evidence that the same soil mass meets criteria for both radioactive and RCRA hazardous waste. Accordingly, this report reviews contaminant concentrations, spatial relationships, regulatory classifications, and their potential interactions within the engineered disposal cell. The scope encompasses a thorough analysis of site characterization data, hydrogeologic conditions, waste classification criteria, and engineering compatibility to support a technically sound, environmentally protective, and legally permissible approach to long-term mine closure.

1.2 Site Background and Environmental Setting

Mt. Taylor Mine sits in Cibola County, New Mexico, about one mile north of San Mateo on the southwestern flank of Mt. Taylor within the Grants Mineral Belt (Figure 1.1). The facility operated as a conventional underground uranium mine, extracting over 675,000 tons of ore between the late 1970s and 1990. After entering a prolonged standby phase, Rio Grande Resources began formal closure efforts in December 2019. Reclamation activities now focus on shaft plugging, soil characterization, and remediation of historic mining impacts, all conducted under NMED Discharge Permit DP-61 and MMD Permit C1002RE.

The site's environment is shaped by a high-elevation, semi-arid climate, marked by low annual precipitation, strong seasonal variation, and freeze–thaw cycles. Most rainfall arrives during the summer monsoon, while cold, dry winters limit natural contaminant migration and slow hydrocarbon biodegradation, resulting in persistent weathered diesel in the subsurface. These climate factors directly affect erosion, infiltration, and long-term cover performance, which are essential for designing the expanded disposal cell. Regional climate data guide stormwater and erosion control strategies to ensure the cell's durability.

Geologically, the mine area consists of sedimentary formations from the Morrison, Dakota, and Mancos groups, overlain with volcanic deposits. Silty sands, gravels, and weathered volcanics dominate the shallow subsurface, offering favorable compaction for engineered waste placement. Beneath these layers, low-permeability mudstones and siltstones serve as barriers to groundwater movement. The deep groundwater table, found 70 to 95 feet below ground, provides substantial natural separation between surface waste and aquifers. Extensive investigations have defined the mine's chemical and radiological baseline. Studies from the 1950s to 1980s identified orebodies, while recent site work by Enserio Solutions (2021) and AVM Environmental Services (2023, 2025) mapped petroleum and radiological hotspots in specific areas. These findings suggest targeted excavation and consolidation can reduce risks, and groundwater monitoring indicates no widespread contamination.

1.3 Site Status and Contamination Overview

The Mt. Taylor Mine is currently in reclamation status under NMED DP-61 and MMD Permit C1002RE. The site presents dual environmental challenges: legacy radiological contamination from historical uranium mining and localized diesel contamination discovered in 2019 during potable water system rehabilitation. Investigations conducted between 2021 and 2023 delineated a concentrated diesel-impacted zone near the Car Shop and Hoist House, while radiological impacts were identified across broader areas, including the North Controlled Area (NCA), Ore Pad, and several treatment ponds. These findings underscore the need for a unified waste management strategy that consolidates both petroleum-impacted and radiologically elevated soils into a single engineered containment system.

Characterization data indicates that while the primary hotspots for diesel and radionuclides are geographically distinct, there is limited overlap in specific corridors such as the Mine Compound. In the Primary Diesel Release Area, TPH-DRO concentrations range from 4,700 to 11,700 mg/kg, significantly exceeding the NMED industrial soil screening level of 3,000 mg/kg. Radiologically elevated soils often exceed the site-specific investigation level of 6.8 pCi/g for Ra-226. The presence of these adjacent or co-located waste streams necessitates a disposal strategy that leverages the engineered expansion of the on-site disposal cell to prevent localized seepage into the deep-water table, which lies approximately 70 to 95 feet below ground surface. This section establishes the foundation for evaluating whether co-placement is technically and regulatorily appropriate.

2.0 SUMMARY OF SITE CHARACTERIZATION DATA

2.1 Hydrocarbon Distribution and Concentrations

Hydrocarbons impact at Mt. Taylor Mine are centered on a discrete diesel release discovered in 2019 during potable water system upgrades. Investigations by Ensero Solutions (2021) identified four key borings (MTSB-9, MTSB-10, MTSB-11, and MTSB-14) with Total Petroleum Hydrocarbons in the diesel range (TPH-DRO) far exceeding the NMED industrial Soil Screening Level (SSL) of 3,000 mg/kg (Figure 2.1). Concentrations ranged from 4,700 to 11,700 mg/kg, with the highest values detected between 10 and 15 feet below ground surface. The most severe contamination, estimated at about 7,400 cubic yards, is therefore highly localized and confined to the central operational areas, primarily at substantial subsurface depths. Notably, no free-phase petroleum product was found, and BTEX (benzene, toluene, ethylbenzene, xylenes) concentrations were consistently below regulatory thresholds, indicating that lighter, more mobile diesel fractions have largely dissipated or were never present in significant amounts.

Broader assessment by AVM Environmental Services (2023) extended characterization across the Mine Compound, where diesel odors were detected during radiological surveys. Laboratory results showed that outside the primary release area, diesel concentrations ranged from 22 to 170 mg/kg—well below the actionable 3,000 mg/kg SSL. These low-level impacts are not a regulatory concern and demonstrate that hydrocarbon contamination outside the core release zone is minor, limited, and manageable within the proposed disposal cell. The absence of free product and weathered condition of the diesel further confirm geochemical stability, making the material suitable for excavation and engineered containment. Collectively, the data supports a focused, technically feasible approach for consolidating diesel-impacted soils, minimizing handling complexity and ensuring compliance with state requirements for long-term environmental management.

2.2 Radiological and Spatial Overlap Analysis

Radiological surveys across Mt. Taylor Mine have identified significant contamination with Ra-226, uranium isotopes, and gamma anomalies in several key areas, including the North Controlled Area (NCA), Ore Pad, Treatment Ponds, and parts of the Mine Compound. Approximately 23 acres of the NCA, about half of its area, exceed the site-specific investigation threshold of 6.8 pCi/g Ra-226, with particularly deep impacts observed at the Ore Pad and Ore Retention Ponds, where contamination extends to depths of up to 15 feet below ground surface. These findings necessitate engineered containment solutions that comply with EPA 40 CFR 192 and NRC Appendix A, as the radiological impacts are extensive and drive the need for expanding the disposal cell.

Within the Mine Compound, radiological impacts are moderate but still surpass the 6.8 pCi/g threshold in several locations, particularly near the Production Shaft, with contamination reaching depths of about 10 feet. Importantly, these areas also contain low diesel concentrations (≤170 mg/kg), demonstrating that significant overlap between elevated hydrocarbons and radionuclides is minimal. This spatial separation supports the conclusion that a mixed-waste classification is not warranted. The primary contaminants requiring engineered disposal are Ra-226 and uranium, and the presence of low-level diesel in these soils does not change their regulatory status.

A spatial analysis shows that the corridor impacted by diesel (MTSB9 through MTSB14) partially overlaps with radiologically affected soils and the area designated for the expanded disposal cell. In the Mine Compound, soils with elevated Ra-226 to a depth of 10 feet coincide with minor diesel impacts. Table 2.1 summarizes the site areas impacted by diesel and radionuclides. Generally, areas impacted by elevated diesel contamination do not have elevated radionuclide concentrations above the background.

Table 2.1 summarizes how diesel (TPH-DRO) and Ra-226 impacts are distributed across the main Mt. Taylor Mine site areas and highlights why mixed-waste concerns are not triggered. The table shows that the Primary Diesel Release Area contains the only significant diesel exceedances (4,700–11,700 mg/kg, above the 3,000 mg/kg SSL) while Ra-226 remains at background (~1.8 pCi/g), indicating no radiological co-contamination in the diesel hotspot. In contrast, areas such as the North Controlled Area, Ore Pad/Retention Pond, and Treatment Ponds are characterized by elevated Ra-226 (generally above the 6.8 pCi/g investigation level) while diesel is not targeted because it is not a driving concern there. The Mine Compound is the primary area where both constituents are present; however, diesel concentrations are low (≤170 mg/kg) and below the SSL even where Ra-226 exceeds the investigation threshold. Overall, Table 2.1 supports the conclusion that elevated diesel and elevated Ra-226 do not overlap in the same soil mass, supporting co-placement in the engineered disposal cell.

Table 2.1 Summary of Diesel and Radiological Impacts by Site Area

Site Area	Diesel (TPH-DRO)	Radionuclides (Ra-226)	Notable Findings
Primary Diesel Release Area	4,700–11,700 mg/kg	Background (~1.8 pCi/g)	Significant exceedance of 3,000 mg/kg SSL; no radiological impacts.
North Controlled Area (NCA)	Not targeted	>6.8 pCi/g	Approximately 23 acres exceed investigation level.
Ore Pad & Retention Pond	Not targeted	Significantly elevated	Radiological impacts extend to ~15 ft bgs.
Mine Compound	≤170 mg/kg	>6.8 pCi/g	Both present, but diesel is low and below SSL.
Windblown Area	Not targeted	Localized exceedances	Impacts confined to top ~1 inch.
Treatment Ponds (1, 4–8)	Not targeted	>6.8 pCi/g	Radiological impacts in multiple ponds.
Marquez Arroyo	Not targeted	Below 6.8 pCi/g	No exceedances.

3.0 REGULATORY CRITERIA AND WASTE CLASSIFICATION

3.1 Federal and State Waste Placement Standards

Federal and state regulatory frameworks establish the criteria that govern the placement of diesel-impacted and radiologically elevated soils at the Mt. Taylor Mine. For petroleum-impacted soils, the New Mexico Environment Department (NMED) and the Oil Conservation Division (OCD) provide clear thresholds for total petroleum hydrocarbons (TPH) and associated constituents. The NMED industrial Soil Screening Level (SSL) for diesel-range organics (TPH-DRO) is 3,000 mg/kg, a value exceeded only within the discrete Primary Diesel Release Area. Additional criteria include a benzene limit of 10 mg/kg and a requirement that the upper four feet of reclaimed soil contain less than 100 mg/kg TPH to support vegetation and prevent phytotoxicity. These standards ensure that petroleum-impacted soils placed at depth do not pose risks to human health, ecological receptors, or long-term reclamation performance. The expanded disposal cell design accommodates these requirements by isolating diesel-impacted soils well below the root zone and beneath an engineered cover system.

Federal standards established by the U.S. Environmental Protection Agency (EPA) and the Nuclear Regulatory Commission (NRC) directly regulate radiologically elevated soils. Under EPA 40 CFR 192 and NRC 10 CFR Part 40, Appendix A, site managers must ensure that surface soils do not exceed 5 pCi/g above background and subsurface soils remain below 15 pCi/g above background. Several areas at Mt. Taylor Mine, such as the North Controlled Area, Ore Pad, and former treatment ponds, surpass these thresholds. To address this, the expanded disposal cell uses a low-permeability liner, a radon-attenuating cover, and long-term monitoring provisions that meet or exceed federal performance criteria. Because radiological impacts drive the need for engineered containment, the disposal cell's design specifically supports safe, long-term management of these materials.

The combined regulatory framework allows site managers to co-place diesel-impacted and radiologically elevated soils within the expanded disposal cell. Diesel-impacted soils at Mt. Taylor Mine do not qualify as hazardous waste under RCRA, since they are not listed wastes and lack hazardous characteristics such as ignitability, corrosivity, reactivity, or toxicity. Radiologically elevated soils, while subject to engineered containment, do not overlap with hazardous petroleum impacts in ways that would require mixed-waste classification. Table 3-1 (Summary of Applicable Regulatory Criteria) brings together the main thresholds for TPH, benzene, radium-226, and mixed-waste determinations, confirming that the proposed co-placement approach meets both state and federal requirements. Taken together, these criteria demonstrate that the expanded disposal cell offers an appropriate and compliant solution for managing both waste streams.

