

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

Ken McQueen
Cabinet Secretary

Matthias Sayer
Deputy Cabinet Secretary

Fernando Martinez, Director
Mining and Minerals Division



April 17, 2018

General Electric Company
Global Operations, Environment, Health & Safety
Attn: Mr. Roy Blickwedel
475 Creamery Way
Exton, PA 19341

RE: Technical Comments on Supplemental Investigations Work Plan (Feb. 2018), St. Anthony Mine, Cibola County, New Mexico, Permit Tracking Number MK006RE

Dear Mr. Blickwedel,

The Mining and Minerals Division ("MMD") has received the *Supplemental Investigations Work Plan* ("Workplan"), dated February 23, 2018, prepared by Stantec Consulting Services, Inc. ("Stantec") for the St. Anthony Mine in Cibola County, New Mexico. In accordance with 19.10.5 NMAC, MMD solicited comments from the New Mexico Environment Department ("NMED") on the Workplan. MMD's comments on the Workplan are below, and NMED's comments are attached.

1. Please describe the purpose of the "geomorphic evaluation" and what is hoped to be achieved by collecting samples for particle-size and Atterberg limits. Is the purpose to assess the stability of materials so that an appropriate reclamation configuration can be designed?
2. The Workplan acknowledges on page 4.1 that the "radiologic contamination boundary was not identified in the 2007 *Materials Characterization [Report]*." MMD believes it critical to delineate this boundary for development of a Closure Plan for the site. However, the Workplan appears to propose delineation based on an "investigation level" of approximately 6.6 pCi/g Ra-226 (which is derived by 5.0 pCi/g + 1.6 pCi/g [background]). MMD believes the investigation level for delineation of contamination should be background levels. The *Joint Guidance for the Cleanup and Reclamation of Existing Uranium Mining Operations in New Mexico* (March 2016) states that the characterization work plan "should focus on the extent of surface soil contamination above background levels" and should be of a sufficient scope to allow for discrimination among impacted areas and "unimpacted areas reflecting background concentrations." It is MMD's opinion that the extent of contamination should be delineated based on an investigation level equivalent to background levels (i.e., counts per minute equivalent to 1.6 pCi/g). Please address.
3. The Workplan states that the gamma scan survey will be conducted on 30-foot transect spacing that will provide approximately 20 percent coverage of the ground surfaces. This frequency and total coverage appears low to adequately define the extent of surface contamination. EPA has successfully been performing continuous real-time gamma scans, which seems more appropriate to define the extent of contamination. Please address.

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4. The Workplan states that “no significant contamination above the investigation level [6.6 pCi/g] is expected beyond the permit boundary” but proposes that “if any portion of the permit boundary, including the arroyo bed, exceeds the investigation level, a step-out gamma scan will be performed until gamma radiation levels below the investigation level are detected.” Similar to comment #1 above, MMD believes that the investigation level proposed in the Workplan is too high to adequately delineate contamination, especially along the permit boundary. The Workplan should commit to delineation of contamination to background levels even if this extends beyond the permit boundary.

5. The area proposed for supplemental investigation (generally described as the permit boundary minus the pits and piles that have already been previously characterized) does not appear to capture all areas of potential surface contamination. As examples, potential surface contamination appears visible in the following locations (based on aerial images available on Google Earth):

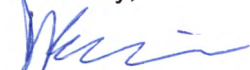
- a. A triangular shaped area northwest of the crusher/stockpile area;
- b. The area north and northwest of the “topsoil north” pile;
- c. The area between “shaft access road” and the fenceline to the north;
- d. The access road to the St. Anthony mine site, which appears to potentially be partially constructed with mine waste;
- e. An area south of Pit 1 along a 2-track road;

Please address.

6. Section 4.3.2.1 of the Workplan states that up to 30 locations will be sampled and Section 4.3.3 states that approximately 15 sample locations from the site will be used to correlate gamma measurements to Ra-226 results. Section 4.3.3 states that “the correlation will meet an R^2 value of at least 0.8.” Is the 0.8 a minimum value that will be obtained, even if more than 15 samples have to be analyzed?

Please address these comments in writing within 60-days of receipt of this letter. If you have any questions, please contact me at (505) 476-3434 or by email at david.ennis@state.nm.us.

