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June 14, 2021

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Mr. David Ennis
Mining Act Reclamation Program
Energy, Minerals and Natural Resources Department
Mining and Minerals Division (MMD)
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Dear Mr. Ennis:

No. GR009RE, Chino Mine, Grant County, NM – Material Handling Plans

Please find enclosed a proposed combined Pit and Reclamation Material Handling Plan for the Chino Santa Rita Open Pit. Permit GR009RE 18-1 Conditions U and V require that:

- Permittee shall submit an updated Reclamation Cover Material Handling Plan within 180 days after approval of this Permit.
- The Permittee shall submit an updated Pit Material Handling Plan within 180 days after approval of this Permit.

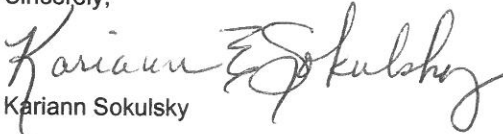
In an email dated April 13, 2021 Chino requested of MMD a 60-day extension to comply with these conditions. MMD approved this extension in an email also dated April 13, 2021.

In previous conversations, MMD has proposed, and Chino concurs, that in the future, this combined plan should be an appendix to the next Closure-Closeout Plan (CCP) update, which update is due no later than August 2024 to both agencies. At that time, as you have recommended, Chino will explicitly identify the floor elevations for the STS2, Whitehouse and Upper South cover material stockpiles in the combined material handling plan.

Therefore, Chino anticipates MMD and the New Mexico Environment Department will review and comment on the enclosed proposed plan prior to submittal of the next CCP in August 2024 and formal approval of the material handling plan will occur when the next CCP is approved by both State agencies. Chino also notes that during the next update to the CCP Table 1 of the enclosed plan will include the 9 and North Lampbright Waste Rock Stockpiles, both recently permitted, but exclude the Santa Rita Stockpile.

Please contact me at (575) 912-5386 or Ms. Pam Pinson at (575) 912-5213 with any questions or comments concerning this MHP.

Sincerely,


Kariann Sokulsky

Enclosure

KS:pp
20210614-001

c: (via email)
Holland Shepherd, MMD
Kurt Vollbrecht, NMED
Brad Reid, NMED

REPORT

Reclamation Cover and Pit Materials Handling Plan

Submitted to:

Freeport-McMoRan Chino Mines Company

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Submitted by:

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June 14, 2021

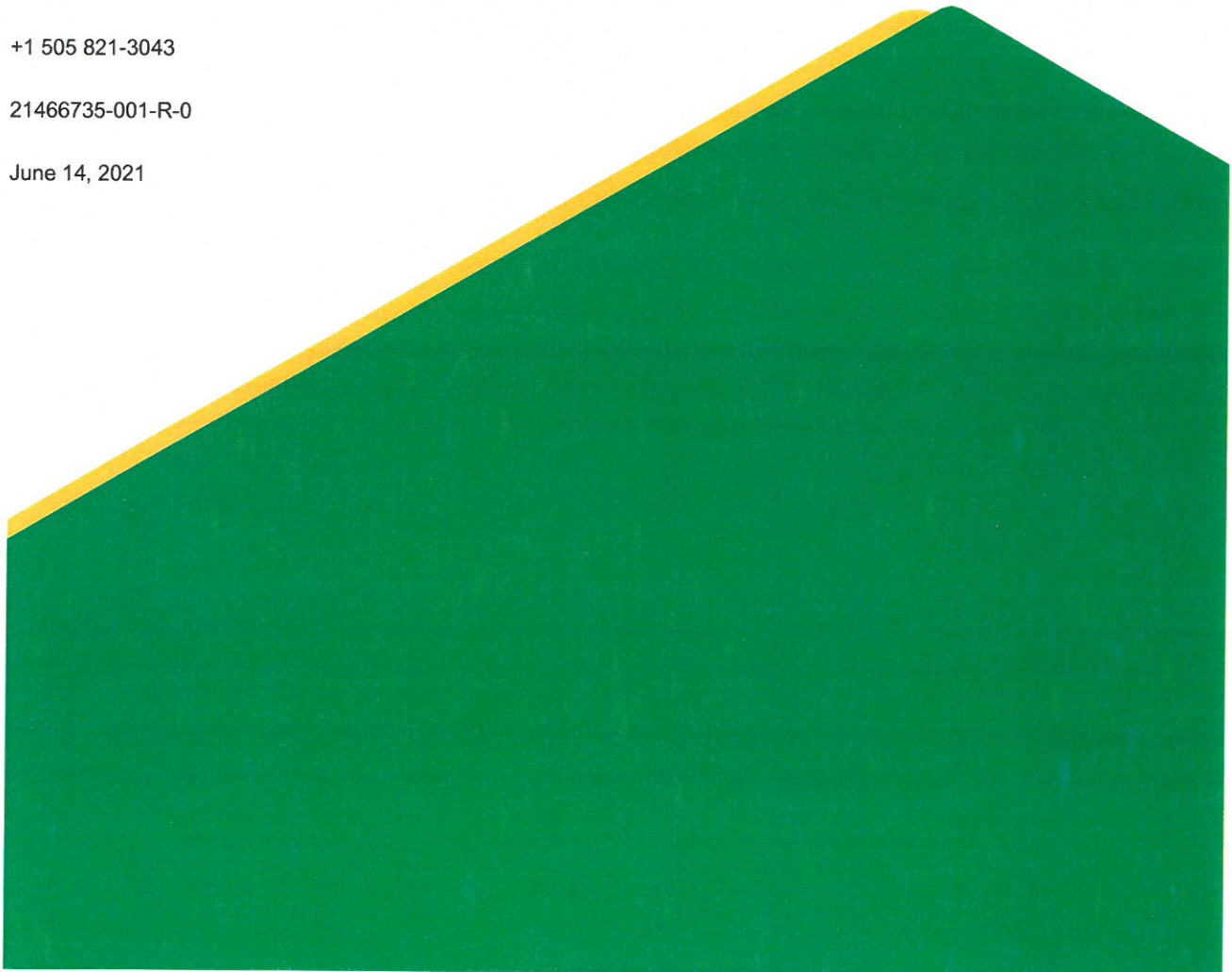


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1.0 INTRODUCTION

Freeport-McMoRan Chino Mines Company (Chino) operates an open pit copper mine, concentrator, and solution extraction/electrowinning (SX/EW) plant about 10 miles east of Silver City, New Mexico (**Figure 1**). Chino has developed plans for reclamation of the mine following closure in accordance with Discharge Permit 1340 (DP-1340) issued by the New Mexico Environment Department (NMED) and Permit GR009RE issued by the Mining and Minerals Division (MMD). Permit Revision 18-1 to Permit GR009RE was issued on September 29, 2020. This permit revision approves and incorporates the updated Closure/Closeout Plan (CCP Update) and Cost Estimate for the Chino Mine that was submitted to the agencies on February 14, 2018 (Golder 2018a), and the associated addenda that were submitted between June 11, 2018 and September 17, 2020.