3.2 Determination of Mixed-Waste Status

A central regulatory question for the Mt. Taylor Mine is whether any soil mass qualifies as "mixed waste," defined under the New Mexico Hazardous Waste Act as material containing both radioactive constituents and RCRA hazardous waste. Diesel-impacted soils at the site do not meet the criteria for hazardous waste under RCRA. They are not listed wastes, and they do not exhibit hazardous characteristics such as ignitability, corrosivity, or reactivity. The toxicity characteristic, evaluated through the Toxicity Characteristic Leaching Procedure (TCLP), is also not triggered.

Although benzene was detected in localized seepage, soil benzene concentrations remain in the micrograms-per-kilogram range, which is orders of magnitude below levels associated with TCLP exceedances. Therefore, diesel-impacted soils are classified as non-hazardous petroleum-impacted soils.

The evaluation further confirms that no area at the site contains both elevated diesel (above 3,000 mg/kg) and elevated radionuclides (above 6.8 pCi/g Ra-226) in the same soil mass. In the Mine Compound, where both contaminants occur, diesel concentrations are low ($\leq$170 mg/kg) and well below regulatory thresholds. Because mixed-waste classification requires simultaneous presence of radioactive material and RCRA hazardous waste, and neither condition is met, the site does not contain mixed waste. This determination significantly simplifies the regulatory pathway for disposal, allowing diesel-impacted and radiologically elevated soils to be co-managed within the expanded disposal cell without invoking dual regulatory oversight.

The applicable regulatory criteria further support this determination. Under NMED petroleum guidance, soils containing TPH-DRO above 3,000 mg/kg require controlled management but are not classified as hazardous waste. Under EPA 40 CFR 192, radiologically elevated soils require engineered containment but are not subject to RCRA unless they also contain hazardous constituents. Because neither the diesel-impacted soils nor the radiologically elevated soils meet the dual criteria required for mixed-waste classification, the site does not contain mixed waste. This conclusion streamlines disposal regulation, permitting co-management of both waste types in the expanded cell under NMED DP-61 and MMD Permit C1002RE, avoiding dual RCRA mixed-waste oversight.

Table 3.1 Summary of Applicable Regulatory Criteria

Regulatory Area	Standard / Threshold	Applicability to Mt. Taylor
TPH-DRO (NMED/OCD)	3,000 mg/kg (industrial SSL)	Exceeded only in Primary Diesel Release Area.
Benzene (NMED)	10 mg/kg	Not exceeded in soil; localized seepage only.
TPH in top 4 ft (NMED)	100 mg/kg	Achievable with deep placement in disposal cell.
Ra-226 (EPA 40 CFR 192)	5 pCi/g (surface), 15 pCi/g (subsurface)	Exceeded in NCA, Ore Pad, Treatment Ponds.
Mixed Waste (HWA/RCRA)	Must be radioactive + RCRA hazardous	Not triggered; diesel soils are non-hazardous.

4.0 GROUNDWATER AND SEEPAGE CONSIDERATIONS

4.1 Hydrogeologic Context and Depth to Water

The hydrogeologic setting of the Mt. Taylor Mine is a critical factor in evaluating the suitability of placing diesel-impacted and radiologically elevated soils within the expanded disposal cell. Groundwater beneath the Mine Compound occurs at depths ranging from approximately 70 to 95 feet below ground surface (bgs), providing a substantial natural buffer between the contaminated soils and the underlying alluvial aquifer. This deep-water table significantly reduces the potential for downward migration of contaminants, particularly when combined with the arid climate and low infiltration rates characteristic of the region. Historical groundwater monitoring data demonstrate that the hydrocarbon contamination identified in 2019 has remained confined to the vadose zone, with no evidence of widespread BTEX or TPH impacts in the groundwater monitoring network.

The low-permeability nature of the underlying bedrock further enhances the natural containment of contaminants. The proposed disposal cell expansion incorporates engineered controls, including a low-permeability liner and a radon-attenuating cover system, are designed to minimize infiltration and prevent leachate generation. These engineered features effectively sever the pathway between surface waste and the subsurface aquifer, ensuring that contaminants remain isolated over the long term. Because the disposal cell will be constructed well above the groundwater table and will include multiple layers of engineered protection, the hydrogeologic conditions strongly support the safe placement of diesel-impacted and radiologically elevated soils within the expanded cell.

4.2 Regulatory Significance of Localized Detections

The presence of localized detections of benzene and uranium in seepage samples has important regulatory implications, but these detections do not alter the classification of the soils or trigger mixed-waste criteria. In one borehole (MTSB-10), benzene was detected at 12.2 µg/L, exceeding the New Mexico groundwater standard. However, this detection occurred in seepage, not in a monitoring well, and is interpreted as water that percolated through contaminated soil rather than groundwater from the regional aquifer. Under RCRA, hazardous waste determinations apply to the solid waste itself, not to water that has contacted the waste. Because benzene concentrations in the soils remain far below TCLP toxicity thresholds, the diesel-impacted soils do not meet the definition of hazardous waste.

Localized uranium detections in seepage, such as the measured concentration of 0.817 mg/L at the alluvium-bedrock interface, demonstrate uranium's inherent mobility under specific geochemical conditions; however, these findings do not provide evidence of extensive groundwater contamination. These detections underscore the need for engineered containment but do not change the regulatory status of the soil. Radiologically elevated soils at the site are regulated under EPA 40 CFR 192 and NRC 10 CFR Part 40, Appendix A, which require engineered containment and radon control but do not classify the soils as hazardous waste unless they also contain RCRA-regulated constituents. Because the diesel-impacted soils do not meet hazardous waste criteria, the radiologically elevated soils do not become mixed waste by association.

The regulatory significance of these localized detections lies in their role as indicators of source-area processes, not aquifer-scale impacts. By consolidating diesel-impacted and radiologically elevated soils into a lined and capped disposal cell, RGR effectively addresses the factors responsible for these localized exceedances, specifically by preventing infiltration through unlined, contaminated soils. The expanded disposal cell is specifically designed to prevent such interactions by isolating the waste mass from precipitation, limiting redox cycling, and preventing contact between infiltrating water and contaminated soils. This approach aligns with NMED DP-61 requirements for groundwater protection and supports the conclusion that co-placement is both protective and compliant with applicable regulatory standards.

Table 4.1 consolidates the key groundwater and seepage observations that co-placement is protective and does not change waste classification. The table highlights the deep groundwater table (70–95 ft bgs) as a primary natural protective feature, and notes that BTEX is not detected in monitoring wells, indicating no site-wide hydrocarbon plume. It also documents a localized benzene detection (12.2 µg/L) in MTSB-10 seepage, emphasizing that this is interpreted as seepage from percolation through impacted soil rather than regional groundwater impacts—therefore it does not trigger RCRA hazardous waste status for the soil. Similarly, the table summarizes a localized uranium seepage detection (0.817 mg/L) as evidence of potential mobility under certain conditions, reinforcing the need for engineered containment rather than indicating widespread aquifer contamination. Overall, Table 4.1 supports the rationale that a lined and capped disposal cell will minimize infiltration and leachate potential, thereby addressing the mechanisms that produced these localized detections.

Table 4.1 Summary of Groundwater and Seepage Findings

Parameter	Finding	Regulatory Significance
Depth to groundwater	70–95 ft bgs	Provides natural separation from waste; supports safe placement.
BTEX in groundwater	Non-detect in monitoring wells	Indicates no widespread hydrocarbon plume.
Benzene in MTSB-10 seepage	12.2 µg/L	Localized seepage; does not trigger hazardous waste classification.
Uranium in seepage	0.817 mg/L	Indicates radiological mobility; supports need for engineered containment.
Leachate potential	Negligible under engineered liner	Supports suitability of co-placement in disposal cell.

5.0 TECHNICAL EVALUATION OF CO-PLACEMENT

5.1 Physical and Geotechnical Compatibility

The physical characteristics of diesel-impacted and radiologically elevated soils at the Mt. Taylor Mine are sufficiently similar to support co-placement within the expanded disposal cell. Both soil types consist primarily of silty sands and gravels, which are non-plastic, readily compactable, and capable of achieving the density and stability required for engineered waste containment systems. These materials exhibit predictable compaction behavior, allowing them to be placed in controlled lifts that meet the structural requirements of the disposal cell design. The absence of free-phase petroleum product further enhances their suitability, as free product can interfere with compaction, reduce shear strength, and compromise the long-term stability of the waste mass. Because the diesel contamination has weathered, losing its lighter hydrocarbons, the soil acts much like clean granular material when it's excavated and placed.

Operationally, the co-placement of these soils reduces the need for segregated handling, minimizes the active footprint of waste management operations, and streamlines the overall reclamation process. Transporting both waste types to a single engineered containment area reduces equipment movement, lowers the potential for cross-contamination, and simplifies construction sequencing. Because the disposal cell expansion is located within the same operational corridor as the diesel-impacted and radiologically elevated soils, haul distances are short and operational efficiency is maximized. These factors collectively support the conclusion that the physical and geotechnical properties of the soils are compatible with co-placement and will not compromise the structural integrity of the disposal cell.

5.2 Geochemical Compatibility and Radionuclide Behavior

Geochemical interactions between diesel-impacted and radiologically elevated soils are not expected to present significant risks when co-placed in the engineered disposal cell. Diesel biodegradation is minimal in the cell’s dry, low-oxygen environment, reducing the likelihood of uranium or radionuclide mobilization. Uranium's mobility increases in oxidizing conditions, particularly with carbonate and dissolved organic carbon, while reducing conditions can either immobilize or remobilize it during redox cycles. Iron and manganese oxides can sorb uranium but release it when reduced (DOE, 2018; Punia et. al., 2021)). The stable geochemical setting limits both hydrocarbon breakdown and radionuclide movement, supporting long-term containment. Diesels do not influence radioactive decay, radon, or gamma emissions. The cell’s cover and liner prevent radon and contaminant migration, maintaining isolation. Together, these controls and natural soil stability confirm that co-placement does not introduce additional geochemical or radiological hazards.

5.2.1 Uranium Mobility in the Presence of Hydrocarbons

The interaction between hydrocarbons and uranium-bearing soils introduces geochemical conditions that can influence uranium mobility within the vadose zone. Hydrocarbons, particularly diesel-range organics, act as electron donors that stimulate microbial activity. As microbes degrade hydrocarbons, they consume oxygen and drive the system toward reducing (low-Eh) conditions. Under these partially reducing conditions, uranium remains in its soluble U(VI) form rather than

converting to insoluble U(IV). Because the reduction process is often incomplete or spatially variable, the resulting redox gradients can enhance uranium mobility rather than immobilize it. These dynamics are especially relevant in semi-arid environments like Mt. Taylor, where infiltration events are episodic and redox conditions can fluctuate rapidly.

Hydrocarbon degradation also produces organic acids, bicarbonate, and dissolved carbon dioxide, all of which promote the formation of soluble uranyl-carbonate complexes. Complexes like $UO_2(CO_3)_2^{2-}$ and $UO_2(CO_3)_3^{4-}$ are very mobile in groundwater and stay stable over a broad range of pH levels. The increased availability of organic ligands and carbonate species enhances uranium solubility and reduces sorption to mineral surfaces. Additionally, slight decreases in pH associated with hydrocarbon biodegradation can dissolve uranium-bearing minerals or destabilize sorption sites on clays and iron oxides, further contributing to uranium mobilization.