Sincerely,



David J. (“D.J”) Ennis, P.G.
Permit Lead

Attachment: NMED Comments



SUSANA MARTINEZ
Governor

JOHN A. SANCHEZ
Lieutenant Governor

NEW MEXICO
ENVIRONMENT DEPARTMENT

Ground Water Quality Bureau
1190 South St. Francis Drive (87505)
P.O. Box 5469, Santa Fe, New Mexico 87502-5469
Phone (505) 827-2900 Fax (505) 827-2965
www.env.nm.gov



BUTCH TONGATE
Cabinet Secretary

J.C. BORREGO
Deputy Secretary

MEMORANDUM

Date: April 4, 2018

To: Holland Shepherd, Program Manager, Mining Act Reclamation Program

Through: Jeff Lewellin, Mining Act Team Leader, Mining Environmental Compliance Section

From: Amber Rheubottom, Ground Water Quality Bureau
Alan Klatt, Surface Water Quality Bureau
Neal Butt, Air Quality Bureau

Subject: **NMED Comments, United Nuclear Corporation/GE Corporate,
Supplemental Investigations Workplan, St Anthony Mine, MMD Permit
No. MK0006RE**

The New Mexico Environment Department (NMED) received correspondence from the Mining and Minerals Division (MMD) on March 16, 2018 requesting NMED review and provide comments on the above-referenced MMD permitting action. In accordance with 19.10.5.506 NMAC, NMED is providing comments prescribed by the regulation. NMED has the following comments.

Background

United Nuclear/GE Corporate (Applicant) proposes additional field investigations to be used in updating the Closeout Plan for the St. Anthony Mine. The mine is located in Cibola County, on land held by the Cebolleta Land Grant.

Air Quality Bureau

The Air Quality Bureau comments are attached under separate letterhead.

Surface Water Quality Bureau

The Surface Water Quality Bureau comments are attached under separate letterhead.

Mining Environmental Compliance Section

Personnel from the Mining Environmental Compliance Section (MECS) of the Ground Water Quality Bureau of NMED reviewed the *Supplemental Investigations Work Plan (SIWP)* and have the following comments:

- 1) Table 4: MECS requests the addition of Boron, Fluoride, Sulfate, and Chloride as analytical parameters. Alternative abatement standards were approved for these parameters by *Proposed Findings of Fact, Conclusion of Law, and Final Order in the Matter of The Petition for Alternative Abatement Standards for the Former St. Anthony Mine, Cibola County in the State of New Mexico* (Final Order).
- 2) Section 4.1 and 4.2: Please further explain the investigation level.
- 3) Section 4.2: Please further explain the unrestricted concentration level.
- 4) Figure 4: MECS requests the Supplemental Radiological Investigation Area shown on Figure 4 be expanded to include:
 - a. The area south of the ore storage area;
 - b. The northern and southern sections of Meyer Draw within the permit boundary;
 - c. The area west of the Ponds;
 - d. The area south of the Shaft Pad Storage Area.
- 5) Section 5.2: Previous investigations have established a background radon level of 20 pCi/m². NMED request a re-evaluation of the background following the work performed under the SIWP, in accordance with the *Joint Guidance for the Cleanup and Reclamation of Existing Uranium Mining Operations*.
- 6) Section 5.3: MECS requests the results of the analysis (hydrology, hydrologic, geologic, soil, sediment) conducted under the SIWP be shared, in a timely manner, with Interra Inc. Interra Inc. has completed extensive work under the NMED Abatement process. The results of the SIWP investigation are applicable to complete the abatement process as approved by the Final Order, specifically Condition 68 of the Final Order.
- 7) Section 5.3: With respect to Pile 4 and all other covers developed at the site for material with elevated parameters, the recommended cover is a store and release (evapotranspiration) per the *Joint Guidance for the Cleanup and Reclamation of Existing Uranium Mining Operations*, not a rock cover designed only for erosion protection.

NMED would like to remind the Applicant of Condition 67 of the Final Order requiring the Applicant to submit closure plan documents directly to NMED for review and comment.

NMED Summary Comment

NMED finds that the proposed SIWP is critical to ongoing abatement actions and requests the Applicant directly address the comments contained herein.

If you have any questions, please contact Jeff Lewellin at (505) 827-1049.

cc: Bruce Yurdin, Division Director, NMED-WPD
Shelly Lemon, Bureau Chief, SWQB
Liz Bisbey-Kuehn, Bureau Chief, AQB
Fernando Martinez, Division Director, EMNRD-MMD
DJ Ennis, Lead Staff, EMNRD-MMD
Kurt Vollbrecht, Program Manager, MECS



SUSANA MARTINEZ
Governor
JOHN A. SANCHEZ
Lt. Governor

**NEW MEXICO
ENVIRONMENT DEPARTMENT**

Harold Runnels Building
1190 South St. Francis Drive (87505)
P.O. Box 5469, Santa Fe, NM 87502-5469
Phone (505) 827-0187 Fax (505) 827-0160
www.env.nm.gov