Reclamation of the mine will ultimately involve regrading of stockpiles and un-reclaimed tailing impoundments, and the application of a store and release cover to contain the waste materials, support vegetation, and reduce the entry of water into the facilities. For reclamation planning purposes, the Chino Mine has been separated into three main geographical areas including:

- **North Mine Area (NMA):** All of the Chino Mines facilities north and east of Bayard, New Mexico which includes, but is not limited to, the Santa Rita Open Pit (which includes the Lee Hill, East and Estrella pit areas), stockpiles, SX/EW plant, reservoirs, pumping stations, seepage impoundments, storm water detention ponds, mill facilities, maintenance area, former precipitation plant, Groundhog Mine area, Oswaldo #3 Mine, Star Mine shaft, and Ivanhoe Concentrator. See Plate 2: North Mine Area Location Map in the CCP Update dated February 14, 2018.
- **South Mine Area (SMA):** All of the Chino Mine facilities south and east of Hurley, New Mexico, which includes, but is not limited to, Lake One area, tailings impoundments, Pond 7 seepage interceptor system, Axiflo Lake, and all property included within the Permit Area as displayed on Plate 4: South Mine Area Location Map in the CCP Update dated February 14, 2018.
- **Pipeline Corridor Area (PCA):** All of the Chino Mine facilities south and east of Bayard and north and east of Hurley, which includes the concentrate, tailing and process water pipelines, the associated spill containment structures, the pipeline subgrade, and access roads as shown in Plate 3: Pipeline Corridor Area Location Map in the CCP Update dated February 14, 2018.

Identification of viable sources of cover material is critical to the reclamation planning process in all three areas. Conditions U and V in Section 9 of Permit Revision 18-1 to Permit GR009RE requires updates to the existing reclamation cover and pit material handling plans for the Chino Mine (MMD 2020). Specifically, the conditions are as follows:

Condition U. Reclamation Cover Material Handling Plan

1. *Permittee shall submit an updated Reclamation Cover Material Handling Plan within 180 days after approval of this Permit.*

Condition V. Pit Material Handling Plan

1. *The Permittee shall submit an updated Pit Material Handling Plan within 180 days after approval of this Permit.*

1.1 Reclamation Cover Materials

Agency approved borrow material will be used as reclamation cover material (RCM) and will meet all regulatory requirements listed in permit GR009RE and the Copper Mine Rule. For the NMA, current agency approved RCM (MMD 2020) includes pre-mining salvaged soils, overburden from un-mineralized Tertiary volcanic rocks and igneous rock, Paleozoic sedimentary rocks (e.g., Colorado Formation), and intrusive dikes and sills sourced from the Upper South Stockpile, STS2, and/or Whitehouse Stockpile (**Figure 2**). **Table 1** summarizes the RCM requirements for the NMA and the associated sources of RCM for each facility to be reclaimed. As indicated in **Table 1**, approximately 13.15 million cubic yards (MCYs) of RCM is required for reclamation of the NMA. Note, this volume includes leaving 3 feet of RCM on the Upper South and STS2 stockpiles following completion of reclamation of the NMA. **Table 2** presents the material balance for the NMA using only the approved RCM from the Upper South Stockpile, STS2 Stockpile and Whitehouse Stockpile. As shown in this table, there is a projected excess of approximately 4 MCYs of RCM in the NMA with the approved reclamation designs presented in the CCP Update.

Additionally, RCM from the Rubio Peak Formation is currently being tested by Chino on a test plot and was conditionally approved by the MMD for the North Lampbright Waste Rock Stockpile under Revision 16-1 to Permit GR009RE (MMD 2017). The physical and chemical characteristics of the Rubio Peak Formation cover materials were evaluated after placement on the test plots in 2018 and the methodology and results are reported in more detail in the as-built report (Golder 2020a). The results from the Rubio Peak demonstration plots shows that the material is on the right trajectory to meet the MMD and NMED cover material standards. Rubio Peak RCM used in the test plots are generally moderately coarse- to medium-textured (coarse sandy loams to loams) with 15 to 20% clay. Total rock fragment content is moderate ranging from an estimated 38 to 46 percent by volume. Potential erodibility (the K-factor in the Revised Universal Soil Loss Equation) was assessed using laboratory data to calculate the whole soil K-factors (K_w). Rubio Peak RCM potential erodibility is relatively low based on the calculated K_w values with all samples yielding a K_w value of 0.09. The analysis presented in Golder (2020a) indicates that the Rubio Peak RCM will achieve the Copper Mine Rule water holding capacity (WHC) requirements (≈ 2.6 inches) with the 3-foot thick cover prescribed in the CCP Update. Vegetation attributes and cover stability on the Rubio Peak test plots were also evaluated in August 2020. After three growing seasons, the reclamation seeding is considered successful and has resulted in an early-seral stage mixed grass-shrub community across both test plots. Initial results strongly suggest the Rubio Peak RCM can support a self-sustaining ecosystem, especially considering the dry conditions during the 2019 and 2020 growing seasons. Future vegetation studies required by the Rubio Peak Test Plot Work Plan (Chino 2017) and the MMD permit will be conducted to better define the overall long-term vegetation response and species performance on the Rubio Peak RCM.

For the SMA, current agency approved RCM includes in-situ material sourced from the Gila Group/ Formation/ Conglomerate, piedmont alluvial materials, and Datil Group materials (**Figure 3**). Results of previous borrow investigations in the SMA indicate that approximately 200 MCY of potentially suitable borrow materials are present in the vicinity of the Chino Tailing Impoundments (DBS&A 1998, Golder 2006). The Gila Conglomerate and associated soils in the SMA have no inherent chemical limitations (DBS&A 1998, Golder and URS 2007) and have proven to be suitable RCM for the reclaimed facilities in the SMA. Portions of the available borrow material in the SMA were utilized as part of the reclamation of Lake One; Older Tailings Ponds 1, 2, 4 East, 4 West, B, and C; and partial reclamation of older Tailings Ponds 6 East and 6 West. Remaining borrow areas E, F, and H will be utilized as the RCM source for the remaining facilities within the SMA (**Figure 4**). These three borrow areas are estimated to contain over 4 MCY of suitable RCM. The area between Highway 180 and the western boundary of

borrow areas E and H, and the area to the north of Borrow Area F have also been identified as containing suitable cover material and will be utilized for RCM in the SMA (**Figure 4**). There are still substantial borrow material areas identified in the SMA that have not been utilized and are not included in the CCP Update. The surplus of RCM available in the SMA will allow flexibility of configuring borrow areas, as well as providing for potential contingencies. Interim vegetation surveys conducted since 2017 revealed that the reclamation seeding on these cover materials at the tailing ponds have been successful and the revegetated plant communities are on track to meet Chino's revegetation success standards performance on Ponds B/C, 4 & 6, 1 & 2 and Lake One (Golder 2018b, 2019, 2020b, and 2021).

Table 3 summarizes the RCM requirements for the SMA and the associated sources of the RCM for each facility to be reclaimed. As indicated in **Table 3**, approximately 9.77 MCYs of RCM is required for reclamation of the SMA. **Table 4** presents the material balance for the SMA and shows a projected excess of approximately 635,000 CYs of RCM in the borrow areas identified in this plan. Based on the substantial borrow material areas identified in the SMA that have not been utilized and are not included in this plan, no assumed reject percentage has been applied to the available RCM volumes.