Hydrocarbon-driven reduction of iron and manganese oxides can also release uranium previously bound to these mineral phases. As Fe(III) and Mn(IV) oxides dissolve under reducing conditions, sorbed uranium is liberated into porewater. Repeated redox cycling, which often occurs in semi-arid regions during periods of intermittent infiltration, can convert U(IV) back into U(VI), resulting in recurring surges of mobile uranium. These processes underscore the importance of engineered containment systems that minimize infiltration, stabilize redox conditions, and prevent contact between infiltrating water and contaminated soils. The expanded disposal cell design, which incorporates a low-permeability liner, radon-attenuating cover, and moisture-limiting features, effectively mitigates these geochemical mechanisms and ensures long-term isolation of uranium-bearing materials.

5.2.2 Hydrocarbon Geochemistry and Implications for Contaminant Behavior

The geochemical behavior of hydrocarbons in the subsurface plays a central role in determining how diesel-impacted soils interact with radiologically elevated materials. Diesel-range organics (DRO) consist primarily of long-chain alkanes, cycloalkanes, and aromatic hydrocarbons that degrade slowly under the semi-arid climatic conditions present at the Mt. Taylor Mine. In the vadose zone, hydrocarbons undergo limited volatilization and slow microbial degradation due to low moisture availability and restricted oxygen diffusion. As a result, the diesel present at the site is highly weathered, with reduced concentrations of volatile aromatic compounds such as benzene, toluene, ethylbenzene, and xylenes (BTEX). This weathering reduces the potential for hydrocarbon migration and minimizes the likelihood of free-phase product formation, which is consistent with field observations and analytical data showing no measurable free product in any borehole.

Hydrocarbon degradation, although slow, can still influence subsurface geochemistry through the production of organic acids, carbon dioxide, and reduced species. Microbial oxidation of hydrocarbons consumes oxygen and can drive the system toward reducing conditions, particularly in microenvironments where moisture is present. These reducing conditions may promote the dissolution of iron and manganese oxides, which are common sorbents for both hydrocarbons and uranium. The dissolution of these oxides can release previously sorbed contaminants into porewater, although the extent of this process at Mt. Taylor is limited by the site's low moisture content and the weathered nature of the diesel. Additionally, the production of carbon dioxide

during hydrocarbon degradation increases bicarbonate concentrations, which can enhance the formation of uranyl-carbonate complexes and influence uranium mobility.

The physical and chemical properties of diesel-impacted soils also influence their behavior within an engineered disposal environment. Weathered hydrocarbons tend to increase soil hydrophobicity, reducing infiltration and limiting the movement of water through the waste mass. This effect can be beneficial in a disposal cell setting, as it reduces the potential for leachate generation and minimizes contact between infiltrating water and radiologically elevated soils. However, hydrocarbon-impacted soils may also exhibit slightly altered compaction characteristics, depending on moisture content and organic loading. These factors must be considered during waste placement to ensure that compaction specifications are met and that the engineered cover system performs as designed. The expanded disposal cell design accommodates these considerations by requiring controlled lift placement, moisture conditioning where necessary, and verification of compaction through construction quality assurance procedures.

Overall, the geochemical behavior of hydrocarbons at the Mt. Taylor Mine supports the conclusion that diesel-impacted soils are compatible with co-placement in the expanded disposal cell. The hydrocarbons present are weathered, immobile, and geochemically stable under site conditions. Their degradation products, while capable of influencing redox conditions and carbonate chemistry, do so in a manner that is predictable and manageable within the engineered containment system. The combination of natural geochemical stability, limited mobility, and robust engineered controls ensures that hydrocarbon-impacted soils can be safely co-managed with radiologically elevated materials without compromising long-term environmental protection.

5.2.3 Combined Contaminant Behavior: Hydrocarbons and Uranium

The combined presence of hydrocarbons and uranium in the subsurface creates a complex geochemical environment in which the behavior of each contaminant influences the mobility of the other. Hydrocarbons act as electron donors that stimulate microbial activity, consuming oxygen and driving the system toward reducing conditions. These partially reducing conditions can destabilize iron and manganese oxides—key sorbents for uranium—leading to the release of previously immobilized uranium into porewater. At the same time, the degradation of hydrocarbons produces organic acids and bicarbonate, which form strong aqueous complexes with U(VI), enhancing its solubility and mobility. Thus, even though hydrocarbons at the Mt. Taylor Mine are weathered and relatively immobile, their presence can indirectly influence uranium behavior through redox modification and complexation chemistry.

The interaction between hydrocarbons and uranium is further complicated by the semi-arid climatic conditions at the site, which promote episodic infiltration and redox cycling. During wet periods, oxygenated water infiltrates the vadose zone, oxidizing U(IV) to mobile U(VI) and potentially re-mobilizing uranium that had been temporarily immobilized under reducing conditions. During dry periods, microbial degradation of hydrocarbons re-establishes reducing microenvironments, altering the stability of uranium-bearing minerals and sorption sites. These redox oscillations can create repeated pulses of uranium mobility, particularly in zones where hydrocarbons and uranium co-occur at low to moderate concentrations. Although the diesel

hotspot does not overlap with radiological hotspots at Mt. Taylor, the areas where both contaminants occur at low levels may still experience these geochemical interactions.

Despite these potential interactions, the engineered design of the expanded disposal cell effectively mitigates the conditions that promote uranium mobilization in the presence of hydrocarbons. The low-permeability liner and radon-attenuating cover limit infiltration, reducing the likelihood of redox cycling and minimizing contact between infiltrating water and contaminated soils. The engineered cover also maintains stable moisture and oxygen conditions, suppressing microbial activity and slowing hydrocarbon degradation. By isolating the waste mass from climatic fluctuations and controlling the geochemical environment within the cell, the disposal system prevents the formation of conditions that would otherwise enhance uranium mobility. As a result, the combined presence of hydrocarbons and uranium does not pose a long-term risk when managed within the engineered containment system.

Table 5.1 Hydrocarbon Geochemical Processes Relevant to Uranium Mobility

Hydrocarbon Process	Geochemical Mechanism	Effect on Uranium Mobility
Microbial degradation of hydrocarbons	Consumes oxygen, lowers redox potential (Eh)	Maintains uranium in soluble U(VI) form during partial reduction
Production of organic acids	Generates acetate, lactate, citrate	Forms soluble U-organic complexes; increases mobility
CO_2 generation and bicarbonate increase	Hydrocarbon oxidation produces $CO_2 \rightarrow HCO_3^-$	Promotes uranyl-carbonate complexes (highly mobile)
Iron and manganese reduction	Dissolves Fe/Mn oxides	Releases sorbed uranium into porewater
Hydrophobic soil behavior	Reduced infiltration through hydrocarbon-coated grains	Limits water movement but can create perched microenvironments
pH modification	Slight acidification from organic acids	Dissolves uranium-bearing minerals; destabilizes sorption
Redox cycling	Alternating wet/dry conditions	Re-oxidizes U(IV) to mobile U(VI); repeated mobilization pulses

5.3 Hydrocarbon Performance and Liner Integrity

The behavior of diesel within the disposal cell environment is consistent with long-term containment objectives. Under a low-permeability engineered cover, hydrocarbon vapors are negligible, and any residual odors dissipate rapidly once the soils are buried. Research and site-specific evaluations indicate that weathered diesel concentrations at the levels found at Mt. Taylor—up to approximately 1.17% by weight—do not compromise the integrity of high-density polyethylene (HDPE) liners. HDPE is resistant to diesel permeation at concentrations far higher than those present at the site, and the absence of free-phase product further reduces the potential for chemical stress on the liner. This ensures that the liner will maintain its performance over the long-term design life of the disposal cell.

Table 5.2 Technical Evaluation of Hydrocarbon-Impacted Soil with Radionuclide Waste

Impact Category	Technical Consideration	Potential Impact & Integration Issues
Geochemical Integration	**Redox Potential Shifts**	Hydrocarbon degradation consumes oxygen and increases biological activity, which can shift subsurface geochemistry to reducing conditions. This may convert uranium between different oxidation states, potentially altering its stability.
Geochemical Integration	**Complexation and Solubility**	Organic acids and ligands generated during the biodegradation of diesel can complex with uranium, significantly increasing its solubility and mobility within the cell.
Geochemical Integration	**Carbonate Equilibria**	Enhanced production of CO_2 from hydrocarbon degradation can impact carbonate equilibria, further influencing the mobility of uranium.
Physical Stability	**Slope and Structural Stability**	Hydrocarbon-impacted soils often exhibit lower shear strength, higher compressibility, and variable moisture content compared to standard mine waste. This can compromise the overall stability of the disposal cell and affect settlement patterns.
Physical Stability	**Cover System Integrity**	Differential settlement caused by the higher compressibility of oily soils can lead to cracking or failure of the engineered low-permeability cover.
Liner Compatibility	**Chemical Stress on HDPE**	While weathered diesel at observed concentrations (up to 1.17% by weight) generally does not compromise HDPE, free-phase product or high concentrations could subject the liner to chemical stress or permeation.
Hydrologic Performance	**Infiltration and Leachate**	Hydrocarbon degradation may alter soil porosity or hydrophobicity. If not tightly compacted, these soils could facilitate moisture pathways that mobilize radionuclides.
Regulatory & Stakeholder	**Dual Framework Compliance**	Co-placement requires navigating dual standards: NMED Soil Screening Levels for hydrocarbons and NRC/40 CFR 192 for radionuclides. Stakeholders may express concerns regarding the perceived risks of "mixing" these waste streams.

Tables 5.2 and 5.3 collectively indicate that co-placement is technically achievable, provided that the disposal cell is designed and managed to effectively control key interaction mechanisms. Table 5.2 outlines primary integration risk categories, including geochemical effects (such as redox shifts, organic acid/ligand complexation, and carbonate equilibria that may impact uranium mobility), concerns regarding physical stability (including reduced shear strength, increased compressibility, differential settlement, and potential effects on cover integrity), liner

compatibility (noting that weathered diesel at observed levels typically does not damage HDPE in the absence of free product), hydrologic performance (highlighting the need for sufficient compaction to avoid preferential moisture pathways and leachate production), and regulatory/stakeholder considerations related to managing dual standards within a single unit. Table 5.3 shows that the site's compactable silty sands and gravel are suitable, with no free product detected. Diesel is stable and weathered and does not affect radon or gamma shielding. Furthermore, the HDPE liner and engineered cover are compatible with both waste types, and operational efficiencies support the consolidation of waste into a single engineered unit.

From an engineering perspective, co-placement is the most efficient and technically defensible approach. Segregating diesel-impacted soils from radiologically elevated soils would require the construction of additional disposal units, increasing the long-term stewardship burden without providing measurable environmental benefits. By consolidating both waste streams into a single engineered containment system, RGR can optimize the performance of the radon-attenuating cover, minimize the number of units requiring monitoring, and reduce the overall footprint of waste management infrastructure. This integrated approach aligns with best practices for mine reclamation and long-term environmental stewardship.

To manage environmental and geotechnical risks in the expanded disposal cell, four main engineering controls are advised: maintain low-permeability, oxygen-limited conditions via compaction and moisture; blend hydrocarbon-impacted soil with granular material for stability; use a durable, vegetated cover to reduce infiltration and volatilization; and monitor groundwater for contaminants and settlement. These steps promote consistent waste properties, limit contaminant spread and ensure long-term compliance.

