



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

January 6, 2020

**Certified Mail #9171999991703580021266**  
**Return Receipt Requested**

Mr. David Otori  
Energy, Minerals and Natural Resources Department  
Mining and Minerals Division  
Mining Act Reclamation Program  
1220 South St. Francis Drive  
Santa Fe, NM 87505

Dear Mr. Otori:

**Re: Freeport-McMoRan Tyrone Inc. Tyrone Mine**  
**Closure/Closeout Plan Update, Permit GR010RE, Response to Comments**

Freeport-McMoRan Tyrone Inc. (Tyrone) submitted an update to the 2013 Tyrone Closure/Closeout Plan (2013 CCP) update to the Mining and Mineral Division (MMD) and the New Mexico Environmental Department (NMED) in July 2019. Tyrone received comments in a letter dated December 6, 2019, from MMD. Below are MMD's comments in italics followed by Tyrone's responses. Based on the comments received from the Agencies to date, Tyrone plans to issue another CCP update and cost estimate to address the comments once all comments are received from the various parties and the scope of work is finalized. Tyrone will also issue an errata document to identify all the changes made since the July 2019 submittal. In this response document, Tyrone refers to this update as "the final version of this update".

- 1. Section 2.1.1, Open Pits, page 7 of the revised updated CCP discusses the main open pit, other open pits and certain stockpiles, or portions thereof, at the Tyrone Mine that MMD has approved a conditional waiver from the requirement of achieving a self-sustaining ecosystem pursuant to 19.10.5.507.B NMAC. MMD will continue the requirements and conditions of Revision 10-1 for the conditionally waived areas at the Tyrone Mine in Revision 09-1 for the Tyrone revised updated CCP.*

No response necessary.

- 2. Section 2.3.7, Material Characteristics, Borrow Materials, page 22 of the revised updated CCP discusses the Gila conglomerate cover material and associated soils that*

*have been approved by MMD for use as vegetative reclamation cover material. Tyrone proposes that MMD consider approval of the Precambrian Granite overburden and associated intrusive rocks from the Little Rock Mine as reclamation cover material based on the preliminary results of the USNR test plots. MMD will determine whether these materials will be approved as reclamation cover material after the final results of these test plots has been received and reviewed.*

No response necessary.

- 3. Section 5.5.2, Management and Treatment Processes, Sludge and Salt Management, page 56 of the revised updated CCP states that, "The closure/closeout activities planned for the SDF [Sludge Disposal Facility] and the HDPE-lined salt disposal facility are the same as those described for the stockpiles in Section 5.2.1." Section 5.2.1, Stockpiles Located Outside the OPSDA and Conditional Waiver Area, Planned Closure /Closeout Activities, page 42 of the revised updated CCP and associated Table 4-2, Summary of Key Design Criteria for Facilities to be Closed, and Section 5.2.2, Stockpiles Located Inside the OPSDA and Conditional Waiver Area, Planned Closure/Closeout Activities, pages 43-44 of the revised updated CCP and associated Table 4-2, do not provide a narrative on the reclamation of the SDF and the HDPE- lined salt disposal facilities (as shown in Figures 3 and 5 of Appendix D, Basis of Cost Estimate for Water Management and Treatment) of the revised updated CCP, although cost estimate details are provided in Attachment B5, Sludge and Salt Disposal Cost Backup Details of Appendix D. Please provide a brief description of the reclamation plan for the SDF and salt disposal facilities.*

The Sludge Disposal Facility (SDF) and HDPE-lined salt disposal facility are both located outside the Tyrone Conditional Waiver Area (Waiver) and within a Reclamation Area (3A and 2A Flat respectively). The SDF is also located outside the Open Pit Surface Drainage Area (OPSDA). For these reasons and for reclamation planning purposes, Tyrone utilized the design criteria applicable to the top surface areas for 'Stockpile Regrading Outside OPSDA and Conditional Waiver Area' found in Table 4-2.

Per Table 4-2, the following criteria applies to the SDF and HDPE-lined salt disposal facility.

- Top surfaces graded to 1 to 5 percent (20.6.7.33.C NMAC).
- Regrading to be done in such a manner that orients surface water conveyances to the exterior perimeter of the stockpiles.
- Outslopes to be constructed to a maximum inter-bench slope of 3.0H:1V (20.6.7.33.C NMAC).
- Maximum uninterrupted slope length of 200 feet for outslopes (20.6.7.33.C NMAC).