1.2 Scope of Material Handling Plans

The following reclamation cover and pit material handling plans present an update to the "Material Handling Plan, South Pit Area" that was submitted to the MMD and the NMED in July 2006 (Chino 2006), and the "Quality Control - Standard Operating Procedure Cover Material Hauling and Placement West Stockpile Test Plots" that was submitted to the MMD and the NMED in March 2007 (Chino 2007). The updated reclamation cover and pit material handling plans presented below in Sections 2.0 and 3.0 were prepared in accordance with Conditions U and V in Section 9 of Permit Revision 18-1 to Permit GR009RE, respectively. These updated material handling plans are broader than the original plans submitted in 2006 and 2007. The updated RCM material handling plan now covers all of the current agency approved RCM and additional proposed RCM presented herein rather than being focused on the West Stockpile and Lampbright Rubio Peak Formation test plot studies, and the updated pit materials handling plan now covers the entire Santa Rita Open Pit rather than just the South Pit Area.

2.0 RECLAMATION COVER MATERIALS HANDLING PLAN

Under the current mine plan, there will be no new cover material mined at Chino prior to the next CCP Update submittal expected in August 2024. As previously mentioned, the primary sources of RCM in the NMA include pre-mining salvaged soils, overburden from un-mineralized Tertiary volcanic rocks and igneous rock, Paleozoic sedimentary rocks (e.g., Colorado Formation), and intrusive dikes and sills stored within the Upper South Stockpile, STS2, and/or Whitehouse Stockpile (**Figure 2**).

Chino is also requesting as part of this plan that RCM be defined as materials that: 1) meet the current agency approved materials handling plan (currently the 2006 South Pit Area Materials Handling Plan), and 2) materials that meet the soil texture and rock fragments specifications described below in Section 2.1: soil textures of — loamy sand, sandy loam, silt, silty clay loam, clay, loam, sand clay loam, sandy clay, silt loam, and clay loam with rock fragment ranging from 10-70% by volume. Materials meeting the soil texture and rock fragment specifications may be sourced from existing RCM stockpiles, planned borrow areas, or combined with other mine sources that fulfil the criteria defined in the current agency approved materials handling plan.

As part of Permit Modification 13-2 to Permit GR009RE, Chino also requested that additional reclamation stockpiles sites that can be constructed on existing disturbance within the approved design limit boundary be approved, provided that the criteria listed in the current agency approved material handling plan(s) be met prior to

construction. Chino will notify the MMD and NMED by letter that additional storage sites are to be constructed within the authority of this modification prior to construction. The purpose of these notices are to document the location of these reclamation resources and new RCM stockpile(s). Notification will include maps showing footprints of existing and proposed stockpiles, recording of the stockpile base elevation, material placement sequencing, and assurance that the requirements of the current material handling plans have been met. Proper documentation of cover placement will help prevent cover material from being deleteriously impacted by mine operations and that the placed material is appropriate for its intended use (i.e., has suitable textural and geochemical characteristics for use as cover). Placement of material not in accordance with applicable material handling plan(s), or in areas that are not previously disturbed by mining operations may require permit amendments or modifications from the MMD and/or NMED. The storing of RCM closer to future reclamation sites will result in a financial assurance reduction by decreasing the haul distance from the RCM stockpiles to the reclamation sites.

2.1 RCM Performance Objectives and Textural Guidelines

Chino's performance objectives for reclamation are to establish a self-sustaining ecosystem, protect the underlying materials from wind and water erosion and off-site sedimentation, and reduce infiltration of water into the underlying waste materials (waste rock, leach material, tailing, and or facility/area requiring cover). The principal functional attributes of the cover for plant growth and water interception and storage are related to thickness, materials characteristics, and sequencing. The RCM guidelines proposed herein are designed to be consistent with the MMD soil suitability guidelines for rock fragments, meet applicable Copper Mine Rule requirements, and provide an acceptable level of performance.

The suitability of the NMA RCM has been demonstrated as part of the Chino test plot program (Golder 2015 and 2016). The fine-earth fraction of the RCM is mostly medium- and moderately coarse-textured with clay ranging from about 10 to 20%. The rock fragment content of the RCM ranges from about 35 to 65% by volume. Overall, the cover resulting from the proposed RCM hauling and placement plan is expected to have a rock fragment content of 30 to 70 percent by volume. Because some of the RCM are angular and susceptible to gravity segregation during placement, localized zones of poorly graded materials may occur within the soil profiles. Field investigations at the Tyrone Mine suggest that the poorly graded zones are volumetrically insignificant for large scale reclamation (Chino 2007). Similar results are expected at Chino if these features form in the covers.

Tables 5 and 6 list the guidelines for rock fragment contents for the NMA and SMA RCM, respectively. The cover specification limits the total rock fragment content to a maximum of 70 percent by volume on a whole soil basis with upper bounds on the volume of cobble and stone sized fragments. For clarity, these tables are intended to indicate that the volume of rock fragments based on the sum of the individual components (i.e., gravel, cobbles, and stones) cannot exceed 70 percent on a whole soil basis. Although beyond the size limits specified in the MMD soil suitability guidelines (MMD 1996), **Tables 5 and 6** include an allowance for boulders in the reclamation covers in recognition of the practical limitations in the materials handling and segregation processes to achieve complete (i.e., 100 %) conformity with the proposed guidelines. Minor variances (i.e., less than 20 percent of the area and less than one continuous acre) in the texture of the surface layer are acceptable. Areas with larger variances may be acceptable pending evaluation by the reclamation contractor and approval from the MMD and NMED. The allowable rock fragment content for cover materials in **Tables 5 and 6** are provided with the understanding that the soil cover system is evaluated not in a single test pit, but across an entire facility during final reclamation.

2.2 RCM Handling Plan

The following RCM handling plan is based on proven successful cover material handling methods employed as part of the West Stockpile and Lampbright Rubio Peak Formation test plot studies at the Chino Mine. The RCM handling plan and methods presented herein represent our current understanding of the RCM stockpiles and borrow areas and their anticipated configurations at closure. More specific RCM handling plans will be developed and submitted prior to mine closure. In accordance with Section 20.6.7.34 NMAC and Permit GR009RE, a final Construction Quality Assurance (CQA)/ Construction Quality Control (CQC) plan for reclamation and closure will be prepared by Chino for submittal to and approval by the NMED and MMD at least 180 days prior to submission of a notice of intent to implement the CCP. The final RCM handling plan for an individual facility or facilities to be reclaimed will be presented as a component of this CQA/CQC plan.

Under the current RCM handling plan, dozers will push cover materials from the top of an RCM stockpile or other designated borrow area into a load-out area where it will be loaded. A front-end loader will then be used to fill haul trucks for delivery of the RCM to the facility to be closed. Individual RCM source areas are expected to be mined in individual areas 300 to 500 feet wide and 200 to 250 feet long (1.5 to 3 acres) and graded to allow a downhill push to a load-out area. If encountered, large rock fragments (> 2 ft +/-) will be segregated by the dozer and/or loader operators in the load-out area to the extent practicable. The RCM will then be hauled and dumped onto the top surfaces of the facilities being reclaimed at a density necessary to attain the required 36-inch cover thickness. For regraded slopes being reclaimed, it is anticipated that the RCM will be staged at the crest of the slope. Staged RCM will then be spread by dozers to attain final grade and thickness. A motor grader may be used to achieve final grade if necessary. Oversize or otherwise unsuitable materials encountered during rough and final grading will be removed and segregated to the extent practicable.