Table 5.3 Summary of Technical Compatibility Factors

Compatibility Area	Findings	Implications for Co-Placement
Physical properties	Silty sands and gravels; compactable; no free product	Suitable for stable placement in engineered lifts
Geochemical behavior	Minimal hydrocarbon degradation; limited redox cycling	Low potential for radionuclide mobilization
Radiological performance	Diesel does not affect radon or gamma emissions	Compatible with radon-attenuating cover
Liner compatibility	Weathered diesel does not compromise HDPE	Supports long-term containment integrity
Operational efficiency	Reduced handling and transport distances	Supports streamlined reclamation

6.0 RISK AND COMPLIANCE EVALUATION

6.1 Human Health and Air Pathways

The evaluation of human health risks associated with co-placement of diesel-impacted and radiologically elevated soils focuses on potential exposure pathways during both active construction and long-term post-closure conditions. Once the soils are placed within the expanded disposal cell and covered with the engineered cap, direct exposure pathways—such as incidental ingestion, dermal contact, or inhalation of particulates—are effectively eliminated. The cover system is specifically designed to provide radon attenuation, ensuring that radon flux remains below regulatory thresholds established under EPA 40 CFR 192. Because diesel-impacted soils at the site contain weathered hydrocarbons with negligible vapor pressure, the potential for hydrocarbon vapor emissions is extremely low. This further reduces the likelihood of inhalation risks, even during the active placement phase.

Air pathway risks are also mitigated through standard operational controls during excavation, transport, and placement of the soils. Dust suppression measures, such as water application and controlled equipment movement, minimize the generation of airborne particulates. Air monitoring during construction ensures that worker exposures remain within occupational safety limits. Once the engineered cover is installed, windblown dust is no longer a concern, and the site transitions into a long-term stewardship phase where institutional controls prevent disturbance of the capped waste. Collectively, these measures ensure that co-placement does not introduce unacceptable human health risks and remains consistent with regulatory expectations for mine reclamation and closure.

6.2 Groundwater Protection and Long-Term Environmental Risk

Groundwater protection is a central component of the risk evaluation for the expanded disposal cell. Section 4 shows that the deep groundwater table, 70 to 95 feet below ground, acts as a significant natural barrier between waste and the aquifer. The engineered design of the disposal cell further enhances this protection by incorporating a low-permeability liner, drainage layer, and radon-attenuating cover. These features minimize infiltration, prevent leachate generation, and ensure that contaminants remain isolated from groundwater over the long term. The absence of widespread BTEX or TPH detections in the groundwater monitoring network supports the conclusion that hydrocarbon impacts have remained confined to the vadose zone since their discovery.

Long-term environmental risks are further mitigated by the consolidation of diesel-impacted and radiologically elevated soils into a single engineered containment system. This approach reduces the number of potential contaminant sources across the site and eliminates the conditions that contributed to localized seepage exceedances, such as the benzene detection in borehole MTSB-10. By removing impacted soils from unlined areas and placing them in a lined, capped cell, RGR ensures that future infiltration events cannot mobilize contaminants. The long-term monitoring program required under NMED DP-61 and MMD Permit C1002RE provides ongoing verification of groundwater protection, ensuring that any unexpected changes in groundwater quality are promptly identified and addressed.

6.3 Regulatory Compliance and Institutional Controls

Compliance with state and federal regulatory requirements is a critical component of the risk evaluation. The co-placement of diesel-impacted and radiologically elevated soils is consistent with the regulatory framework governing both waste types. Diesel-impacted soils at the site do not meet the criteria for RCRA hazardous waste, and radiologically elevated soils require engineered containment regardless of hydrocarbon content. The expanded disposal cell is designed to meet the requirements of EPA 40 CFR 192, NRC Appendix A, and NMED DP-61, ensuring that radon flux, infiltration, and long-term stability criteria are satisfied. Because mixed-waste classification is not triggered, the disposal cell does not require dual regulatory oversight, simplifying compliance and long-term management.

Institutional controls play a key role in ensuring long-term protection of human health and the environment. These controls include land-use restrictions, maintenance of the engineered cover, periodic inspections, and groundwater monitoring. The consolidation of waste into a single engineered unit reduces the number of areas requiring institutional controls and simplifies long-term stewardship. Documentation of waste placement, compaction records, and confirmation sampling results will be maintained to support regulatory review and eventual site release. This integrated compliance framework ensures that the co-placement strategy remains protective, verifiable, and aligned with the long-term reclamation objectives for the Mt. Taylor Mine. Table 6.1 summarizes the risk and compliance factors.

The co-placement strategy meets regulatory requirements and boosts transparency and stakeholder trust. By following clear standards and keeping detailed records, the team shows commitment to environmental and regulatory goals. Regular engagement with agencies and the public builds confidence in the management plan. These actions support approval, site closure, and address concerns about waste streams, ensuring the project aligns with community expectations and best mine reclamation practices.

Table 6.1 Summary of Risk and Compliance Evaluation

Risk Area	Key Findings	Regulatory Implications
Human health	Exposure pathways eliminated by engineered cover	Meets EPA and NMED health-based standards
Air pathways	Negligible hydrocarbons vapor: radon controlled	Complies with 40 CFR 192 radon limits
Groundwater	Deep groundwater table; engineered liner prevents leachate	Supports DP-61 groundwater protection
Environmental risk	Consolidation reduces contaminant sources	Enhances long-term site stability
Regulatory compliance	No mixed-waste criteria triggered	Simplifies permitting and oversight

7.0 DETERMINATION OF SUITABILITY FOR PLACEMENT

7.1 Suitability Findings

The comprehensive evaluation of hydrocarbon impacts, radiological conditions, groundwater protection, engineering design, and regulatory criteria demonstrates that diesel-impacted soils containing radiologically elevated materials are suitable for placement within the expanded disposal cell at the Mt. Taylor Mine. The technical analyses confirm that there are no physical, geotechnical, or radiological barriers to co-placement. Diesel-impacted soils exhibit stable physical properties, lack free-phase product, and contain weathered hydrocarbons that do not compromise compaction or liner integrity. Radiologically elevated soils, which represent the primary driver for engineered containment, are already designated for controlled disposal within the expanded cell. The co-location of low-level diesel in some radiological areas does not alter the classification or behavior of the soils and does not introduce new risks.

From a regulatory standpoint, the evaluation confirms that no soil mass at the site meets the dual criteria required for mixed-waste classification under the New Mexico Hazardous Waste Act or RCRA. Diesel-impacted soils are not hazardous waste, and radiologically elevated soils do not coincide with elevated diesel concentrations in a manner that would trigger mixed-waste management. This determination simplifies the regulatory pathway and supports the use of a single engineered containment system. The risk assessment further demonstrates that co-placement reduces long-term environmental risk by removing impacted soils from unlined areas and isolating them within a lined, capped disposal cell designed to meet federal and state performance standards.

7.2 Basis of Determination

The determination of suitability is grounded in a multi-disciplinary evaluation that integrates site characterization data, regulatory requirements, engineering design criteria, and long-term environmental protection considerations. Hydrocarbon impacts are limited in extent, well-defined, and geochemically stable. Radiological impacts are more widespread but are already slated for engineered containment. The spatial analysis confirms that the diesel hotspot does not overlap with radiological hotspots, and areas where both contaminants occur contain diesel at concentrations far below regulatory thresholds. This spatial separation is a key factor in determining that mixed-waste criteria are not met and that co-placement is permissible.

Engineering evaluations confirm that the expanded disposal cell is designed to accommodate both waste types without compromising performance. The low-permeability liner, radon-attenuating cover, and infiltration controls ensure that contaminants remain isolated from groundwater and the surrounding environment. The geochemical environment within the cell, which is characterized by low moisture, limited oxygen, and minimal redox cycle, further reduces the potential for hydrocarbon degradation or radionuclide mobilization. Collectively, these findings support the conclusion that co-placement is technically feasible, environmentally protective, and fully compliant with applicable regulatory requirements.

The key determination factors supporting co-placement include: (1) the absence of hazardous waste characteristics in diesel-impacted soils; (2) the spatial separation between diesel hotspots and radiological hotspots; (3) the engineered design of the disposal cell, which meets or exceeds

federal and state performance standards; (4) the deep water table and stable hydrogeologic conditions that limit contaminant mobility; and (5) the regulatory framework, which does not classify the soils as mixed waste. Table 7-1 consolidates these factors and demonstrates that the proposed co-placement approach aligns with all applicable regulatory criteria. Collectively, these findings provide a clear, defensible basis for assessing co-placement is appropriate and protective. Table 7.1 indicates that hydrocarbons contamination is local, weathered, and lacks free product, and radiological contamination is the primary driver for engineered containment and justifies the use of lined, and capped cell. The table highlights that the engineering design (liner and cover) is compatible with both waste types and that groundwater protection is robust due to the deep groundwater table and negligible leachate potential under the engineered system. Finally, Table 7.1 ties these findings to full regulatory compliance (DP-61, C1002RE, and 40 CFR 192), supporting the overall suitability determination.

In addition to the technical and regulatory assessments, ongoing monitoring and adaptive management strategies are proposed to ensure continued compliance and protection of environmental resources. Periodic sampling of groundwater and soil, combined with robust data tracking, will allow for early detection of any unexpected changes in contaminant behavior or migration. The integrated approach also includes contingency protocols for potential remedial actions, should future site conditions warrant intervention. By establishing clear operational guidelines and regular review processes, the placement strategy remains responsive to evolving regulatory standards and scientific advancements. This proactive framework not only reinforces the safety and reliability of the disposal cell but also demonstrates a commitment to transparency and stakeholder engagement throughout the project lifecycle.

Table 7.1 Summary of Key Determination Factors

Evaluation Area	Key Findings	Conclusion
Hydrocarbon impacts	Localized; weathered; no free product	Suitable for controlled disposal
Radiological impacts	Widespread; exceed investigation levels	Require engineered containment
Spatial overlap	No overlap of elevated diesel and elevated Ra-226	Mixed-waste criteria not triggered
Engineering design	Liner and cover compatible with both waste types	Supports co-placement
Groundwater protection	Deep water table; negligible leachate potential	Protective of aquifer
Regulatory compliance	Meets DP-61, C1002RE, 40 CFR 192	Fully compliant

8.0 IMPLEMENTATION CONDITIONS

8.1 Engineering and Operational Requirements for Placement

The successful implementation of co-placement within the expanded disposal cell requires adherence to specific engineering and operational conditions designed to ensure long-term stability and regulatory compliance. First, the disposal cell must incorporate a compliant low-permeability liner system capable of isolating both diesel-impacted and radiologically elevated soils from the surrounding environment. This liner must meet or exceed the performance standards established under NMED DP-61 and EPA 40 CFR 192, including requirements for hydraulic conductivity, thickness, and resistance to chemical degradation. The radon-attenuating cover must be constructed to specifications that ensure long-term control of radon flux, erosion resistance, and moisture infiltration. These engineered components form the foundation of the containment system and must be installed under rigorous quality assurance protocols.

Operationally, the placement of mixed soil must occur in controlled lifts that achieve the compaction standards specified in the engineering design. Proper compaction is essential to maintaining the structural integrity of the waste mass, preventing differential settlement, and ensuring the long-term performance of the cover system. During excavation and transport, soils must be handled in a manner that minimizes dust generation, prevents cross-contamination, and maintains clear separation between waste destined for the disposal cell and materials intended for reuse or reclamation. Equipment operators must follow established haul routes and placement procedures to maintain operational efficiency and environmental protection. These engineering and operational requirements collectively ensure that co-placement is executed safely and in accordance with regulatory expectations.