- Top surfaces and outcrops to be covered with 36 inches of Gila Conglomerate (or other suitable RCM; the 9A overburden stockpile may be used as borrow source and is not projected to require imported cover). Cover to meet the requirements of 20.6.7.33.F NMAC.
- Top surfaces and outcrops to be revegetated in accordance with Appendix C of the MMD Permit and applicable modifications.
- A moderate maintenance program will be acceptable until cover vegetation establishes.

Tyrone will be updating this criteria, in regards to the borrow source bullet, please see Tyrone's response to comment number 5. Please note that the Salt Disposal Facility is located inside the OPSDA and therefore cannot be regraded 'in such a manner that orients surface water conveyances to the exterior perimeter of the stockpiles'.

4. *Table 7-1, Proposed Interim Seed Mix and rates for the Tyrone Mine Reclamation Sites - the Total PLS (pounds per acre, lbs./acre) proposed in the revised updated CCP is 5.6 lbs. /acre, whereas the Total PLS approved in Modification 06-3 to Permit No. GR010RE is 9.1 lbs. /acre. In addition, the proposed Alternate reclamation seed mix for the Tyrone Mine does not include as extensive of a list of alternate or substitute plant species as approved in Modification 06-3. The proposed seed mix eliminates the cool season grasses from the seed mix. While MMD has agreed with Tyrone regarding the lack of success in the past of establishing the cool season grasses, Tyrone should provide in the updated CCP an explanation for the proposed changes in the seed mix from previously approved seed mixes.*

In the next update, Tyrone will update the 'Alternate Reclamation Seed Mix' for Tyrone to exclude the cool season grasses and to include other all approved alternate and substitute plant species found in the approved Permit GR010RE Modification 06-3.

In Permit GR010RE Modification 06-3, Tyrone proposed to use 9.10 lbs. /acre of seed (cool and warm season grass, forbs, and shrubs). This seed mix included 4.50 lbs. /acre of cool season grasses. With the elimination of the requirement of cool season grasses at Tyrone, the seed mix table has been updated to reflect the change in seed rate. Tyrone has proposed a new seeding rate higher than the adjusted seeding rate found in Table 4 of Modification 06-3.

Modification 06-3 Seed Rate: 9.10 lbs. /acre – 1.25 lbs. /acre of Bottlebrush Squirreltail – 1.75 lbs. /acre of Indian Ricegrass – 1.50 lbs. /acre of Streambank Wheatgrass = 4.60 lbs. /acre of seed

Tyrone has proposed 5.60 lbs. /acre of seeding compared to the adjusted seeding rate of 4.60 lbs. /acre of seed. Tyrone will add an explanation of the change in seeding rates to the next update.

- 5. Table 1, Reclamation Overview, page 3 of the Summary Report indicates that the Stockpile 2A interior slope will be reclaimed using a 2-foot thick cover imported from the 9AX stockpile along with a 1-foot thick cover of Gila [conglomerate] from the Lube Shop Area. Section 2.4, Changes from Previously Submitted CCP Update, page 10 and Section 3.0, Calculations, page 19-20 of the Summary Report, indicate that the 2A stockpile will be reclaimed using a 2-foot thick cover sourced from the 9AX stockpile, and a 1-foot thick cover of Gila conglomerate. The 9AX stockpile consists of Precambrian Granite overburden from the Little Rock Mine. As this material has not yet been approved by MMD as reclamation cover material, Gila conglomerate is the approved cover material, Tyrone should revise the closeout plan for the 2A stockpile to include a 3-foot thick cover of Gila conglomerate cover material.*

This comment from MMD discourages mining companies (during operations) from doing the right thing to segregate non-acid generating materials during mining to be used for reclamation materials in the future. Tyrone believes it is poor policy. Tyrone has put the effort and expense to segregate these materials and it is extremely unrealistic that these materials will not be utilized as a valuable reclamation cover material in any closure scenario even if the Agency is directing the work. Tyrone has demonstrated that this material is a suitable substrate for vegetation establishment with proper management and knew that it would be because of the numerous historic stockpiles around Tyrone composed of this material that have revegetated naturally over time.