BUTCH TONGATE
Cabinet Secretary
J.C. BORREGO
Deputy Secretary

MEMORANDUM

DATE: April 3, 2018

TO: Jeff Lewellin, Mining Act Team Leader
Mining Environmental Compliance Section
Ground Water Quality Bureau

FROM: Alan Klatt, Environmental Scientist & Specialist
Watershed Protection Section
Surface Water Quality Bureau

Jennifer Foote, Environmental Scientist & Specialist
Point Source Regulation Section
Surface Water Quality Bureau

RE: **Request for Comments, Supplemental Investigations Work Plan, St. Anthony Mine, Cibola County, MMD Permit No. MK006RE**

The New Mexico Surface Water Quality Bureau (SWQB) has completed its review of the above-mentioned mining project. On March 19, 2018 SWQB received a request for comments regarding the Supplemental Investigations Work Plan (work plan) for the St. Anthony Mine, a designated regular existing mine. The work plan was prepared by Stantec Consulting Services, Inc. on behalf of United Nuclear Corporation (UNC). The St. Anthony Mine was an open pit and underground uranium mine located near Seboyeta, New Mexico that was operated by UNC from 1975 to 1981. The work plan's radiological investigation will comprise of collecting samples from boreholes and soil pits in order to update the Reclamation Plan, Revegetation Plan, and the Closeout Plan. Pursuant to Section 19.10.506 NMAC, SWQB has the following comments:

The work plan identifies Meyer Draw as the arroyo that passes through and directly adjacent to the piles of non-economical mine materials. The National Hydrography Dataset identifies this arroyo as Arroyo del Valle and not Meyer Draw. Arroyo del Valle is classified as intermittent. Arroyo del Valle and its tributaries are subject to 20.6.4.98 NMAC (State of New Mexico, Standards for Interstate and Intrastate Surface Waters) and have designated uses for livestock watering, wildlife habitat, marginal warmwater aquatic life and primary contact. The New Mexico water quality standards (20.6.4 NMAC) apply at all times. The standards are available on the web at <https://www.env.nm.gov/swqb/Standards/>. They include, but are not limited to:

20.6.4.8 ANTIDegradation Policy and Implementation Plan:

This antidegradation policy applies to all surface waters of the state.

20.6.4.13 GENERAL CRITERIA (e.g., Bottom Deposits and Suspended or Settleable Solids, Floating Solids, Oil and Grease, Toxic Pollutants, Temperature, Turbidity, and Total Dissolved Solids):
 General criteria are established to sustain and protect existing or attainable uses of surface waters of the state. These general criteria apply to all surface waters of the state at all times, unless a specified criterion is provided elsewhere in this part. Surface waters of the state shall be free of any water contaminant in such quantity and of such duration as may with reasonable probability injure human health, animal or plant life or property, or unreasonably interfere with the public welfare or the use of property.

20.6.4.900 CRITERIA APPLICABLE TO EXISTING, DESIGNATED OR ATTAINABLE USES UNLESS OTHERWISE SPECIFIED IN 20.6.4.97 THROUGH 20.6.4.899 NMAC.

H.(6) Marginal warmwater: dissolved oxygen 5 mg/L or more, pH within the range of 6.6 to 9.0 and maximum temperature 32.2°C (90°F).

J.(1) Use-Specific numeric criteria – Table of numeric criteria. The following table includes constituents that were addressed in Section 4 of the 2007 Materials Characterization Report for the St. Anthony Mine:

Pollutant	Livestock watering	Wildlife Habitat	Aquatic Life, chronic	Aquatic Life, acute
Arsenic, dissolved	200 µg/L		150 µg/L	340 µg/L
Copper, dissolved	500 µg/L		Hardness-dependent*	Hardness-dependent*
Selenium, dissolved	50 µg/L			
Selenium, total recoverable		5.0 µg/L	5.0 µg/L	20.0 µg/L
Adjusted gross alpha	15 pCi/L			
Radium 226 + Radium 228	30 pCi/L			

*20.6.4.900 I.(2) NMAC

- Arroyo del Valle flows to the Pueblo of Laguna approximately 500 feet downstream of the permit boundary. Contact the Pueblo of Laguna for questions regarding water quality standards within the exterior boundaries of the Pueblo of Laguna and to request comments on the St. Anthony Mine Supplemental Investigations Work Plan.
- The migration of contaminants past the permit boundary should be considered in addition to the investigation levels at the permit boundary. Sediment deposition zones

downstream of permit boundary have the potential to accumulate contaminants to concentrations above investigation levels.