In addition, robust documentation and verification practices are essential throughout the placement process. Detailed records of liner installation, cover construction, and soil placement must be maintained to demonstrate compliance with regulatory standards and engineering specifications. This includes tracking the source and characteristics of all waste materials, documenting compaction testing results, and recording any corrective actions taken during construction. Regular inspections and third-party quality assurance reviews should be conducted to confirm that all engineered barriers and operational controls are functioning as intended. By maintaining comprehensive documentation and proactive oversight, project stakeholders can ensure that the disposal cell provides reliable containment and meets both environmental and regulatory objectives for the long term.

8.2 Confirmation Sampling and Waste Acceptance Criteria

To ensure that only appropriate materials are placed within the expanded disposal cell, confirmation sampling must be conducted during excavation to verify that no free-phase petroleum product is present in the diesel-impacted soils. Free products pose a risk to liner integrity and can compromise compaction, making its exclusion essential. Confirmation sampling should include visual inspection, field screening, and laboratory analysis of representative samples. Analytical parameters should include TPH-DRO, BTEX, and any additional constituents identified during site characterization. Soil exceeding the established waste acceptance criteria must be segregated and evaluated for alternative management options.

Radiologically elevated soils must also be verified through gamma screening and laboratory analysis to ensure that they meet the radiological waste acceptance criteria for the disposal cell. These criteria are based on the design assumptions for radon attenuation and long-term radiological stability. Documentation of all confirmation sampling results must be maintained as part of the project record and made available for regulatory review. This documentation provides assurance that the waste placed in the disposal cell meets the design specifications and regulatory requirements, supporting long-term compliance and environmental protection.

8.3 Long-Term Monitoring and Stewardship Requirements

Long-term monitoring is a critical component of the disposal cell's performance and is required under NMED DP-61 and MMD Permit C1002RE. Groundwater monitoring wells located around the disposal cell must be sampled at regular intervals to verify that no leachate is migrating from the waste mass. Analytical parameters should include petroleum hydrocarbons (TPH/BTEX) and radiological constituents (uranium and radium isotopes). Monitoring results must be evaluated for trends, exceedances, and any indications of liner or cover system failure. If anomalies are detected, corrective actions must be implemented promptly to maintain regulatory compliance and protect groundwater resources.

In addition to groundwater monitoring, the physical performance of the disposal cell must be evaluated through periodic inspections of the cover system, drainage features, and erosion controls. Inspections should assess vegetation establishment, settlement, cracking, and stormwater management. Any deficiencies must be addressed through maintenance activities such as regrading, reseeding, or repair of drainage structures. Institutional controls, including land-use restrictions and access limitations, must remain in place to prevent disturbance of the capped waste. These long-term stewardship requirements ensure that the disposal cell continues to function as designed and remains protective of human health and the environment throughout its operational life and beyond.

Table 8.1 presents the critical requirements for the successful co-placement of diesel-impacted soils within the expanded disposal cell, emphasizing both regulatory compliance and long-term stability. These requirements include ensuring containment integrity through verification of the foundation and liner system, such as the installation of a 40-mil HDPE liner and confirmation of an underlying clay layer to prevent contaminant migration. Geochemical control is achieved by maintaining an oxygen-limited, low-permeability environment via appropriate compaction, which reduces the risk of uranium and Ra-226 mobilization. Geotechnical reliability is addressed by strategically blending or layering compressible diesel-impacted soils with granular waste rock to minimize settlement and protect the cover system. Placement depth controls, notably the "5/15 rule," manage material distribution, while a multi-layer engineered cap limits infiltration and volatilization. Fluid management is assured through lined sumps and berms. Verification and stewardship are maintained with confirmation sampling, ongoing groundwater monitoring for TPH/BTEX and radionuclides, regular physical inspections, and enforcement of institutional controls, collectively ensuring the disposal cell's continued protection of human health and the environment.

Table 8.1 Summary of Key Implementation Requirements

Category	Requirement	Technical Objective & Justification
Foundation & Liner	Liner Integrity & Clay Layer Verification	Ensure the expanded footprint utilizes min. a 40-mil HDPE liner and confirms the presence of an underlying clay liner through test pits to prevent downward migration of contaminants.
Geochemical Control	Oxygen-Limited / Low-Permeability Environment	Maintain reducing conditions through high compaction to prevent the mobilization of Uranium and Radium-226.
Waste Conditioning	Strategic Blending & Layering	Blend diesel-impacted soils (high compressibility) with dryer, granular waste rock to ensure geotechnical stability and prevent uneven settlement of the cover system.
Placement Depth	Subsurface Isolation (The "5/15" Rule)	Place soils with Ra-226 concentrations exceeding 15 pCi/g at depths greater than 15 cm (6 inches) below the final surface to meet federal decommissioning standards.
Cover System	Multi-Layer Engineered Cap	Construct a cap with low-permeability layers, erosion-resistant armoring, and vegetative stabilization to minimize infiltration and prevent the volatilization of hydrocarbons.
Fluid Management	Lined Sump & Runoff Containment	Install dedicated sump and perimeter berms (e.g., 2-foot interior berms) to collect and evacuate any stockpile runoff or seepage for evaporation.
Infrastructure	Source Removal (Piping & Buildings)	Remove, rinse, and dispose of legacy diesel piping within the cell; demolish existing buildings to allow for the full lateral excavation of the hydrocarbon source zone.
Verification	Confirmation Sampling (VSP)	Utilize Visual Sample Plan (VSP) software to statistically verify that the floor and sidewalls of the excavation meet the TPH cleanup goal of 3,000 mg/kg.
Groundwater monitoring	Regular sampling for TPH/BTEX and radionuclides	Verify containment and detect anomalies
Physical inspections	Evaluate cover, drainage, erosion, and settlement	Maintain long-term performance
Institutional controls	Land-use restrictions; access limitations	Prevent disturbance of capped waste

9.0 CONCLUSIONS AND RECOMMENDATIONS

9.1 Conclusions

The comprehensive evaluation of the Mt. Taylor Mine confirms that co-placement of diesel-impacted and radiologically elevated soils within the expanded on-site disposal cell is appropriate and fully compliant with regulatory standards. Multiple lines of evidence, including detailed contaminant characterization, assessment of hydrogeologic conditions, engineering design review, and adherence to regulatory criteria, support this conclusion. Diesel-impacted soils at the site fall outside the scope of hazardous waste as defined by the RCRA. These soils do not qualify as listed wastes and do not display hazardous characteristics such as ignitability, corrosivity, reactivity, or toxicity. Benzene concentrations in the soil remain well below the thresholds that would trigger TCLP exceedances, and isolated benzene detections in seepage do not affect the overall classification of the solid waste.

Radiologically elevated soils, while requiring engineered containment, do not overlap with areas of elevated diesel in a manner that would necessitate a mixed-waste classification under the New Mexico Hazardous Waste Act. Spatial analysis demonstrates that the diesel-impacted area remains geographically separate from radiological hotspots, and zones where both contaminants are present contain diesel at concentrations well below regulatory thresholds. Because mixed-waste classification requires the simultaneous presence of both radioactive material and RCRA hazardous waste in the same soil mass, and neither condition exists at this site. Thus, the Mt. Taylor Mine does not contain mixed waste. This regulatory finding streamlines the permitting process and authorizes the use of a single, engineered containment system for both waste types.

9.2 Recommendations

Based on the technical, regulatory, and environmental analyses provided in this report, it is recommended that Rio Grande Resources (RGR) move forward with co-placing diesel-impacted and radiologically elevated soils within the expanded disposal cell at Mt. Taylor Mine. This strategy offers a comprehensive, efficient, and protective approach to managing legacy site contamination. The engineered disposal cell uses a liner with low permeability, a cover that reduces radon, and thorough long-term monitoring to keep contaminants contained and protect against future exposure risks. Co-placement of these materials into a single containment structure reduces the number of separate waste management units, lessens long-term stewardship demands, and bolsters the stability and sustainability of the reclamation landscape. To ensure proper implementation, RGR should update all permit documentation under NMED DP-61 and MMD Permit C1002RE to clearly authorize the inclusion of non-hazardous petroleum-impacted soils in the radiological cell. Maintaining thorough records—including waste acceptance criteria, confirmation sampling, compaction data, and construction quality assurance—will facilitate regulatory oversight and eventual site closure. Provided RGR adheres to the implementation requirements detailed in Section 8, this integrated approach remains protective, compliant, and consistent with best practices for mine reclamation. There is no technical, regulatory, or risk-based obstacles to this remedy, making it the most practical and effective solution for long-term closure at Mt. Taylor Mine.

