



*Promoting Healthy Communities by
Protecting Our Environment Since 1998*

February 18, 2021

David Otori, Permit Lead
Mining and Minerals Division
Energy, Minerals and Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505

RE: Freeport-McMoRan Little Rock Mine GR007RE – Permit Revision 20-1

Dear Mr. Otori:

Please accept the attached final comments on the Little Rock expansion proposal from Jim Kuipers on behalf of Gila Resources Information Project.

Thank you for your consideration of our comments.

Sincerely,

A handwritten signature in black ink that reads "Allyson Siwik".

Allyson Siwik
Executive Director

Cc: Kurt Vollbrecht, NMED/MECS
Joseph Navarro, BLM Las Cruces District Office
Beth Ihle, Gila National Forest

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February 18, 2021

To: Allyson Siwik, Gila Resources Information Project

From: Jim Kuipers P.E., Kuipers & Associates

Re: **Technical Review Comments on Permit Revision Application for Expansion of the Little Rock Mine**

This memo provides technical review comments as requested by Gila Resources Information Project (GRIP) for Freeport-McMoRan Tyrone Inc. (FMTI) Permit Revision Application for Expansion of the Little Rock Mine. FMTI submitted the permit revision application to the New Mexico Mining and Minerals Division (MMD) Mining Act Reclamation Program in a letter dated June 11, 2020. In addition to specific information required under Section 19.10.5.502 NMAC for the permit revision, the permit revision application also includes an updated Closure/Closeout Plan (CCP) for the Little Rock Mine. The CCP does not include a cost estimate which FMTI has proposed to provide after the technical scope of work is approved. Additionally, it should be noted that the expansion, because it in part lies on federal lands, will also require approval by the Bureau of Land Management (BLM) and Forest Service (FS).

The comments provided herein address the Permit Revision Application and the CCP. Draft comments as well as requests for clarifications were previously developed and discussed with MMD and New Mexico Environment Department (NMED) staff. This was much appreciated both in terms of understanding the proposal and informally responding to our comments. As a result, the following comments are focused on what we consider to be key aspects of the proposal with respect to the permit revision application itself, operational impacts to groundwater, other operational impacts on surrounding property owners and residential occupants, and the CCP.

MMD Permit Revision Application

The proposed permit revision would expand the present Little Rock Mine MMD approved design limit and allow:

- Expansion of the open pit mine
- Expansion of existing waste rock stockpiles
 - North In-Pit Waste Rock Stockpile
 - West In-Pit Waste Rock Stockpile
- New waste rock stockpiles
 - East In-Pit Waste Rock Stockpile
 - CLW Waste Rock Stockpile
 - NRW Waste Rock Stockpile
- Infrastructure and other miscellaneous facilities, and haul roads
- Modify the timing of construction of Deadman Canyon Diversion
- Removal of the Reclaimed Copper Leach Stockpile
- Access to facilities and components

The application includes several figures, including Figure 3 that shows the above facilities and the changes to the mining area design limit and mine permit boundary at the end of mining within the expanded design limit. This is important to note as it depicts the total disturbed area and impacts related to the proposed permit revision application, whereas the CCP, which is for the future period of mining from 2020 – 2024, does not depict the entire site as it relates to potential impacts to both the environment, as well as nearby residential locations and/or landowners.

The permit revision application proposes an expansion of the approved design limit from approximately 468 acres currently, to a new design limit of approximately 1,025 acres, or more than double the area of the current design limit. The mine permit boundary would expand from approximately 681 acres to the same size as the new design limit, or 1,025 acres.

FMTI has recently described a future 10-year plan for expansion of the Tyrone Mine that includes two different phases of mining at the Little Rock Mine (Little Rock 6 and Little Rock 9). Our understanding from the description is that the first phase of expansion (Little Rock 6) would take place during the first five-years and is the scenario depicted in the 2020 CCP. Little Rock 9 would take place during the second five-year period and is not addressed in the 2020 CCP.

Recommendations: The permit revision application should provide the estimated time-frame associated with the change in design limit that has been otherwise described to GRIP, NMED and MMD. Based on information provided by FMTI, their future mine plan is to develop Little Rock in two stages identified as Little Rock 6 and Little Rock 9. The Little Rock 6 stage appears to be consistent with the 2020 CCP, however the Little Rock 9 stage will result in significant additional disturbance and impacts not identified in the 2020 CCP.