Formal quality control (QC) inspections at both the dozer push and load-out areas will be conducted at least three times during a 12-hour hauling shift. Because the formal QC inspections will typically result in the stoppage of operations, they are limited to three times per 12-hour shift. Nonetheless, quality control monitors (QCMs) will be available to observe changes in materials that could result in the need for further investigation. During the excavation and loading operations, the QCM will observe the dozer push and loadout areas from safe locations and maintain close communication with operators concerning any changes in material characteristics. If changes in material characteristics are noted, the QCM will stop the operations and confirm the character of the materials. In addition, the operators will be informed that they are expected to notify the QCM if abnormalities are observed.

During the formal inspection, the QCM will walk the entire dozer push area and evaluate the surface and any exposed cuts with respect to rock fragments and evidence of potentially acid forming materials. Standard field soil classification protocols (Soil Survey Division Staff 2017) will be used to estimate rock fragment volume and size classes. Areas with excess accumulations of rock fragments or oversize materials will be staked so that they can be avoided or to indicate that they need to be blended with materials with fewer rocks. The sites will be staked using wooden lath and flagging. The dozer and loader operators and construction supervisor will be verbally informed of the occurrence of the materials. Larger rock fragments will be segregated and wasted rather than hauled to the reclamation areas.

At a minimum, soil pH measurements will be made with a Hellige-Truog Soil Reaction (pH) Tester kit (or equivalent) in at least 10 locations during each formal inspection. Additional pH measurements will be made on an as-needed basis in association with changes in materials characteristics during the excavation operations. The pH measurements will be made in areas representative of the dominant materials in the dozer push area as well as any materials that are represented by variations in color or lithology. The QCM will examine the load-out area if

materials have been stockpiled prior to hauling. The entire exposed surface of the piled materials will be examined and a minimum of 3 pH measurements will be taken from the piles. Additional pH measurements will be taken if materials are identified as unsuitable in order to determine the extent and distribution of the materials. If zones of sulfide-bearing materials are encountered or the soil pH is less than 5, the areas will be staked and flagged, and the construction operators will be instructed to avoid or remove the materials from the borrow area.

After cover materials are hauled to the facility being reclaimed, but before they are rough graded, the QCM will inspect the materials to determine if excessive quantities of oversize materials are present. The QCM shall inspect all new materials brought to the site as the hauling progresses. All the piles will be evaluated prior to grading. The QCM will note the location and volume of oversize materials on the piles and determine whether the materials need to be removed or if they can be adequately mitigated by blending.

Following cover grading, the QCM shall walk the entire covered surface to assess surface conditions. Depending on the material characteristics and construction methods, areas with concentrations of cobbles and stones and limited fines may occur at the surface creating a condition that is difficult to seed. Unsuitable seedbed may occur where limited fines and high concentrations of rock fragments are found. These skeletal surfaces will typically have greater than 70 percent large gravels and cobbles in the upper 6 inches of the soil profile with no appreciable fine earth materials (soil particles less than 2 mm) and 25 to 35 percent voids. These areas are expected to be relatively small in aerial extent. Mitigation of these areas will be accomplished through ripping or to amend them with an average of 4 inches of finer-grained RCM (i.e., having fewer rock fragments). Chino will maintain close communication with the Agencies with respect to the implementation and evaluation of the mitigation measures.

3.0 PIT MATERIALS HANDLING PLAN

Significant quantities of potentially suitable cover materials exist within the Santa Rita Open Pit. The current mine plan estimates that several million tons of rhyolite and Cretaceous stock (previously referred to as leach cap) are present within the Santa Rita Open Pit. These materials were previously mined out of the South Pit Area and stored in the STS2, Upper South, and Whitehouse stockpiles for future reclamation activities as approved by the NMED on November 10, 2016 and the MMD on September 1, 2017. Under the current mine plan, there will be no new cover material mined from the Santa Rita Open Pit at Chino prior to the next CCP Update submittal in August 2024.

Although no reclamation cover material is anticipated to be generated within the Santa Rita Open Pit prior to the next CCP Update submittal in August 2024, we have included this detail Pit Materials Handling Plan (PMHP) in case mine plans change prior to this date. Ore control processes and supplemental laboratory testing will be used to identify and segregate suitable materials for use as RCM. Use of these materials will allow Chino to meet its closure/closeout obligations in the most efficient and timely manner. The intent of this PMHP is to present an updated stand-alone PMHP that includes the entire Santa Rita Open Pit area in the plan rather than just the South Pit area. This updated PMHP describes the methods that will be used to identify suitable RCM during open pit mining for use in future reclamation activities. In addition, this plan outlines the steps that will be taken to avoid contamination of the materials and provide long-term safeguards for these RCM.

3.1 Mineral Type Classification

Compositional models based upon exploration data have been developed to identify potential leach, waste, and RCM material within the Santa Rita Open Pit. This work is based in part on the Chino Resource Model that has been used by Chino as a long-term planning tool for predicting, as accurately as possible, ore, leach, waste rock,

and RCM distributions within the Santa Rita Open Pit prior to it being blasted and mined. This model is based on a combination of drill hole assay, mineralogical, and geologic data. The model assigns codes for a number of categories, the most important of which are general geology, mineral population, and alteration.

3.2 Ore Control Process

During active mining, the distribution of mineral types in the mining area is updated as blasting, loading, and hauling progress. Maps are developed that display the individual mineral types and their distribution for the areas that will be mined that day and in the succeeding days or weeks. The mine ore control staff use these maps and the blasthole analytical data to designate the material in the pit as RCM, waste, and leach and mill ore. Suitable RCM will be hauled for direct placement of cover or stockpiled at one of the approved RCM stockpiles (Upper South Stockpile, STS2, and/or Whitehouse Stockpile) as appropriate depending on reclamation requirements and equipment scheduling considerations.

Segregation of the materials is achieved through the ore control process using the screening criteria outlined herein and shown on **Figure 5**. The ultimate fate of the materials that are encountered during mining is determined through the ore control process, which involves several steps associated with material characterization, identification, segregation, and processing. This process is instituted as a routine part of mining at Chino. The steps in the ore control process are described below:

- **Blasthole Drilling** – Each bench is drilled with blastholes to allow the material to be broken with explosives. Typical blasthole spacing is on 25- to 30-foot centers, but varies depending on the rock type, alteration, fracturing, and mineralization of the material.
- **Blasthole Sampling** – The cuttings from the drillholes typically form a cone around the collar of the hole. The cuttings are described, sampled, and submitted for analytical work.
- **Blasthole Logging** – A geologist logs the cuttings from blastholes to characterize the material for mineral type, rock type, and alteration. Maps are developed that display the individual mineral types and their distribution for the areas that will be mined. If the geologist determines that the material is potential RCM, then the material will be flagged for analysis of sulfur forms and paste pH to determine if it is suitable for use as cover.
- **Blasthole Sulfur and pH Analysis** – Each blasthole within the designated RCM units will be analyzed for sulfur forms and paste pH, and a subset may be analyzed for acid-base accounting (ABA) (see Section 3.3).
- **Staking** – Chino utilizes a computerized targeting system for segregation of materials on all shovels.
- **Mining** – Based on the GPS targeting system, the shovel operator selectively mines the various material zones and loads the haul trucks. The shovel operator designates where each truck is to haul the material (based on what type of material was loaded into it) after it is loaded.
- **Tracking, Reporting, and Recording** – Daily and monthly reports are generated to track the progress of mining. These reports include tonnage, grade, and the ultimate destination of the material.