The currently approved Closure/Closeout Plan (CCP) for the 9AX Stockpile is based on hauling 2 feet of Pre-Cambrian Granite cover from the 9AX Stockpile to the 2A Stockpile and then placing 1 foot of Gila Conglomerate (Gila) on top of the Pre-Cambrian Granite. While Tyrone feels that it is well documented that Pre-Cambrian Granite is suitable cover material and MMD has confirmed this with their approval of the 9A CCP and the approved permit language in GR007RE, Revision 14-1, Tyrone agrees to update the 2013 Tyrone CCP to cost 3 feet of Gila over the 2A Stockpile. This change will be made in the final version of this CCP Update.

- 6. Table 1, Reclamation Overview, page 4 of the Summary Report indicates that the reclamation 9A stockpile will not require imported cover material and that the 9AX stockpile will be covered with a 1-foot thick cover of cover material [Gila conglomerate]. Table 4-2: Summary of Key Design Criteria for Facilities to be Closed, of the revised updated CCP indicates that the 9A stockpile may be used as a borrow source and is not projected to require imported cover material. Section 3.0, Calculations, Table 5, Reclamation Activity by Facility Type, page 17 of the Summary Report indicates that the*

*9A stockpile will receive no cover material, and the bullet for Cover on page 19-20 of the Summary Report indicates that the 2A stockpile will receive a 2-foot thick cover sourced from the 9AX stockpile (along with a 1-foot thick cover of Gila conglomerate). The 9A stockpile is composed of Precambrian Granite from the Little Rock Mine (the same material as the 9AX stockpile) and should be subject to the same reclamation requirements of the 9AX stockpile (i.e., 1-foot cover of Gila conglomerate). Section 2.1, Earthwork Processes and Equipment, Borrow Areas, page 7 of the Summary Report indicates that for the purposes of the reclamation cost estimate, that Gila conglomerate and the Precambrian Granite of the 9AX stockpile are assumed as borrow sources for reclamation cover material. Tyrone should revise the closeout plan for the 9A stockpile excluding it as a source of reclamation cover material and include the placement of a 1-foot thick cover of Gila conglomerate over it during reclamation and revise the reclamation cost estimate to use only Gila conglomerate as reclamation cover material.*

See Tyrone's response to comment number 5 in regards to the 2A Stockpile cover material. Additionally, it is extremely discouraging to a mine operator to be told by an agency that it must treat a non-acid generating overburden stockpile the same as an acid-generating stockpile at closure. The prescription should be different. This is poor policy.

The approved 9A Stockpile CCP does not require any additional cover material to be placed over it (such as Gila), therefore, Tyrone did not propose to haul Gila to the 9A Stockpile in the 2013 Tyrone CCP. No one conscious of limited resources to complete closeout for this mine would haul Gila cover to this stockpile, not even MMD. Site history also indicates it will be revegetated by natural processes so it is even a waste of precious resources to bother doing things that nature will do a great job of over time.

Per approved Permit GR007RE, Revision 14-1 Condition 8.H.2.a (In-Pit Stockpiles, composed of Pre-Cambrian Granite), 'After final regrading, areas where the surface is excessively coarse with insufficient fines to create an adequate seedbed shall be covered with 4 inches of approved cover material in order to enhance the seedbed.'

The Little Rock CCP was approved utilizing 4 inches of additional seedbed cover on 10% of the Operational In-Pit Stockpile. This can be seen in Worksheet #4 of the Capital Reclamation Cost Estimate shown below.