- The St. Anthony Closeout Plan states, “In comparison to the temporal variation in constituent background levels, the spatial variation in constituent levels from upstream to downstream of the Site were insignificant.” While the 38 constituents did fluctuate and vary during the 4 sampling events, on several occasions, multiple constituents noticeably increased in concentration downstream of the piles (e.g., cobalt, iron, manganese, total dissolved solids, sulfate, radium 226+228, and gross alpha).
- When calculating adjusted gross alpha using same-sample uranium results, it is noted that results increased substantially from upstream to downstream on two occasions, 8/21/2004 (increase of 192 pCi/L) and 9/22/2004 (increase of 77 pCi/L). Both results exceed the livestock watering criterion of 15 pCi/L for adjusted gross alpha regardless of background concentration. Preliminary assessment of adjusted gross alpha data using the SWQB’s 2017 Consolidated Assessment and Listing Methodology indicates impairment.
- It should also be noted that uranium concentrations increased substantially from upstream to downstream during each sampling event, ranging from 2X to almost 50X the upstream concentration. While there is no applicable standard for uranium in Arroyo del Valle, as the arroyo does not have a Domestic Water Supply designated use, the marked increase does indicate the mine as the probable source.
- The 2006 Closeout Plan also states that there does not appear to be any mass wasting of the ore-bearing materials into the arroyo. Google Earth imagery shows that multiple slump failures, gullies, and extensive rills have been developing and continue to contribute non-economic material into Arroyo del Valle.
- Design alternatives for the arroyo stabilization and setback analysis, to be submitted later in the final Closeout Plan, should include objectives for meeting water quality standards. SWQB encourages the use of buffers, setbacks or equivalent sediment controls to protect water quality from contaminated sediment and stormwater runoff.
- Soil pits located within the arroyo bed should be excavated and remediated during periods of no flow, avoiding snowmelt runoff and monsoon storm events.
- Activities within watercourses or wetlands may require coverage under a Clean Water Act Section 404 permit. If you have questions about this permitting, please contact Ms. Marcy Leavitt, Regulatory Division, US Army Corps of Engineers, Albuquerque (505-342-3678).
- Containment systems capable of retaining stormwater runoff should be designed and constructed. The containment system should be sufficient in size to contain storm water generated within its catchment area from 100-year, 3-day storm event or less. Discharge of stormwater from disturbed areas to any Water of the United States without a National Pollutant Discharge Elimination System (NPDES) permit may be a violation of the Clean Water Act.

- The St. Anthony mine is currently covered under Section 402 (NPDES) of the Clean Water Act, 2015 Multi-Sector General Permit (MSGP) Tracking Number NMR053470 for Sector G2 Metal Mining. The SWPPP for this facility must be updated to incorporate this work. Section 9.6.2.2 of the MSGP Permit describes additional New Mexico specific requirements for inspections and stabilization.

You may contact Jennifer Foote, SWQB, at (505) 827-0596 if you have questions about NPDES MSGP coverage.

If you have any other questions related to these comments, please contact Alan Klatt, SWQB, at 505-827-0388.



SUSANA MARTINEZ
Governor
JOHN A. SANCHEZ
Lieutenant Governor

**NEW MEXICO
ENVIRONMENT DEPARTMENT**

525 Camino de los Marquez
Suite 1
Santa Fe, New Mexico, 87505
Phone (505) 476-4300 Fax (505) 476-4375
www.env.nm.gov



BUTCH TONGATE
Cabinet Secretary

J. C. Borrego
Deputy Cabinet Secretary

MEMORANDUM

DATE: March 26, 2018

TO: Jeff Lewellin, Mining Act Team Leader
Mining Environmental Compliance Section, Ground Water Quality Bureau

FROM: Neal Butt, Environmental Analyst
Control Strategies Section, Air Quality Bureau

RE: Request for Comments on *Supplemental Investigations Work Plan*, St. Anthony Mine, Cibola County, New Mexico, Permit No. MK006RE

The New Mexico Air Quality Bureau (AQB) has completed its review of the above-mentioned mining project. Pursuant to the New Mexico Mining Act Rules, the AQB provides the following comments:

Air Quality Permitting History

The AQB has not issued any air quality permits for this operation.