3.3 Suitability Screening Criteria

In addition to the field mineralogical evaluations performed by Chino's geology staff, cuttings from blastholes designated as RCM will be analyzed for ABA with sulfur forms and paste pH. Materials with greater than 0.15 percent sulfide-sulfur will be conservatively designated as waste or tested to confirm the ABA of the material.

Materials with less than 0.15 percent sulfide-sulfur will be considered suitable for use as cover and directed to a dedicated cover storage area on one of the approved RCM stockpiles (Upper South Stockpile, STS2 and/or Whitehouse Stockpile). The sulfur analyses will be performed at the Freeport-McMoRan Centralized Analytical Service Center (CASC) or a commercial laboratory to provide real-time information. The detection limit for sulfur analysis is 0.01 percent which is well below the action level. This action level will assure that the materials are within the MMD soil suitability guidelines for ABA. Paste pH will be performed on 10 percent of these samples to provide confirmation of the positive relationships observed in the drill hole data. Materials with pH <5.0 will be considered unsuitable for RCM and will be designated as waste. Ten (10) percent of the samples analyzed by the CASC will be sent to a commercial laboratory for paste pH and ABA testing to provide independent confirmation of the data.

The previous blasting regime generally resulted in acceptable particle size distributions for most lithologies in the South Pit Area and is expected to be consistent throughout the Santa Rita Open Pit area. One exception was observed with the near surface rhyolite. The aerial and subaerial joints in the rhyolite attenuate the blast energy resulting in excessively large rhyolite (> 3 feet diameter). The maximum size of the rhyolite fragments decreases as the formation becomes more competent. In Chino's experience, it is impractical to change the blast regime to alter the near surface rhyolite fragmentation. Furthermore, it has been Chino's experience that increases in either the blast energy or density will result in a general reduction in rock fragment size and increased micro-fracturing of clasts but will not substantively change the volume of the fines.

Chino believes that the current blasting regime optimizes fragmentation. Evaluation of blasting and fragmentation is an ongoing and integral part of mine operations that is implemented in the interest of increasing equipment efficiency, which generally benefits from smaller rock fragments. Thus, Chino proposes to maintain the current mining regime and accept the minor volumes of materials that would require special handling to remove excess rock.

4.0 REFERENCES

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https://golderassociates.sharepoint.com/sites/146325/project/files/6/deliverables/001-mhp/rev_b/21466735-001-r-b-chino_draft_mhp-14jun21.docx

Tables

Table 1: Reclamation Cover Material Requirements for the North Mine Area¹

Stockpile	Top Area (ft ²)	Top Area (acres)	Outslope Area (ft ²)	Outslope Area (acres)	Required RCM Vol. (CY)	Cover Source
South Stockpile	3,729,480	85.6	21,735,774	499.0	2,829,473	STS2/Upper South
West Stockpile	4,230,866	97.1	22,204,645	509.7	2,937,279	Upper South
3A Stockpile	5,427,636	124.6	3,840,247	88.2	1,029,765	Upper South
Santa Rita Stockpile	2,637,618	60.6	---	---	293,069	Upper South
Northwest Stockpile	174,504	4.0	183,527	4.2	39,781	Upper South
Lee Hill Stockpile	1,106,676	25.4	---	---	122,964	Upper South
North Stockpile	237,112	5.4	63,822	1.5	33,437	Upper South
Northeast Stockpile	533,461	12.2	---	---	59,273	Upper South
Lampbright Stockpile ¹	3,608,260	82.8	34,710,227	796.8	4,257,610	Upper South/Whitehouse
Southwest Lampbright	227,835	5.2	3,879,770	89.1	456,400	Upper South/Whitehouse
STS2 Stockpile	2,294,867	52.7	1,354,480	31.1	405,483	STS2
Upper South Stockpile	1,570,313	36.0	4,643,954	106.6	690,474	Upper South
Total:	25,778,628	592	92,616,446	2,126	13,155,008	

Notes:

¹ - From Chino CCPP Update (Golder 2018).

² - Lampbright Stockpile includes the Main and South Lampbright Leach Stockpiles

Table 2: Reclamation Cover Material Balance for the North Mine Area ¹

Borrow Source	Available (CY)	RCM Used in Reclamation Plan (CY)
STS2	2,203,450	2,203,450
Upper South	13,943,641	9,956,558
Whitehouse	995,000	995,000
Rubio Peak ²	4,901,076	0
Total Available RCM ³ (CY):		17,142,091
Total Required RCM (CY)		13,155,008
Excess RCM ⁴ (CY):		3,987,083

Note:

¹ - From Chino CCPP Update (Golder 2018).

² - RCM from the Rubio Peak Formation is currently being tested by Chino on a test plot and was conditionally approved by the MMD for the North Lampbright Waste Rock Stockpile under Revision 16-1 to Permit GR009RE (MMD 2017).

³ - Available RCM only accounts for material from the Upper South, STS2, and Whitehouse Stockpiles, and in-situ Rubio Peak Formation material located south of the South Lampbright Leach Stockpile. Does not account for the estimated several million tons of suitable RCM currently present within the Santa Rita Open Pit area.

⁴ - Excess RCM only accounts for material from the Upper South, STS2, and Whitehouse Stockpiles.

Table 3: Reclamation Cover Material Requirements for the South Mine Area¹

Stockpile	Top Area (ft ²)	Top Area (acres)	Outslope Area (ft ²)	Outslope Area (acres)	Required RCM Vol. (CY)	Cover Source
Axi-flow Lake	2,598,413	59.7	1,631,151	37.4	469,952	Borrow Area F & Area to the North
TP6-W	4,148,184	95.2	1,447,374	33.2	621,729	Borrow Area F
TP6-E	4,405,555	101.1	1,396,710	32.1	644,696	Borrow Area F
TP7	57,014,017	1,308.9	15,316,705	351.6	8,036,747	Borrow Areas E & H, Area to the West of Borrow Areas E & H, and Area to the North of Borrow Area F
Total:	68,166,169	1,565	19,791,940	454	9,773,123	

Note:

¹ - From Chino CCPP Update (Golder 2018).