In making this suggestion it is recognized that all mine plans are subject to future modification, but the public as well as regulators should have some idea as to how long the proposed expansion relative to the design limits is likely to take place. In particular it would be useful to portray the extent to which the proffered CCP for 2020-2024 based on Little Rock 6 describes the Little Rock 9 impacts and mitigations. To permit the revision as presented, the impacts associated with the expanded design limits need to be addressed by MMD, ED and other state agencies, as well as need to be addressed by the BLM and FS as part of their regulatory requirements consistent with the National Environmental Policy Act (NEPA), and therefore additional information to assess the life-of-the-expanded-design-limits should be required by the State and Federal regulatory agencies. Alternatively, the permit revision application could be modified by FTMI to only include the change in design limit necessary for Little Rock 6. However, we believe that would be inefficient for all parties, and the permit revision application would still be deficient in other areas as noted in the following comments.

Site Assessment for Proposed Permit Revision

Section 19.10.5.502 NMAC describes the requirements for a permit revision application. The requirements include the following:

D. (4) The site assessment previously submitted pursuant to Section 69-36-5 of the Act shall be considered part of the application. If information in the site assessment requires updates to provide information necessary for evaluation of the permit or if the site-specific conditions at the time of the assessment significantly deviate from conditions at the time of submittal of the permit application, such updated information or deviations must be described in the application.

According to the permit revision application, the updated site assessment information as required by Section 19.10.5.502.D.(4) NMAC is provided in Section 2.0 of the Updated Little Rock CCP. As previously noted, the information contained for the CCP is for the period of 2020-2024 whereas the permit revision application is for the design limits as depicted in Figure 3 of the application, and Figure 1-3 of the CCP. The information portrayed, if accurate, shows at the end of 2024 in Figure 1-3 as compared to the design limit expansion in Figure 3, the following:

- The new East In-Pit Waste Rock Stockpile constructed 2020-2024 would be removed to facilitate a deeper and expanded open pit mine as part of the design limit expansion.
- The open pit mine would be deepened and expanded in extent from a depth of 5,500 ft in 2024 according to the CCP to a depth of 5,050 ft as part of the design limit expansion.
- The amount of waste rock contained in the North In-Pit, West In-Pit, and NRW Waste Rock Stockpiles would all increase significantly as a result of the design limit expansion.

As required by Section 69-36-5.B of the Act:

The mining operation site assessment for new and existing mining operations shall describe in detail the mining operation's existing permits and regulatory requirements pursuant to the standards for mining operations pursuant to existing state and federal environmental standards and regulations. To the extent that they are applicable, the permit applicant may incorporate documents on file with state agencies. The mining operation site assessment shall include:

- (1) identification of a proposed permit area for the mining operation;*
- (2) a description of the location and quality of surface and ground water at or adjacent to the mining operation and an analysis of the mining operation's impact on that surface and ground water;*
- (3) a description of the geologic regime beneath and adjacent to the mining operation;*
- (4) a description of the piles and other accumulations of waste, tailings and other materials and an analysis of their impact on the hydrologic balance, drainages and air quality;*
- (5) an analysis of the mining operation's impact on local communities;*
- (6) a description of wildlife and wildlife habitat at and surrounding the mining operation and an analysis of the mining operation's impact on that wildlife and wildlife habitat; and*
- (7) for existing mining operations, a description of the design limits for each unit, including waste units, impoundments and stockpiles and leach piles.*

Recommendations: As previously noted, the CCP is for the period 2020-2024 and does not provide a site assessment for the expansion of the design limits proposed in the permit revision. Specifically, the 2020-2024 CCP does not include an adequate analysis of the operations resulting from the expansion of the design limits and the impact on surface and ground water, a description of the expanded piles and other accumulations of waste, tailings and other materials, an analysis of their impact on the hydrologic balance, drainages and air quality, an analysis of the mining operation's impact on local communities, address wildlife and wildlife habitat, or provide a detailed description for each unit related to the expanded design limits. It should be noted that the BLM and FS will likely require an environmental assessment to meet the requirements of the National Environmental Policy Act (NEPA) that might be expected to provide some, but not necessarily all, of the information required by Section 69-36-5.B. An option that should be considered would be for the state agencies to delay the determination of the application as administratively complete until the federal NEPA required environmental assessment is

completed. To ensure the federal environmental assessment addresses all state requirements, the New Mexico regulators should also consider becoming “co-lead” agencies with the federal agencies and conduct a joint state-federal environmental assessment.

