FREEPORT-McMoRan

Tyrone Operations
P.O. Box 571
Tyrone, NM 88065

February 10, 2023

Certified Mail #70150640000476264121
Return Receipt Requested

Ms. Carmen Rose
Energy, Minerals and Natural Resources Department
Mining and Minerals Division
Mining Act Reclamation Program
1220 South St. Francis Drive
Santa Fe, NM 87505

Dear Ms. Rose:

Re: Response to Additional Comments on the Applications for Modification 22-1 to Little Rock Mine, Permit No. GR007RE; and Modification 22-1 to Tyrone Mine, Permit No. GR010RE

In letters dated August 2, 2022 and August 17, 2022, Freeport-McMoRan Tyrone, Inc. (Tyrone) applied for modifications to Little Rock permit GR007RE and Tyrone permit GR010RE for the approval of Precambrian granite as reclamation cover material (RCM) and the termination of the USNR Test Plot Study. On November 21, 2022, Tyrone received comments from the Mining and Minerals Division (MMD) and other agencies on the applications. In a letter dated December 21, 2022, Tyrone responded to the agency comments. In a letter dated January 11, 2023, Tyrone received additional comments from MMD on the applications and data provided. This letter is in response to that comment letter.

Tyrone has had several virtual meetings and site visits with state agencies to discuss their comments and concerns on the applications. During these meetings and site visits, Tyrone communicated the value of existing data on the RCM and requested MMD to consider it in lieu of performing confirmation sampling on the 9A Waste and 9AX Waste stockpiles. Tyrone also provided a table of reports with this data in an email dated December 9, 2022.

Below are MMD comments in italics followed by Tyrone's.

1. *This response is acceptable to MMD.*

   No response required.

2. *After receiving the summary table on December 9, 2022 of previous studies, sampling efforts, and results of material characterized by Tyrone on the USNR test plots, USNR reclamation, Little Rock geologic material, and the 9A/9AX stockpiles, MMD remains concerned with the amount of data relating to the growth medium suitability of the Little Rock overburden in the 9A/9AX stockpiles and how it relates to the USNR test plots. Specifically, MMD would like to see a direct comparison and justification that the material on the USNR test plots is representative of the material within the 9A/9AX.*

   Based on the summary table provided by Tyrone, only one sample has been collected at the surface of the 9AX stockpile, and only three surface samples collected on the 9A stockpile. Surface samples, while informative, do not provide an indication of the variability of soil suitability within the 9A/9AX stockpiles. Additionally, sample size and scope should be expanded to describe the variability within the 9A/9AX stockpiles, with a direct comparison to the USNR test plot material. Interpreting the historical data of various sampling methods, sampling times, analytical methods, and sampling locations makes it difficult to draw a clear comparison between the characterization on the USNR test plots and the Little Rock overburden stockpiles.

   While Tyrone has done extensive sampling of the Little Rock Precambrian granite under DP-435 to fulfill requirements under the Water Quality Act, growth medium suitability parameters such as total metals concentrations, cation exchange capacity, and organic carbon/organic matter were nonexistent or limited in scope of what was analyzed and reported on both the USNR test plots and the 9A/9AX stockpiles. Leachability studies do not provide total metals concentrations, which are a better indicator for identifying any potential concerns related to bioaccumulation of metals throughout the nutrient cycling process. Additionally, methods for determining rock fragment content differed across studies, and, as such, skew the comparison between the Little Rock overburden stockpiled material and the material on the USNR test plots.

   MMD reiterates the request for more sampling of the 9A/9AX stockpiles and USNR test plots by Tyrone. MMD is requesting that Tyrone provide a clear comparison of how the material within the 9A/9AX is representative of the material that was placed on the USNR test plots prior to MMD approval of the Little Rock Precambrian granite as RCM. MMD appreciates the continued open dialogue regarding this decision and is willing to continue to provide more technical assistance in identifying parameters to sample in the development of a sampling and analysis plan.

   It is important to clarify some important facts and concepts.

From the beginning, Tyrone has clearly signaled that overburden waste rock from the Little Rock Mine was intended to be used as reclamation cover material (not only for reclamation of the Precambrian granite stockpiles themselves, but also potentially for other nearby mine facilities) as documented in the following examples in the record:

- GR007RE, Revision 97-1 – several citations where Precambrian granite will be utilized as reclamation cover material will be utilized (including live handling from the mine) - Pages 3 and 4 of 21.
- September 1997, Final Environmental Impact Statement Little Rock Mine Project, BLM-NM-PL-97-005-1793; e.g. - pages S2, 2-28 and 4-56.
- October 11, 2007, Tyrone Mine Closure/Closeout Plan, e.g., pages 13 and 35.
- July 30, 2019, 2013 Tyrone Mine Closure/Closeout Plan Update – e.g. - Page 34.

The 9A Waste and 9AX Waste stockpiles and other Precambrian granite stockpiles have had more scrutiny and oversight of the materials that go into them than most stockpiles at Tyrone to date. So in fact, Tyrone and the agencies know a lot about the nature and characterization of these facilities. For example, NMED has requested and Tyrone has provided everything NMED asked for to ensure that the stockpiles remain non-discharging units as the stockpiles were constructed which is the most logical time to obtain necessary data.

Tyrone has segregated material that is suitable for use as cover material and riprap. One 50-foot bench of the 9A Waste stockpile was specifically reserved as a future riprap source. When the USNR test plots and USNR reclamation site were being constructed/reclaimed, a material handling plan was followed to visually segregate texturally suitable cover material at the loading site (Little Rock shovel pit) for this 20-acre site. Tyrone is willing to accommodate additional sample collection, but it would not make sense to sample areas that are set aside for riprap or that are too coarse for use as cover material – this material is not texturally comparable to USNR cover material. These materials will not be hauled and used as cover because they would not meet textural or water holding capacity requirements.