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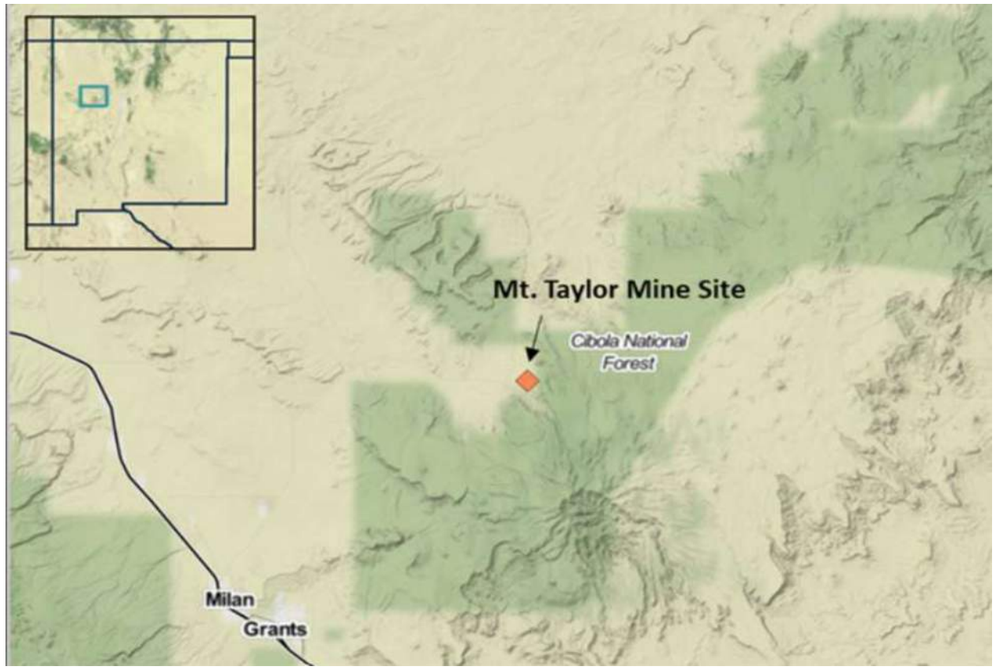
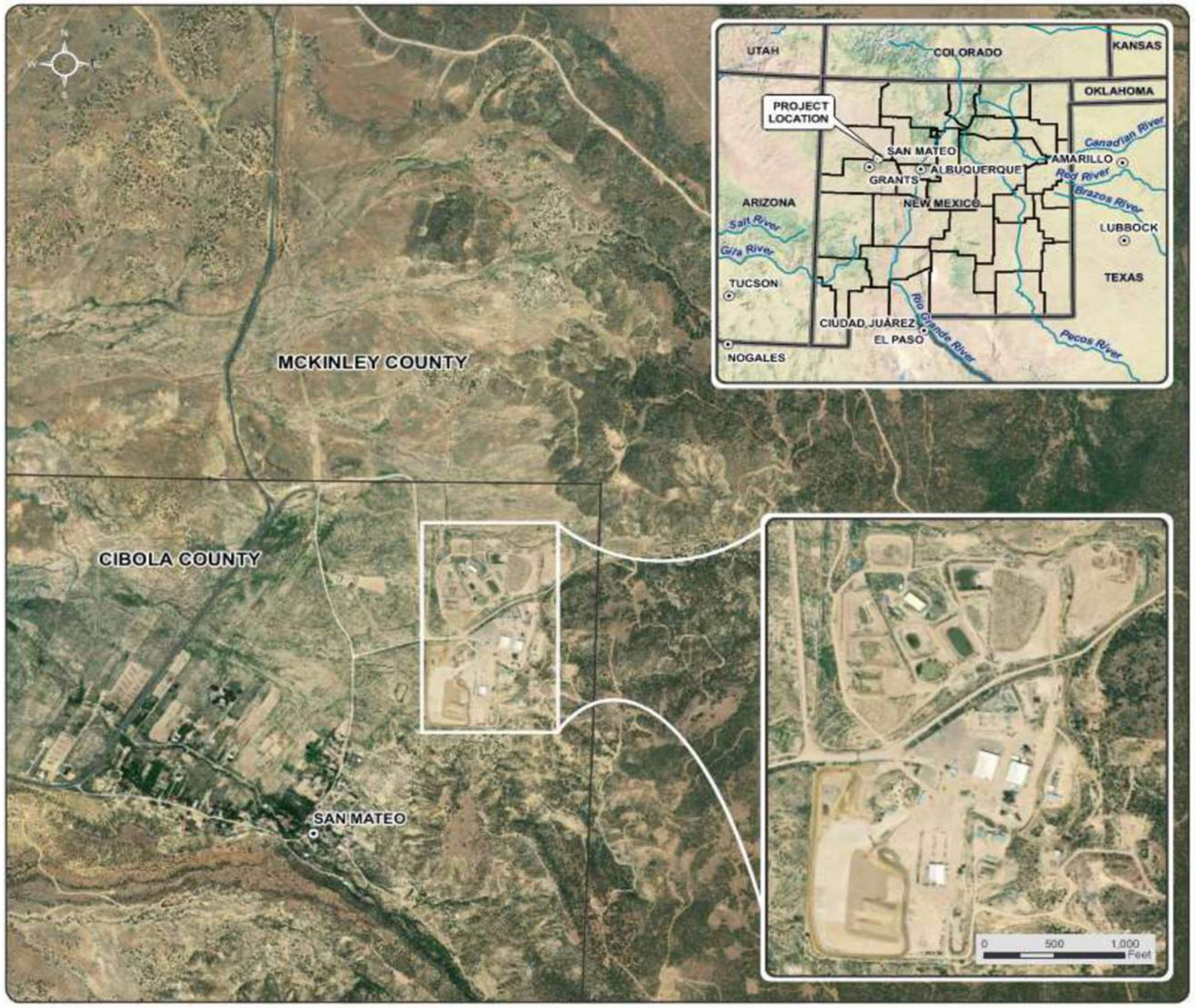
FIGURES





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March 2026

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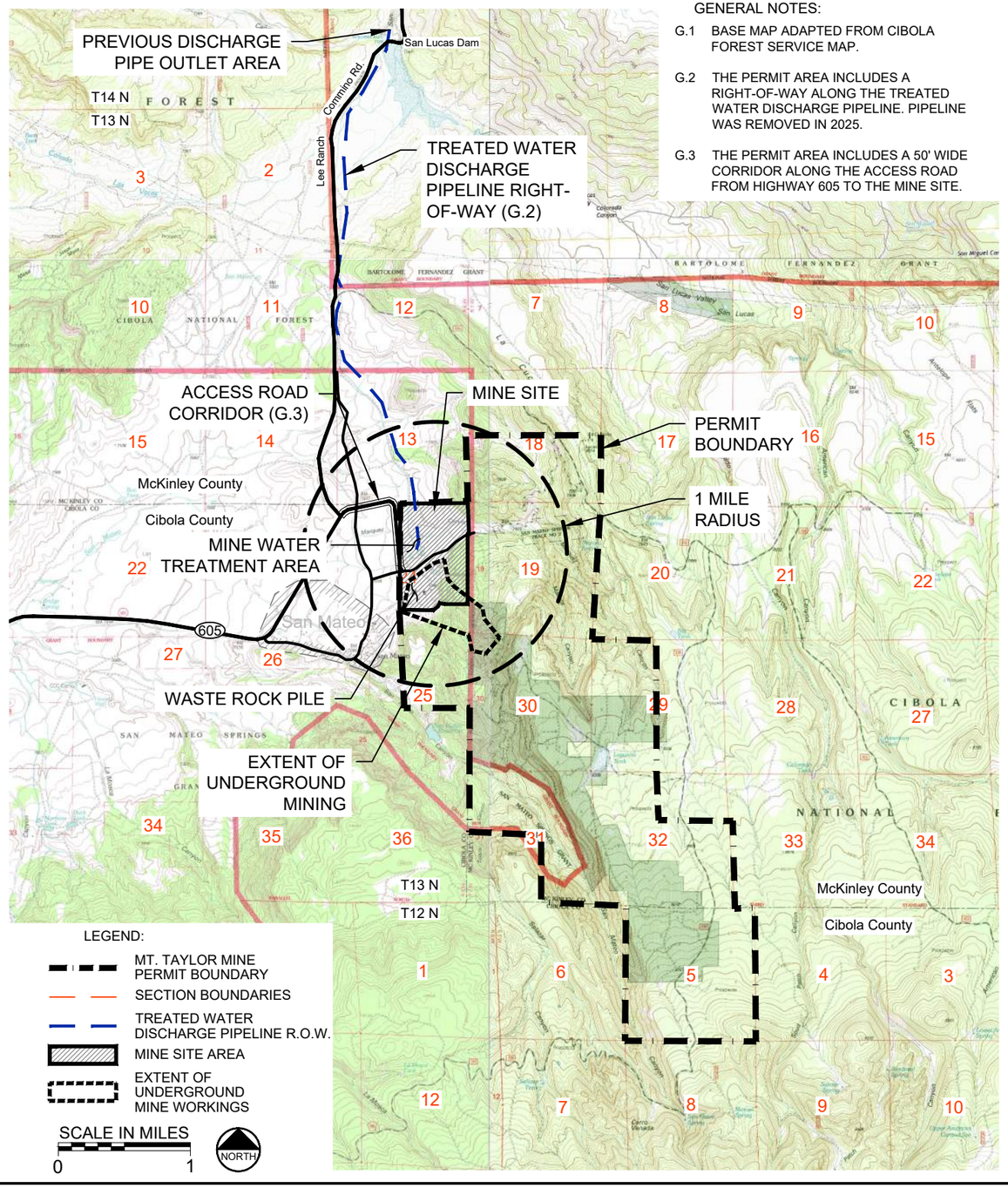
FIGURE 1.1
SITE LOCATION MAP
MT. TAYLOR MINE

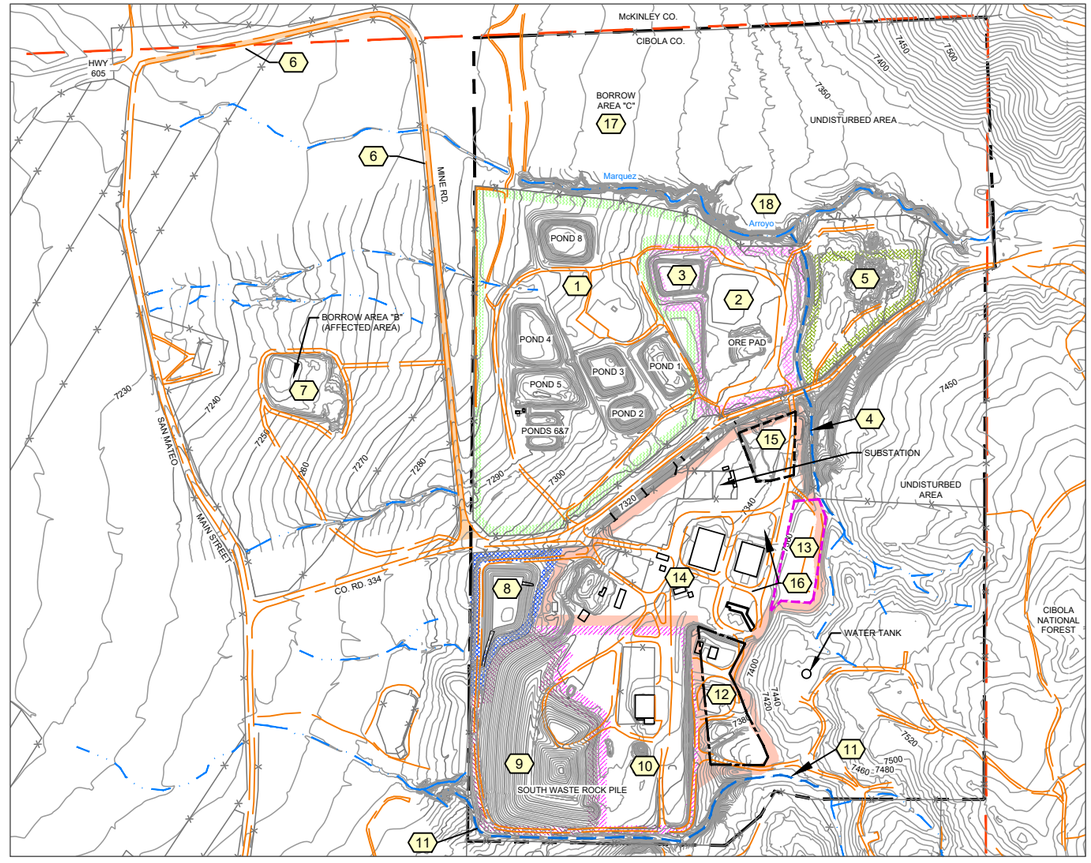


GENERAL NOTES:

G.1 BASE MAP ADAPTED FROM CIBOLA FOREST SERVICE MAP.

G.2 THE PERMIT AREA INCLUDES A RIGHT-OF-WAY ALONG THE TREATED WATER DISCHARGE PIPELINE. PIPELINE WAS REMOVED IN 2025.

G.3 THE PERMIT AREA INCLUDES A 50' WIDE CORRIDOR ALONG THE ACCESS ROAD FROM HIGHWAY 605 TO THE MINE SITE.



MINE UNITS AND OTHER AREAS:

1	MINE WATER TREATMENT AREA	7	BORROW AREA "B"	13	CHILLER BENCH AREA
2	ORE PAD	8	SOUTH STORM WATER POND	14	SERVICE AND SUPPORT AREA
3	ORE PAD RUNOFF RETENTION POND	9	EXISTING WASTE ROCK PILE/ DISPOSAL AREA	15	OLD ORE LOADING AREA
4	NORTH DIVERSION CHANNEL	10	DISPOSAL CELL EXPANSION AREA	16	MINE SHAFTS
5	BORROW AREA "A"	11	SOUTH DIVERSION CHANNEL	17	BORROW AREA "C"
6	MINE ACCESS ROAD	12	COMPRESSOR BENCH AREA	18	WINDBLOWN AREA

LEGEND:

- MINE SITE AREA
- SECTION 24 BOUNDARY
- ROADWAY
- FENCE
- EXISTING TOPOGRAPHY
- DRAINAGE PATHWAYS
- MINE BUILDINGS (PRIOR TO REMOVAL ACTIVITIES)

GENERAL NOTES:

G.1 THE MINE PERMIT AREA INCLUDES THE RIGHT OF WAY ALONG THE TREATED WATER DISCHARGE PIPELINE AND A 50' WIDE CORRIDOR FOR AN ACCESS ROAD (SEE FIGURE 1-3).