Capital Reclamation Cost Estimate

Earthwork Quantity Worksheet

Little Rock  
 Worksheet #4  
 01/14/16

Item	Description	Location	Location 2	Area (ac)	Cover Depth (in)	Stockpile/bank Volume (bcy)	Swell Factor (%)	Stockpile/loose Volume (lcy)
1100	Regrade Outlopes	Operational In-pit Stockpile West Slope	-	-	-	56,446	2%	57,575
1101	Regrade Outlopes	Operational In-pit Stockpile East Slope	-	-	-	508,508	2%	518,678
1102	Dozer Assist	Operational In-pit Stockpile	-	-	-	2,300	0%	2,300
1200	Load cover soil	Operational In-pit Stockpile	-	4.2	4	2,300	0%	2,300
1300	Haul cover soil	North Stockpile	Operational In-pit Stockpile	-	-	2,300	0%	2,300
1400	Grade cover soil	Operational In-pit Stockpile	-	4.2	4	2,300	0%	2,300
1500	Rip Existing Surface	Primary Haul Road	-	12.6	-	-	-	-
1501	Rip Existing Surface	Open Pit Flat Areas	-	85.4	-	-	-	-
1502	Rip Existing Surface	Western Haul Road	-	14.8	-	-	-	-
1503	Rip Existing Surface	North Stockpile	-	4.3	-	-	-	-
1505	Rip Existing Surface	West Canyon Stockpile	-	1.5	-	-	-	-
1506	Rip Existing Surface	Ancillary Facilities and Structures	-	5.3	-	-	-	-
1507	Rip Existing Surface	Reclaimed Copper Leach Stockpile and P-Plant	-	30.1	-	-	-	-
1508	Rip Existing Surface	Allowance for Other Disturbed Areas	-	10.0	-	-	-	-
1509	Rip Existing Surface	Operational In-pit Stockpile	-	42.0	-	-	-	-

01252016\_Mining\_Capital\_Costs.xls  
 Worksheet #4  
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The approved CCP for the 9AX Stockpile has 1 foot of cover being placed over the entire stockpile. In the 2013 Tyrone CCP, Tyrone did not change the approved CCP criteria and therefore has proposed financial assurance to place 1 foot of cover over 63.7 acres of the 9AX Stockpile. Utilizing the approved 2014 Little Rock CCP assumptions, Tyrone only needs to put Financial Assurance in place for 4 inches of seedbed cover over 19.3 acres of 9A and 9AX Stockpiles (129 acres 9A Stockpile + 63.7 acres 9AX Stockpile = 192.7 acres X 10% = 19.3 acres).

The 2013 Tyrone CCP proposed financial assurance has more than adequate cost in-place to place a 4-inch seedbed cover over any surface of the 9A and 9AX Stockpiles that is excessively coarse with insufficient fines to create an adequate seedbed. Therefore, Tyrone does not propose any change to the cost estimate for additional placement of Gila on the 9A Stockpile.

Tyrone proposes an intermediate position for the final version of this update to the Tyrone CCP to reflect that while MMD has not finally approved Pre-Cambrian Granite as cover, non-acid generating overburden stockpiles should be treated differently than acid generating stockpiles, and Tyrone will provide financial assurance to place a 4 inch seedbed cover over 10% of Pre-Cambrian Stockpiles that is too coarse to provide an adequate seedbed during final regrading.

To clearly reflect that Tyrone has Financial Assurance (in the final version of this update) to place a seedbed cover over the 9A and 9AX Stockpile, Tyrone will add a separate line item to the cost estimate to be labeled '9A/9AX Stockpile Cover' for 1 foot of seedbed cover over 63.7 acres. This line item will replace the '9AX Stockpile' line item for haul-cover.

At this time, Tyrone is not proposing a change to the approved 9AX Stockpile CCP (1 foot of seedbed cover over 63.7 acres). In the 2025 update to the Tyrone CCP, Tyrone will update the cover haul, for 9A and 9AX Stockpiles, to reflect the 4 inches of seedbed cover over 10% of the stockpile areas.

7. *Table 4, Miscellaneous Unit Costs, Well Plug & Abandon of the Summary Report lists \$10.55 per foot whereas the cost estimate for well plugging and abandonment is \$18.17 per foot per Chino response #3 in July 15, 2019 letter to joint MMD/NMED comments for the Cobre Mine updated CCP. Please adjust the well plugging and abandonment cost to \$18.17 per foot for the Tyrone updated CCP or provide an explanation for this difference.*

According to the 'Guidance for Estimating Reclamation Costs for Part 3 – Minimal Impact Exploration and Minimal Impact Mining', the cost for drill hole abandonment, for MMD, is \$14.00 per foot. It is Tyrone's opinion that the \$18.17 per foot used for the Cobre Mine updated CCP and MMD's \$14.00 per foot is too high based on actual quotes.

However, for time expediency Tyrone will agree to use \$18.17 per foot and will provide the change with the final version of this update.