June 2021

Table 4: Reclamation Cover Material Balance for the South Mine Area¹

Borrow Source	Available (CY)	RCM Used in Reclamation Plan (CY)
Borrow Area E	2,688,816	2,685,000
Borrow Area F	1,657,136	1,655,000
Borrow Area H	1,037,000	1,035,000
Expanded Borrow Area West of Borrow Areas E and H	3,792,590	3,790,000
Expanded Borrow Area North of Borrow Area F	1,232,590	608,123
Total Available RCM (CY):		10,408,132
Total Required RCM (CY)		9,773,123
Excess RCM (CY):		635,009

Note:

¹ - From Chino CCPP Update (Golder 2018)

June 2021

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Table 5: Textural Guidelines - Chino NMA RCM

Soil Texture ^a	Total Rock Content ^b	Maximum Percentage Allowed ^c			
		Gravel	Cobble	Stone	Boulder ^d
Loamy Sand, Sandy Loam Silt, Silty Clay Loam, Clay, Loam, Sand Clay Loam, Sandy Clay, Silt Loam, and Clay Loam	≥10 to < 70	70	30	10	< 1

Notes:

- USDA System of classification
- Percent by volume materials > 2mm in diameter (i.e., retained on No. 10 sieve)
- USDA System of classification: Gravel 2 mm to 3 inches, Cobble 3 to 10 inches, Stone 10 to 24 inches, Boulder >24 inches
- Guideline to be applied on a reclaimed facility, rather than individual pit basis

June 2021

21466735

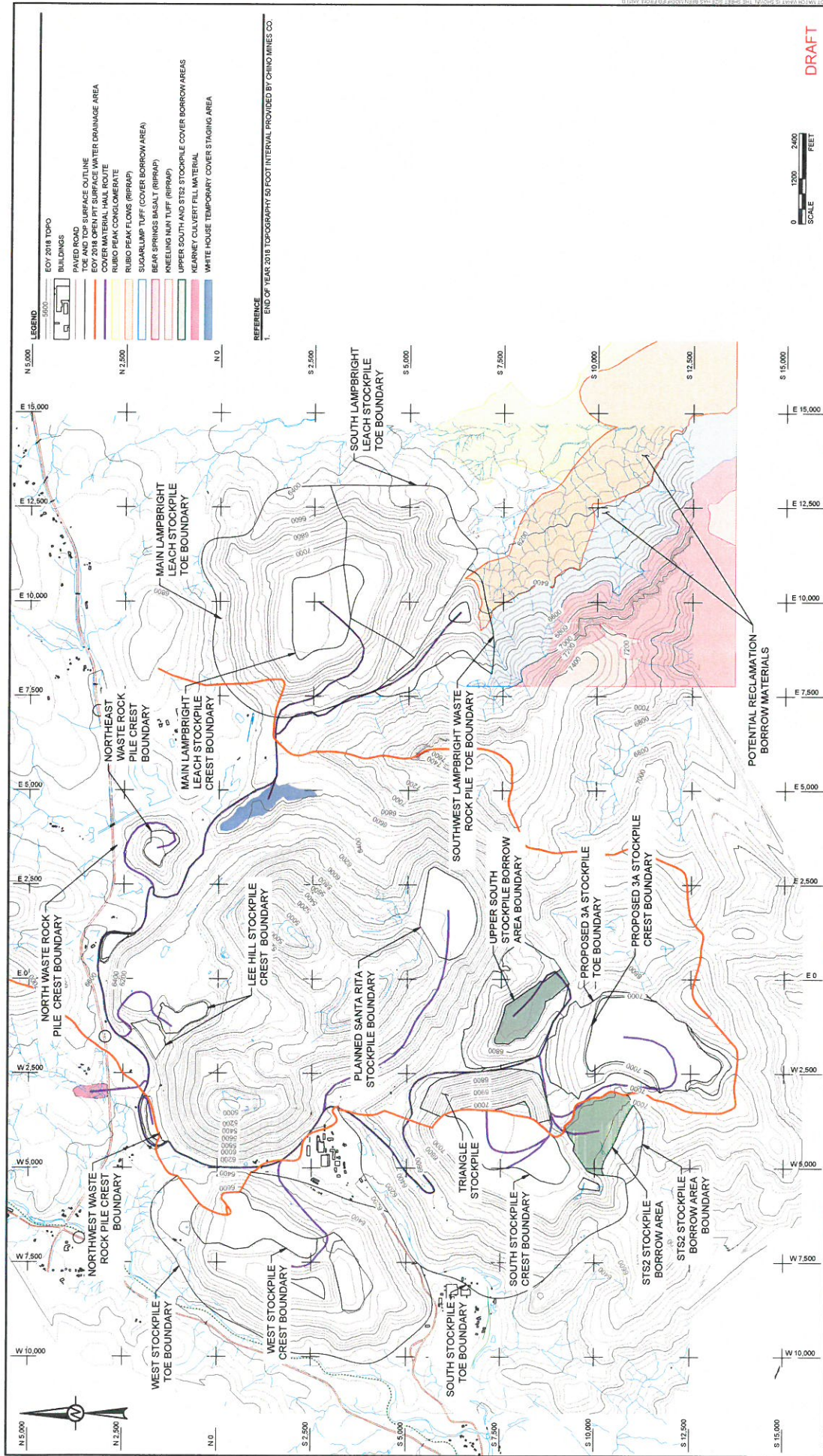
Table 6: Textural Guidelines - Chino SMA RCM

Soil Texture ^a	Total Rock Content ^b	Maximum Percentage Allowed ^c			
		Gravel	Cobble	Stone	Boulder ^d
Upper Portion of Outslope Cover					
Loamy Sand, Sandy Loam	≥25 to ≤ 70	70	30	10	< 1
Upper Portion of Top Surface Cover					
Loamy Sand, Sandy Loam, Sandy Clay Loam. Less than 25% clay.	≥10 to ≤ 70	70	30	10	< 1
Lower Portion of Top Surface and Outslope Covers					
Loamy Sand, Sandy Loam, Silt, Silty Clay Loam, Sandy Clay, Loam, Sand Clay Loam, Sandy Clay, Silt Loam, Clay, and Clay Loam.	0 to ≤ 70	70	30	10	< 1

Notes:

- USDA System of classification
- Percent by volume materials > 2mm in diameter (i.e., retained on No. 10 sieve)
- USDA System of classification: Gravel 2 mm to 3 inches, Cobble 3 to 10 inches, Stone 10 to 24 inches, Boulder >24 inches
- Guideline to be applied on a reclaimed facility, rather than individual pit basis