G.2 AFFECTED AREAS INCLUDE BUT ARE NOT LIMITED TO BORROW AREA "B", BORROW AREA "C", AND WINDBLOWN AREA. EVALUATION OF OTHER POSSIBLE AFFECTED AREAS IS ONGOING.

G.3 THIS DRAWING SHOWS THE SITE CONDITIONS AS OF JULY 2025. SEE FIGURE 1-2B AND TABLE 4.2 FOR DETAILED FACILITY DISPOSITION INFORMATION.

G.4 TOPOGRAPHY BASED ON A 2012 AERIAL SURVEY BY THOMAS R. MANN AND ASSOCIATES AND 2021 SURVEYS BY SOUTHWEST SURVEYING SOLUTIONS (S3).

NORTH

SCALE IN FEET

0 800'

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FIGURE 1.2
SITE LOCATION AND EXISTING CONDITIONS
MT. TAYLOR MINE

- Soil Boring Location: Maximum PID field screening value <100 ppm. No BTEX/TPH soil samples were collected or analyzed
- Soil Boring Location: Maximum PID field screening value >100 ppm. TPH concentrations exceed screening levels (NMED, 2019)
- Soil Boring Location: Maximum PID field screening value <100 ppm. TPH/BTEX concentrations are below screening levels (NMED, 2019)
- Surface Soil: TPH/BTEX concentrations are below screening levels (NMED, 2019)

Acronyms and Abbreviations:
bgs = below ground surface
BTEX = benzene, toluene, ethylbenzene, xylene
CY = cubic yards
ft = feet
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
PID = photoionization detector
sq ft = square feet
TPH C10-C28 = Total petroleum hydrocarbons
TVH C6-C10 = total volatile hyrocarbons
2' = two US standard feet
TPH = Result >3,000 mg/kg

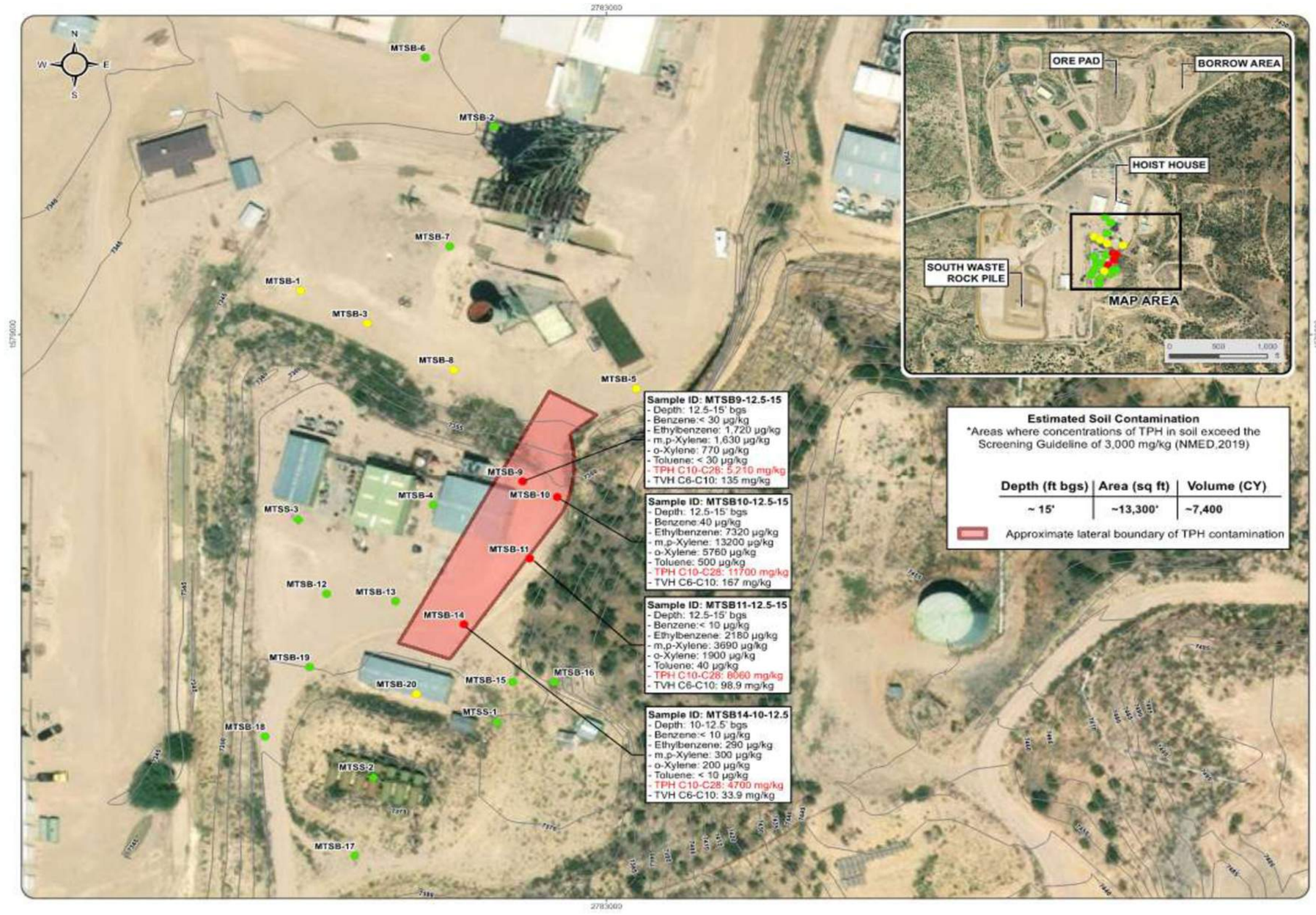

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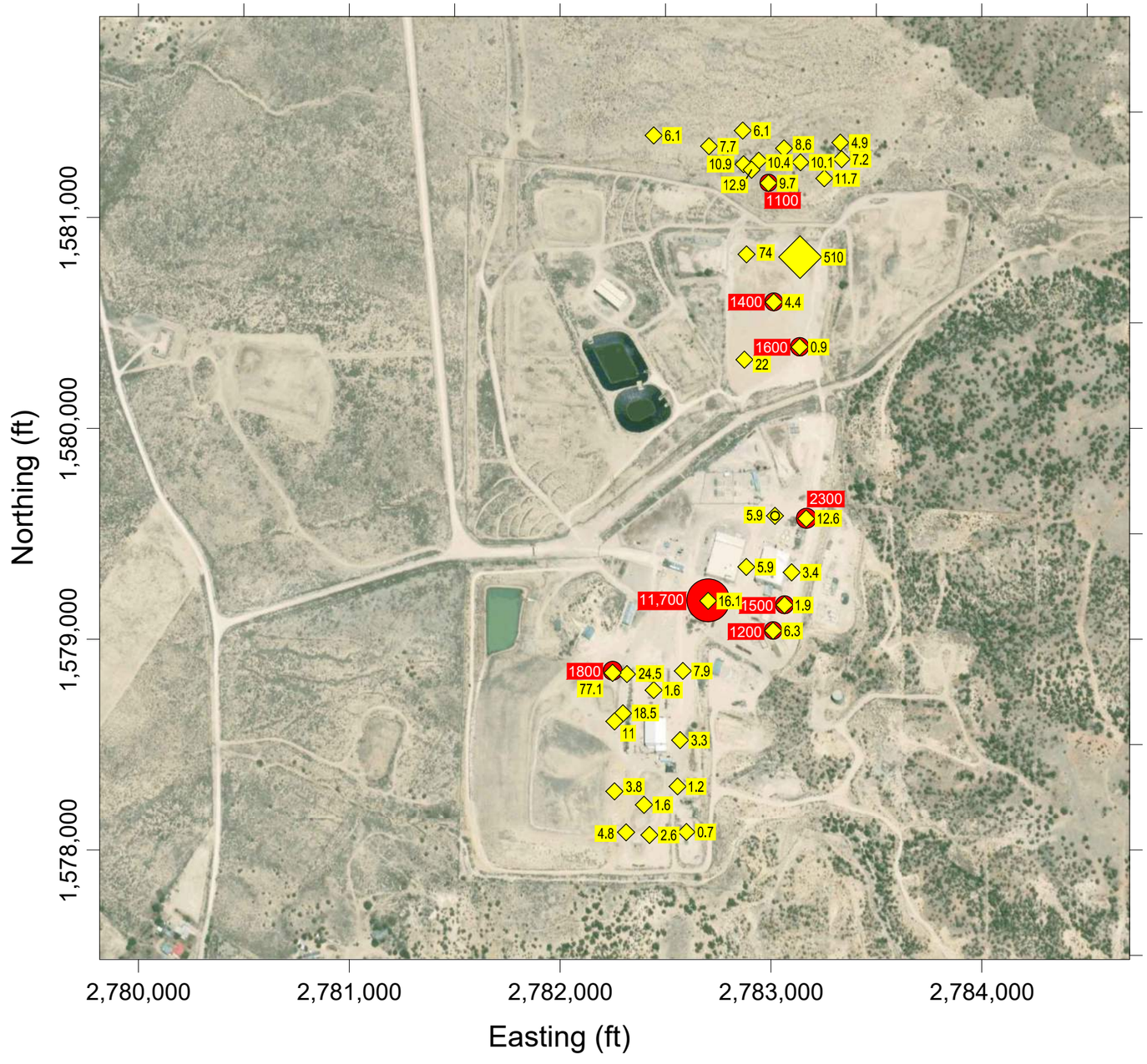
FIGURE 2.1
ENSERO (2021) SITE RESULTS
MT. TAYLOR MINE



LEGEND:

4.4	Radium (226) pCi/g
1400	TPH - DRO mg/kg
TPH	Total Petroleum Hydrocarbon
DRO	Diesel Range Organics

No.	Description	No.	Description	No.	Description
1	Mine Water treatment Area	8	South Stom Water Pond	15	Old Ore Loading Area
2	Ore Pad	9	Existing Waste Rock Pile/Disposal Area	16	Mine Shafts
3	Ore Pad Runoff Retention Pond	10	Disposal cell Expansion Area	17	Borrow Area "C"
4	North Diversion Channel	11	South Diversion Channel	18	Windblown Area
5	Borrow Area "A"	12	Compressor Bench Area	19	Ponds
6	Mine Access Road	13	Chiller Bench Area	20	Water tank
7	Borrow Area "B"	14	Service and Support Area	21	Undisturbed Area

NORTH

APPROXIMATE SCALE IN FEET

0 60'

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March 2026

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FIGURE 2.2
SPATIAL DISTRIBUTION OF CONTAMINANTS
MT. TAYLOR MINE

APPENDIX L

December 17, 1997 USDA Letter

United States Department of Agriculture
Forest Service
Mt. Taylor Ranger District
1800 Lobo Canyon Rd.
Grants, NM 87020
(505) 287-8833
(505) 287-4924 - FAX

File Code: 2650

Date: December 17, 1997

Mr. Joe Lister
Rio Grande Resources
P.O. Box 1150
Grants, New Mexico 87020

Dear Mr. Lister,

I'm writing in response to our recent telephone conversation regarding the status of the old drill pads located on Forest Service administered lands on Mt. Taylor. A question had arisen as to whether reclamation of these pads should be done since so much time had elapsed from their creation.