There are significant volumes of suitable cover material in all the Precambrian granite stockpiles available for future reclamation of nearby leach and waste rock that require a 3-foot cover. To give perspective, less than 25% of the currently available volume in Precambrian granite stockpiles would be needed to cover nearby stockpiles that are within a practical haul distance. Using an appropriate material handling plan, this quantity of cover material can easily be generated from these stockpiles.

After the site visit, Tyrone met with MMD on February 7, 2022 to clarify the rational of analyzing the RCM for total metals and which soil suitability parameters the agency is most concerned about, despite the extensive analysis and vegetation performance of the overburden material. Tyrone understood from these exchanges that the confirmation sampling and analysis should focus on confirming that the material used in the construction of the USNR test plots is representative of what is stored in the 9A Waste and 9AX Waste stockpiles (exceptions noted above). Tyrone understood that the agency would like Tyrone to assess the variability in the chemical and physical characteristics of the stockpiled material. Tyrone's position is that we should compare not only to the small reclaimed area of the USNR test plot, but also the entire USNR reclaimed site and other reclaimed sites to get a true representative sample of the variability within the Precambrian granite cover material.

The specific parameters of concern are understood to be metals, organic carbon/organic matter, cation exchange capacity, texture, and rock fragment content. Tyrone questions the value of testing for organics because we would not expect organics to be present in measurable quantities in run-of-mine overburden stockpiles. Tyrone also questions the value of measuring total metal concentrations. Total metals analysis would provide insight into the variability of the chemical composition of the Precambrian granite, but it does not correlate well with metal bioavailability. There is more value for Tyrone to analyze the materials for extractable metals to better understand their mobility and the potential for excesses or deficiencies. This method is better aligned with industry standards in regard to plant uptake and availability and consistent with Appendix I of the agency's *Guidance for Soil and Cover Material Handling and Suitability for Part 5 Existing Mines.*

Tyrone proposes to obtain samples from test pits on benches, top surfaces, and side slopes of the stockpiles that are safely accessible. As always, the agency is more than welcome to be present for the sampling work.

Due to the timing of the original response letter to the applications and subsequent discussions, Tyrone will not be able to meet the February 19th goal for submitting the Sampling and Analysis Work Plan (SAP). Tyrone will submit a map of proposed sample locations, table of proposed field data, and lab analyses by the end of March to continue the discussions with MMD. Once an overall program has been agreed to, Tyrone will then commit to a reasonable timeline to submit the SAP and perform the sampling.

3. *While MMD appreciates the comparison of the 2022 vegetation surveys on the USNR reclamation compared to the reference area and the vegetation survey results*

for the Little Rock Mine Copper Leach Stockpile, MMD believes that performing a quantitative vegetation survey of the USNR test plots and the Tyrone Mine vegetation reference area indicated in the MMD comment letter dated November 21, 2022 will provide useful information that may enable the conclusion the USNR test plot study.

i. *Paragraph 1 on Page 5 of the Tyrone Response Letter states that:* "In 2018, the reference area was not sampled because this is not a standard practice in the third year of a reclamation program, nor was it performed in previous test plot studies on Gila Conglomerate."

Previous test plot studies approved by MMD at the Tyrone Mine include quantitative vegetation sampling of the test plots and reference area in years 4 and 7 after seeding. Therefore, for Tyrone to perform a quantitative vegetation survey of the USNR test plots and the Tyrone vegetation reference area in 2023, 8 years after seeding does not seem an unusual or unreasonable request.

For all past test plot programs at Tyrone, as well as Chino and Cobre, year 4 quantitative vegetation sampling was limited only to the test plots. The reference areas were not surveyed in year 4 because the intent of the test plot programs was to compare the performance of different cover thickness and slope treatments to one another. Year 7 test plot vegetation surveys did include the reference area.

ii. *Paragraph 2 on Page 5 of the Tyrone Response Letter states that:* "performing another study on the test plots in 2023 would significantly delay this process as the results would not be available until early 2024."

MMD understands that Tyrone wishes to gain MMD approval of Modification 22- 1, in part, to conclude the USNR test plot study in a timely manner, however, MMD will not be able to conclude its review of the application for Modification 22-1 until it receives the results of the additional sampling and characterization of the waste rock stockpiled in the 9A and 9AX waste rock stockpiles at the Tyrone Mine as indicated in MMD's comment # 2 above. MMD suggests that the vegetation sampling at the USNR test plots in 2023 may be done concurrently with additional sampling of the 9A and 9AX stockpiles.

Tyrone agrees to conduct an additional survey in 2023 and the survey will include both the USNR test plots and remaining USNR reclamation site in addition to the reference area. If representativeness is a concern,

then it would be more valuable to evaluate the overall performance of the USNR reclamation site. The test plot area comprises only a small fraction of the whole reclamation effort and does not capture the overall variability. Additionally, sampling methods are complicated by the small size of the test plots, and it is better to use larger sampling plots and quadrats for both the reclaimed and reference areas.

The primary objectives of the test plots were to evaluate vegetation success and erosion, but also to inform about the implications of mulching on seedling establishment. The test plots results have led to the conclusions that the material is stable and there is no significant difference in seed mixes or mulching techniques. Based on this and the fact that the soil sampling will also take place outside of the test plot boundary, Tyrone proposes to evaluate the overall success of the USNR reclamation in this approval process.

Tyrone plans to conduct this vegetation survey separately from the others and earlier in the growing season, so that the results may be reported prior to 2024.

Please contact Ms. Raechel Roberts at (575) 956-3290 if you have questions.

Sincerely,

Thomas L. Shelley
Environmental Services Manager

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c. Holland Shepherd – MMD