Figures



PROJECT
CHINO MATERIALS HANDLING PLAN

TITLE
NORTH MINE AREA BORROW LOCATIONS AND HAUL ROUTES

CLIENT
FREEMONT-McGRAN
CHINO MINES COMPANY
BAYARD, NEW MEXICO

CONSULTANT
GOLDER
MEMBER OF WSP

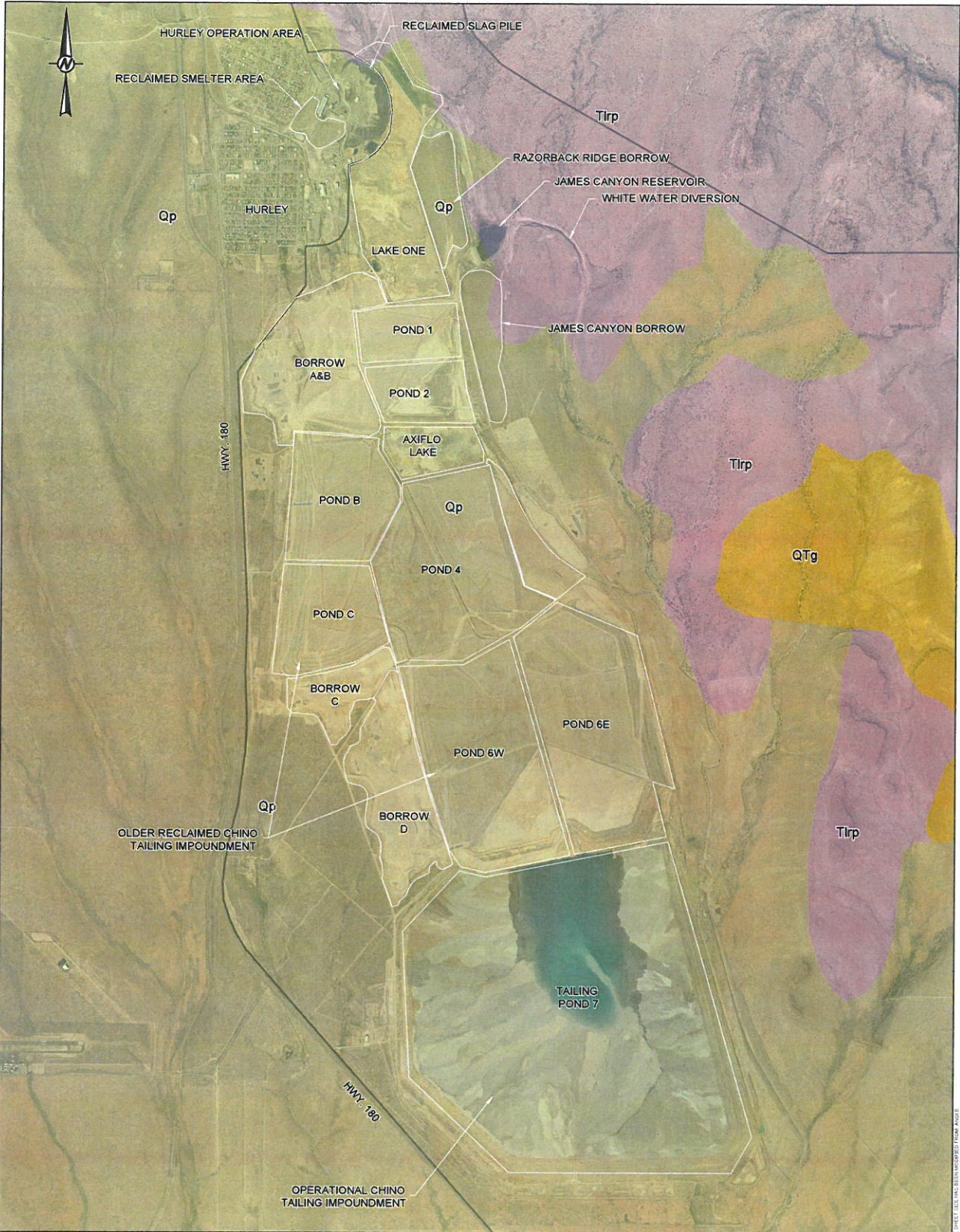
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PROJECT No. 21466735

Rev. of **FIGURE**
D of 2

Rev.	Date	Description	Prepared	Design	Review	Approved
E	2018-08-24	ADD TRIANGLE STOCKPILE	SAF	SAF	TMF	BRB
D	2018-08-13	ADDRESS AGENCY COMMENTS	SAF	SAF	TMF	BRB
C	2016-04-12	INCORPORATE CLIENT COMMENTS & ISSUE FOR CLIENT REVIEW	DET	DET	TMF	BRB

Prepared: YYY-AM-LDD Description



LEGEND GEOLOGY

Qlg	S&LA GROUP, FORMATION, OR CONGLOMERATE (MIDDLE PLEISTOCENE TO UPPERMOST OLOCENE)-INCLUDES MIMBRES FORMATION AND SEVERAL INFORMAL UNITS IN SOUTHWESTERN BASINS
Qp	PREMONT ALLUVIAL DEPOSITS (MIOCENE TO LOWER PLEISTOCENE) INCLUDES DEPOSITS OF HIGHER GRADIENT TRIBUTARIES BOUNDING MAJOR STREAM VALLEYS, ALLUVIAL CONEERS OF THE PREMONT SLOPE, AND ALLUVIAL FANS, MAY LOCALLY INCLUDE UPPERMOST PLEISTOCENE DEPOSITS
Tlrp	LOWER MIDDLE TERTIARY RHYOLITIC TO DACIC; PYROCLASTIC; ROCKS OF THE GATE, GROUP, A&B-FLOW TUFFS, LOWER OLOCENE TO UPPER EOCENE, 30-36 MAO RESERVA, A&B-FLOW TUFFS, INCLUDES SOME LOCALLY DRIFTED LAVAS AND TUFFS WITHIN THICK INTRA CALDERA UNITS, INCLUDES MINOR VOLCANIC-LASTIC SEDIMENTARY UNITS AND LAVAS BETWEEN THIN OUTFLOW SHEETS
	APPROXIMATE FACILITY BOUNDARY
	CHINO MINE PERMITS BOUNDARY

REFERENCES
 SOURCE: SEPTEMBER 2014 AERIAL IMAGE FROM CHINO MINE COMPANY
 GEOLOGIC MAP OF NEW MEXICO, NEW MEXICO BUREAU OF GEOLOGY AND MINERAL RESOURCES (2011) SCALE: 1:500,000. COORDINATE SYSTEM: CHINO MINE COMPANY COORDINATE SYSTEM

CLIENT
**FREEPORT-McMORAN
 CHINO MINES COMPANY
 BAYARD, NEW MEXICO**

PROJECT
CHINO MATERIALS HANDLING PLAN

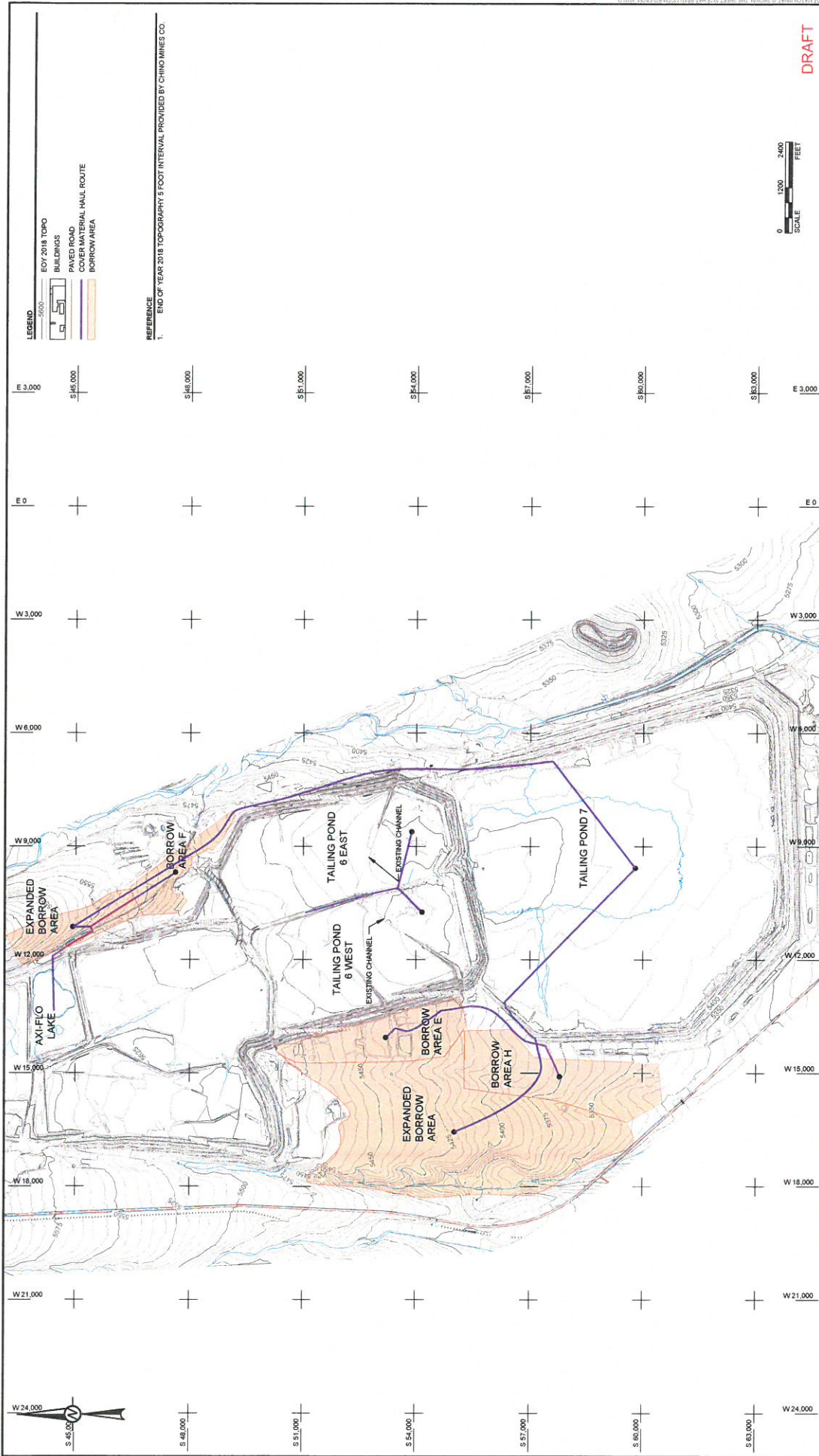
TITLE
GEOLOGIC MAP OF THE SOUTH MINE AREA