As biologist for the District, my recommendation would be to leave these pads and access roads alone for reclamation purposes. Natural revegetation processes have begun to reclaim these areas. Pads located in ponderosa pine habitat are well grassed and contain seedling trees. Pads and access roads located in pinyon-juniper habitat are less vegetated in the understory, but match the surrounding area. Many have sapling trees that are well started.

While the roads and pads fragment the landscape, which is bad for some species, these leave edge effect habitat which is good for other species. As time passes however, these features are becoming less distinct and will eventually blend into the surrounding area. This is a a desired condition.

Reclamation of the areas at this point would disturb existing vegetation, set the clock back on revegetation already occurring and intensify the edge effect. None of these effects is desirable.

One recommendation could be made. Road density on Mt. Taylor is a significant problem. It is detrimental to all wildlife found there. It would be very beneficial if access roads to drill pads could be blocked. Only those roads presently being driven by vehicles would need to be blocked. Placing large boulders in a defendable place is all that would be needed. Many of these roads are not being used and wouldn't need anything.

Blocking drill pad access roads that are now being driven would also protect revegetation that was taking place or would allow natural establishment of vegetation to occur.

Thank you for the opportunity to comment on this activity. If there should be questions about the recommendations given, please contact me.

RITA R. SUMINSKI

Rita R Suminski

District Staff Biologist
Mt. Taylor Ranger District

APPENDIX M

Technical Memorandum: Outfall 001 Historical Summary and Planned Characterization

Engineering Analytics, Inc.
Now Part of MacKay

Fort Collins Office

1600 Specht Point Road, Suite 209, Fort Collins, CO 80525
970.488.3111 / GoMacKay.com

Technical Memorandum

To:	Mr. Jeff Schoenbacher	**From:**	Melissa Meyer, P.E.
Company:	Rio Grande Resources Corporation	**Date:**	August 26, 2026
EA No.:	P02601.367		
Re:	Outfall 001 Historical Summary and Planned Characterization.		
Cc:	Kevin Raabe, RGR President Anita Wilcox, MTM Site Supervisor		

1.0 INTRODUCTION

This technical memorandum summarizes the historical investigations completed at Outfall 001, documents the progression of environmental and radiological investigations conducted to support mine closure, and distinguishes the former discharge pipeline remediation from the Outfall 001 closure activities. Additionally, it describes the planned characterization to support the completion of the Closeout/Closure Plan (CCP). This memorandum provides the technical basis for addressing the New Mexico Environment Department's (NMED) comments regarding Outfall 001 and documents the relationship between previous investigations, completed closure activities, and planned characterization efforts.

2.0 BACKGROUND

Historically, treated mine water from the Mt. Taylor Mine was discharged under Discharge Permit DP-61 through a 4.3-mile pipeline terminating at Outfall 001 in San Lucas Canyon. Prior to discharge, mine water was treated to remove radium and other constituents in accordance with permit requirements.

Since the cessation of mine operations, Rio Grande Resources (RGR) has completed multiple investigations to evaluate whether historical treated mine water discharges resulted in impacts to soils, sediments, groundwater, or surface water in the vicinity of Outfall 001 and within the downstream San Lucas drainage. These investigations, conducted between 2013 and 2020, included soil sampling, groundwater monitoring, surface water sampling, sediment characterization, risk evaluation, and radiological surveys completed to support mine closure activities.

The investigations completed between 2013 and 2014 generally concluded that historical treated mine water discharges had not resulted in significant impacts to downstream soils or

groundwater and that no additional characterization was warranted based on the information available at that time (RGR, 2015). As part of subsequent mine closure planning, a radiological gamma survey completed in 2020 identified localized areas of elevated gamma radiation along the former discharge pipeline, including an area at Outfall 001 (RGR, 2020). The survey was conducted as a screening investigation to identify areas requiring additional evaluation during closure planning.

The former treated mine water discharge pipeline was subsequently addressed through the pipeline abandonment project, including remediation of six isolated radiological areas identified along the pipeline corridor and documentation of those activities in the 2025 Final Status Survey (AVM, 2025). While the pipeline abandonment project addressed the designated pipeline corridor removal areas, the Outfall 001 area remained a separate closure feature requiring additional evaluation.

During review of the 2025 CCP, NMED requested clarification regarding the localized elevated gamma radiation identified at Outfall 001 and requested that the CCP either account for any remaining impacted soil requiring disposal or provide documentation demonstrating that reclamation of the Outfall 001 area is complete.

3.0 SUMMARY OF HISTORICAL INVESTIGATIONS

The following sections summarize the investigations in chronological order and describe how the technical understanding of Outfall 001 has evolved during mine closure planning.

3.1 2013 Outfall Investigation

In 2013, RGR completed a comprehensive investigation of Outfall 001 in response to NMED comments regarding the potential for historical mine water discharges to have impacted soils and groundwater in the vicinity of the outfall (RGR, 2013). The investigation included:

- Surface soil sampling upstream and downstream of the outfall;
- Soil borings and installation of monitoring wells;
- Laboratory analysis of soil uranium concentrations; and
- Groundwater sampling and laboratory analysis.

Based on the analytical results, the investigation concluded that soils near and downstream of Outfall 001 had not been contaminated by historical mine water discharge. Groundwater samples collected from the monitoring wells also did not indicate uranium impacts attributable to historical discharge activities. Based on these findings, no additional investigations were recommended at that time.

3.2 2014 Downstream Soil, Surface Water, and Sediment Investigation

Following the 2013 Outfall 001 investigation, RGR conducted additional downstream investigations in 2014 to further evaluate whether historical treated mine water discharges had affected soils, surface water, or sediments within the San Lucas drainage, including the Leopoldo Diversion Dam and Laguna Polvadera impoundments (RGR, 2015). The investigation included

the collection and analysis of surface soil, sediment, and surface water samples from locations downstream of Outfall 001 to evaluate potential concentrations of uranium, selenium, and molybdenum associated with historical mine water discharges (RGR, 2015).

With the exception of one water sample collected from Laguna Polvadera that exceeded the groundwater standard for uranium, analytical results indicated that constituent concentrations in water samples, surface soils and sediments were below NMED's applicable soil screening levels. The investigation further concluded that the Laguna Polvadera impoundment is not used as a drinking water source, is not known to be hydraulically connected to an underlying aquifer and posed no unacceptable risk to human health or ecological receptors. Based on the analytical results, exposure evaluation, and risk assessment, RGR concluded that historical discharges had not resulted in significant downstream impacts requiring additional characterization.

3.3 2020 Radiological Survey

In 2020, RGR completed a radiological survey to support mine closure planning and evaluate radiological conditions associated with the former discharge pipeline and Outfall 001 (ERG, 2020). The survey consisted of gamma scans performed along the pipeline corridor and at selected areas, including Outfall 001. Several localized areas of elevated gamma radiation were identified, including an area at Outfall 001. The radiological survey was conducted as a screening investigation to identify areas exhibiting elevated gamma radiation during closure planning. Gamma survey measurements alone do not determine whether soils exceed the Site cleanup criterion of 6.8 pCi/g Ra-226; rather, they identify locations where additional characterization may be appropriate to determine whether remediation is necessary.

3.4 2024 Discharge Pipeline Abandonment Work Plan

In 2024, RGR prepared the *Discharge Pipeline Abandonment Work Plan* to support the removal of the former treated mine water discharge pipeline as part of the overall mine closure program (EA, 2024). The Work Plan identified six isolated areas of elevated gamma radiation along the former discharge pipeline that were selected for remediation during pipeline abandonment.

The Work Plan officially recognized that radiological cleanup associated with the pipeline corridor and the evaluation of the Outfall 001 area were separate components of the overall closure program. Accordingly, the proposed pipeline abandonment activities focused on removal of the former discharge pipeline and remediation of the identified pipeline corridor areas, while Outfall 001 remained a separate closure feature requiring additional evaluation.

3.5 2025 Pipeline Corridor Radiological Remediation and Final Status Survey

In 2025, RGR completed radiological remediation of the six isolated areas identified along the former treated mine water discharge pipeline and documented the results in the *Final Status Survey – Former Discharge Pipeline Impacted Soil/Limestone Removal Area* (AVM, 2025). Remediation activities included the excavation of impacted soil and limestone material within the identified pipeline corridor removal areas, followed by confirmatory gamma surveys and collection of confirmatory soil sampling to demonstrate compliance with the Site cleanup

criterion of 6.8 pCi/g Ra-226. The Final Status Survey concluded that the remediated pipeline corridor areas satisfied the applicable cleanup criterion and were suitable for unrestricted release.

The Final Status Survey documents remediation and verification activities completed within the designated pipeline corridor removal areas. Characterization and closure of Outfall 001 will be addressed separately as part of the overall mine closure program.

4.0 SUMMARY OF FINDINGS

The investigations completed between 2013 and 2025 addressed two complementary aspects of the overall mine closure program: evaluation of potential environmental impacts associated with historical treated mine water discharge and evaluation of localized radiological conditions to support mine closure.

Between 2013 and 2015, investigations evaluated whether historical treated mine water discharges had adversely affected downstream soils, groundwater, surface water, and sediment. Collectively, these investigations concluded that historical treated mine water discharge had not resulted in significant environmental impacts requiring additional characterization based on the information available at that time.

As part of subsequent mine closure planning, the 2020 radiological survey was conducted to identify localized areas of elevated gamma radiation associated with the former treated mine water discharge pipeline and Outfall 001 (ERG, 2020). As a screening investigation, the survey identified areas exhibiting elevated gamma radiation but did not independently determine whether soils exceeded the applicable Site cleanup criterion for Ra-226.

The pipeline abandonment project subsequently addressed the six identified radiological areas along the former discharge pipeline through excavation, confirmation sampling, and Final Status Surveys completed in 2025 (AVM, 2025). Those activities documented completion of remediation within the designated pipeline corridor removal areas but did not document final characterization or closure of the Outfall 001 area.

Collectively, these investigations establish that the environmental investigations evaluating historical treated mine water discharges and the radiological investigations completed to support mine closure represent complementary components of the overall closure program. The historical investigations evaluated potential impacts associated with treated mine water discharge, while the radiological investigations were conducted to support closure by identifying localized areas for additional evaluation. Accordingly, the planned characterization of Outfall 001 represents the next critical step in the closure process and is intended to provide the technical basis for determining whether additional remedial actions are necessary and for documenting final closure of the Outfall 001 area.

5.0 PLANNED CHARACTERIZATION

To support completion of the CCP and the final closure of Outfall 001, RGR plans to conduct additional characterization of the Outfall 001 area. The characterization is intended to evaluate

the localized elevated gamma radiation identified during the 2020 radiological screening survey (ERG, 2020) and provide the information necessary to determine whether additional remedial actions are required.

The planned characterization will be designed to:

- Evaluate the area of elevated gamma radiation identified during the 2020 radiological survey;
- Determine whether radionuclide concentrations in soil exceed the applicable Site cleanup criterion;
- Delineate the lateral and vertical extent of any impacted soil, if present;
- Estimate the volume of material requiring excavation and disposal, if necessary; and
- Provide the technical basis for documenting final closure of Outfall 001.

The results of the characterization will be documented in a technical memorandum. Based on the characterization results, a work plan will be prepared, if warranted, describing the proposed remedial approach, estimated material volumes, and confirmation activities necessary to demonstrate compliance with the applicable cleanup criteria.

6.0 REFERENCES

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