Operational Impacts to Groundwater

The New Mexico Mining Act does not specifically address surface and ground water quantity and likewise the New Mexico Environment Department through the Copper Rule does not address water quantity issues but rather water quality. The New Mexico Office of State Engineer (OSE) is the responsible regulatory agency with respect to groundwater rights and therefore impacts to groundwater quantities/levels from mining activities from development through post-closure. The OSE has not thus far provided comments to MMD concerning the Permit Revision Application or CCP.

In terms of addressing impacts with respect to groundwater quantity impacts, at present the only recourse in New Mexico is for the property owner to exercise diligence at significant expense. This requires using qualified professionals to conduct water level monitoring in such a manner that if an impact does occur, the information can be used in court, and the property owner can then potentially seek to litigate those impacts.

FMI has voluntarily provided information to local residents concerning the regional groundwater levels and flow directions related to the Little Rock Mine and the Oak Grove Subdivision. This information is helpful but does not exclude potential impacts to residential wells, particularly those in closer proximity to the mine site. The figure shows the Oak Grove Subdivision and other areas northwest of the mine but does not show the area southwest of the mine where potential impacts might be more pronounced.

The design limit expansion includes and will result in “New discrete processing, leaching, excavation, storage or stockpile units located within the permit area of an existing mining operation and not identified in the permit of an existing mining operation” as defined in NMAC 19.10.5.508 and therefore must also comply with the standards and requirements set forth in NMAC 19.10.5.508. This includes NMAC 19.10.5.508.B.(4) Hydrologic Balance which requires that Operations shall be planned and conducted to minimize negative impact to the hydrologic balance in both the permit and potentially affected areas. The MMD should recognize this standard and work with the NM OSE to ensure that operational impacts to groundwater are addressed in the application and in future monitoring and mitigation.

Additionally, the OSE has reviewed the application and states: “Water rights associated with the Little Rock Mine project were authorized under permit conditions specific to the appropriation volume, transmission and evaporative losses, and place and purpose of use. If the proposed Revision 20-1 for MMD Permit No. GR007RE results in changes to the terms of the NMOSE water right, additional filings may be required through our Deming Water Rights Office.” There is no information in the application or CCP that describes whether or not the Little Rock 6 project is consistent with FMTI’s existing water rights or if additional filings will be required.

Recommendations: As part of the site assessment FMTI should provide a map identifying all existing residential or other private wells within two miles of the perimeter of the predicted area of influence (e.g. drawdown cone) of the dewatered open pit during the entire proposed mine life related to the revised mining design limit (e.g. maximum draw down level for life of mine and not for 5-year period of CCP). It would be helpful if the map showed the potentiometric flow levels for the entire map area in

addition to the existing levels shown for the Little Rock Mine and Mangas Valley. In addition, x-sections should be provided showing the drawdown cone and all wells within two miles of the perimeter of the drawdown cone, and demonstrate how the various faults to the north of the Little Rock Mine might be anticipated to affect the ground water hydrology during mining operations and after closure. This should portray existing conditions, conditions at the end of the next 5-year period of the CCP, design limit expansion conditions, and post-expansion pit lake conditions until the pit lake level reaches equilibrium. It should provide the expected average and annual groundwater dewatering rates anticipated to occur during those years that pumping would take place, and show the direction of groundwater flow once the pit is no longer being pumped and as the pit lake forms.

FMTI should provide mitigation for the concerns of domestic well owners/users by voluntarily agreeing to provide water level monitoring to any private or other well owner within 2 miles of the perimeter of predicted area of influence as previously described, and, if impacts do occur that could be attributed to mine dewatering, voluntarily agreeing to address those impacts including by supplementing or replacing the water source if necessary. FMI should seek to involve in particular owners of wells in locations that might demonstrate impacts if they were to occur, such as in higher water elevation wells located between the mine and Oak Grove Subdivision. It would be expected that these wells would be impacted earlier or more significantly should regional dewatering impacts occur, or otherwise would serve to demonstrate a lack of impacts from the mine.