Details

Stantec Consulting Services, on behalf of United Nuclear Corporation, has submitted the *Supplemental Investigations Work Plan - Work Plan for St. Anthony Mine Site*, dated February 23, 2018, for the St. Anthony Mine, in Cibola County, New Mexico. According to the plan, 'The Supplemental Material Characterization Work Plan (work plan) describes the proposed investigation and data evaluation to provide sufficient supplemental radiological, agronomic and geotechnical information required for the Closeout Plan. This work plan describes the proposed drilling program and provides a geotechnical field sampling plan specific to the borrow areas and stockpiles at the St. Anthony Mine Site, as well as some additional test pit locations to collect samples for the geomorphic evaluation. It also describes the radiological investigation which will cover areas not included in the previous investigation, as well as additional scanning in areas previously characterized. A site-specific Health and Safety Plan (HASP) covering field activities associated with drilling, test pits, and sampling at the St. Anthony Mine Site as well as standard operating procedures (SOPs) are included in the appendices. Information collected will be used for the cover designs, revegetation plans, hydraulic modeling, material balance and grading plans for the design.'

The St. Anthony Mine was an open pit and underground shaft uranium mine located on the Cebolleta Land Grant approximately 40 miles West of Albuquerque, New Mexico located in Cibola County approximately 4.6 miles southeast of Seboyeta, New Mexico. 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 mine site is in a remote, sparsely populated area with difficult access. The Site includes underground workings consisting of one shaft, one vent shaft that is sealed at the surface, two open pits (one containing a pit lake), five inactive ponds, seven piles of non-economical mine materials with some revegetation, numerous smaller piles of non-economical mine materials, and three topsoil piles.' The two open pits at the mine site are located in Sections 19 and 30, Township 11 North, Range 4 West, and the entrance to the underground mine is located in Section 24, Township 11 North, Range 5 West. The mine permit boundary area encompasses approximately 430 acres and includes roads and other disturbed areas along with the open pits and non-economical mine materials piles.'

Air Quality Requirements

The *New Mexico Mining Act* of 1993 states that "Nothing in the *New Mexico Mining Act* shall supersede current or future requirements and standards of any other applicable federal or state law." Thus, the applicant is expected to comply with all requirements of federal and state laws pertaining to air quality. Current requirements which may be applicable in this mining project include, but are not limited to the following:

Subsection A of 20.2.72.200 NMAC, *Application for Construction, Modification, NSPS, And NESHAP - Permits and Revisions*, states that: "Permits must be obtained from the Department by:

(1) "any person constructing a stationary source which has a potential emission rate greater than 10 pounds per hour or 25 tons per year of any regulated air contaminant for which there is a National or New Mexico Ambient Air Quality Standard. If the specified threshold in this subsection is exceeded for any one regulated air contaminant, all regulated air contaminants with National or New Mexico Ambient Air Quality Standards emitted are subject to permit review. . ."; and

(3) "Any person constructing or modifying any source or installing any equipment which is subject to 20.2.77 NMAC, *New Source Performance Standards*, 20.2.78 NMAC, *Emission Standards for Hazardous Air Pollutants*, or any other New Mexico Air Quality Control Regulation which contains emission limitations for any regulated air contaminant;"

Also, Paragraph (1) of Subsection A of 20.2.73.200 NMAC, *Notice of Intent*, states that:

"Any owner or operator intending to construct a new stationary source which has a potential emission rate greater than 10 tons per year of any regulated air contaminant or 1 ton per year of lead shall file a notice of intent with the department."

The above is not intended to be an exhaustive list of all requirements that could apply. The applicant should be aware that this evaluation does not supersede the requirements of any current federal or state air quality requirement.

Fugitive Dust

Fugitive dust is a common problem at mining sites. The AQB does not currently regulate fugitive dust; however, we do recommend controls to minimize emissions of particulate matter from fugitive dust sources. The following control strategies can be included in a comprehensive facility dust control plan (from EPA's Compilation of Air Pollutant Emission Factors, AP-42):

Unpaved haul roads and traffic areas: paving of permanent and semi-permanent roads, application of surfactant, watering, and traffic controls, such as speed limits and traffic volume restrictions.

Paved roads: covering of loads in trucks to eliminate truck spillage, paving of access areas to sites, vacuum sweeping, water flushing, and broom sweeping and flushing.

Material handling: wind speed reduction and wet suppression, including watering and application of surfactants (wet suppression should not confound track out problems).

Bulldozing: wet suppression of materials to "optimum moisture" for compaction.

Scraping: wet suppression of scraper travel routes.

Storage piles: enclosure or covering of piles, application of surfactants.

Miscellaneous fugitive dust sources: watering, application of surfactants or reduction of surface wind speed with windbreaks or source enclosures.

Recommendation

The AQB has no objection to the proposed plan.

The applicant is expected to comply with all requirements of federal and state laws pertaining to air quality. This written evaluation does not supersede the applicability of any forthcoming state or federal regulations.

If you have any questions, please contact me at (505) 476-4317.