DRAFT

CONSULTANT	YYYY-MM-DD	2021-05-07
	PREPARED	SIB
	DESIGN	TS
	REVIEW	TS
	APPROVED	TS
PROJECT No. 21488795	PHASE A	Rev. A
		FIGURE 2



IF THIS DOCUMENT DOES NOT REPRESENT THE PROJECT, IT HAS BEEN MODIFIED FROM PAGE 1.



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PROJECT
CHINO MATERIALS HANDLING
PLAN

TITLE
SOUTH MINE AREA BORROW AREAS & HAUL ROUTES

PROJECT No. CONTROL Rev. of FIGURE
21466735 D 4

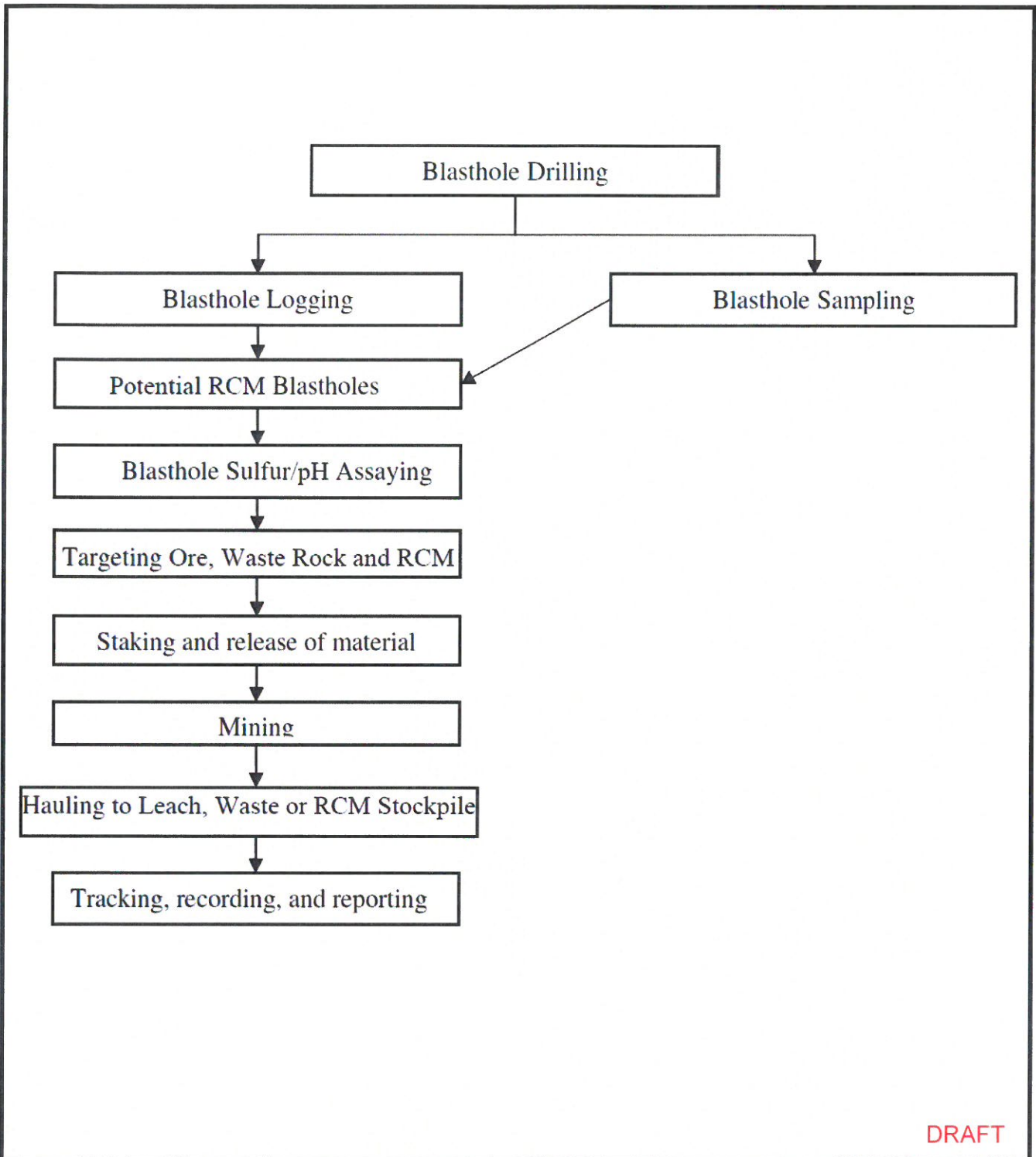
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BAYARD, NEW MEXICO

REV.	DATE	DESCRIPTION	PREPARED	DESIGN	REVIEW	APPROVED
D	2018-08-13	ADDRESS AGENCY COMMENTS	SAF	SAF	TMF	BRB
C	2016-04-12	INCORPORATE CLIENT COMMENTS & ISSUE FOR CLIENT REVIEW	DET	DET	TMF	BRB
R	2015-04-10	DESCRIPTION				

SEAL



DRAFT

CLIENT FREEPORT-MCMORAN CHINO MINES COMPANY BAYARD, NEW MEXICO	 GOLDER MEMBER OF WSP	PROJECT CHINO MATERIALS HANDLING PLAN					
TITLE PROCESS DIAGRAM FOR PIT MATERIALS HANDLING		DRAWN TS	CHECKED	REVIEWED	DATE 05-11-2021	SCALE N/A	JOB NO. 21466735



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