8. *Appendix A, Cost Spreadsheet, Stockpile Spreadsheet Worksheet #14; Revegetation Unit Cost spreadsheet; and Appendix B.5, Direct Quotes, Rocky Mountain Reclamation Price Estimate for Revegetation Services of the Summary Report. MMD requests that Tyrone provide an explanation of the revegetation cost estimation resulting in the unit cost of \$820.12 per acre shown in Table 4, Miscellaneous Unit Costs, page 16 of the Summary Report, where the direct quote from Rocky Mountain Revegetation equates to a revegetation cost of approximately \$1099 per acre.*

The \$820.12 per acre is the revegetation costs without fuel; with fuel added in the costs is \$823.97 per acre plus indirect cost.

Per the Agreement with the FA Work Group, the revegetation costs calculation was updated to use EquipmentWatch costs for equipment, RS Means for equipment attachments, and a direct quote for mulch, seed, and fuel. The reference to Rocky Mountain Reclamation quote is for seed and hay mulch only. This methodology was approved by MMD and NMED at Chino and Cobre. .

9. *CSG Stockpile - Condition 9.C of Permit Modification 19-1 of Permit No, GR010RE requires that Tyrone provide a sampling and analysis plan for the Gila conglomerate excavated from the 5A stockpile and Mohawk Area of the Tyrone Mine that is being placed on the CSG stockpile. MMD will require a similar sampling and analysis plan for areas of the mine that Tyrone proposes as cover material that have not yet been characterized and approved by MMD as cover material borrow sources.*

For Gila excavated and stockpiled for future reclamation use, from an area that was originally covered by an acid-generating stockpile, such as the material excavated from the 5A Stockpile and Mohawk Area, Tyrone agrees to utilize the CSG Stockpile sampling and analysis plan.

For Gila excavated and stockpiled for future reclamation use, from a natural borrow area (not previously mined) or an area originally covered with a non-acid generating stockpile, Tyrone reserves the right to propose an alternative sampling and analysis plan. A Construction Quality Assurance Plan, for cover placement, will be proposed for each individual reclamation area prior to construction.

10. *Financial Assurance - Collateral Properties - In a letter to Stuart Butzier of Modrall Sperling dated December 28, 2018, MMD acknowledged the 2014 appraised ranch collateral properties, a significant part of the overall financial assurance (FA) for the Tyrone Mine Permit No. GR010RE. The 2014 appraised ranch collateral properties total \$60,686,500 and pursuant to the currently approved FA for the Tyrone Mine, MMD recognizes eighty percent (80%) of the appraised values or \$48,549,200 towards the \$179,504,992 NPV FA currently required. Although the amount of FA for the updated Tyrone Mine Closeout Plan has not yet been agreed upon by Tyrone and MMD (and NMED), MMD is requesting an update on the progress of the 2019 re-appraisal of the ranch collateral properties that is required under Revision 01-1.*

Tyrone is currently conducting the 2019 appraisals of the ranch collateral properties. The appraisals are anticipated to be completed by March 31, 2020. The results will be submitted to MMD in the Annual Report due April 30, 2020.

11. *Financial Assurance - MMD and NMED are currently reviewing the FA cost estimate for the Tyrone updated CCP. In January 2019 MMD, NMED and Tyrone agreed on the Indirect Costs to be used in the cost estimate. MMD and NMED are currently discussing with the Tyrone, Chino and Cobre mines the Net Present Value (NPV) calculation of the FA cost estimate. Once MMD has determined that the Tyrone updated CCP is technically approvable, MMD will require that Tyrone submit a FA proposal pursuant to 19.10.5.506H NMAC. However, MMD believes that initiation of a discussion with*

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*Tyrone on the FA proposal could occur sooner. MMD is available to begin a discussion with Tyrone on the FA proposal prior to the approval of the FA cost estimate.*

No response necessary.

After Tyrone receives final comments, Tyrone plans to send updated pages (the final version of this update), reflecting the above changes to NMED and MMD. Please contact Ms. Mandy Lilla at (575) 912-5388 if you have questions.

Sincerely,



Thomas L. Shelley  
Reclamation Manager  
Environmental/Sustainable Development

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- c. Holland Shepherd – MMD
- Keith Ehlert – NMED
- Kurt Vollbrecht - NMED