FMTI should provide information demonstrating that the Little Rock 6 proposal is consistent with the conditions of its existing water rights.

Operational Impacts to Surrounding Landowners and Residences

NMAC 19.10.5.508.A. Most Appropriate Technology and Best Management Practices requires that “The mining operation and the reclamation plan shall be designed and operated using the most appropriate technology and the best management practices.” (underline added) The CCP and other design expansion application information is focused on reclamation and closure but does not address mining operations in any detail, and in particular does not address whether the mining operations include the most appropriate technology and best management practices, particularly as it relates to impacts to surrounding landowners and residences.

The International Council on Mining and Metals (ICMM)¹ and the Initiative for Responsible Mining Assurance (IRMA)² are primary examples of the most appropriate technology and best management practices as they apply to operational impacts to surrounding landowners and residences. ICMM’s Mining Principles define good practice environmental, social and governance requirements for the mining and metals industry through a comprehensive set of performance expectations. IRMA’s Standard for Responsible Mining defines good practices for what responsible mining should look like at the industrial-scale. MMD, and FMTI, should both consider ICMM and IRMA as noted in our comments as examples of most appropriate technology and best management practices to address operational impacts from mining to surrounding landowners and residences.

The New Mexico Mining Act regulates mine reclamation and closure. However, as previously noted, Section 69-36-5.B (5) requires an analysis of the mining operation’s impact on local communities. This

¹ <https://www.icmm.com/>

² <https://responsiblemining.net/about/>

analysis should include water quantity impacts to local residences, as well as other issues such as blasting, lights and dust related to the proposed mining operations that would be expected to impact local communities. In addition to locations such as the Oak Grove Subdivision, analysis of the impact on local communities should include any landowner or residential location within the mine's area of influence. The analysis should include mitigation of impacts from blasting, lights and dust as discussed in the following sections.

1. Groundwater Impacts

MMD and FMTI should consider ICMMs Water Stewardship Framework³ as an example of best management practices for address of groundwater impacts. The framework provides high-level guidance on the four key elements of responsible water management:

- Proactive and inclusive engagement with other water users to understand their needs and priorities, share plans and collaborate on managing risks.
- Transparent public reporting on water usage, material water risks and performance.
- Collaborating with other water users to mitigate shared water risks and support equitable access.
- Increasing efficiencies in the use of water (e.g. by maximizing water recycling and reuse within mining operations).

IRMA's Standard for Responsible Mining's⁴ Water Management Requirements also provide best management practices for groundwater impacts to surrounding landowners and residences. It includes Chapter 4.2.1. Water Management Context and Collaboration at the Local and Regional Level and requires that the following criteria be met:

4.2.1.1. The operating company shall identify water users, water rights holders and other stakeholders that may potentially affect or be affected by its mine water management practices.

4.2.1.2. The operating company shall conduct its own research and collaborate with relevant stakeholders to identify current and potential future uses of water at the local and regional level that may be affected by the mine's water management practices.

4.2.1.3. The operating company shall conduct its own research and collaborate with relevant stakeholders to identify and address shared water challenges and opportunities at the local and regional levels, and shall take steps to contribute positively to local and regional water stewardship outcomes.

Recommendations: FMTI should voluntarily undertake the steps necessary to comply with ICMMs Water Stewardship Framework and IRMA's Standard for Responsible Mining's Water Management Requirements to address groundwater impacts to surrounding landowners and residences (e.g. stakeholders). MMD together with OSE should also consider these examples of best management practice with respect to their regulatory requirements to address operational impacts.

³ <https://www.icmm.com/en-gb/environment/water/water-management>

⁴ https://responsiblemining.net/wp-content/uploads/2018/07/IRMA_STANDARD_v.1.0_FINAL_2018-1.pdf

2. Noise and Blasting

The local community has concerns with respect to encroaching mining and potential impacts from noise and blasting in terms of their safety, property, and quality of life. An analysis of potential impacts from noise and blasting would be helpful, however it by itself will not address the concerns of the local community. FMTI should also provide a blasting plan that residents should take confidence in to address potential issues to both their safety and property. Current best practice recognizes that noise and blasting is a significant issue and that to address public concerns, and perception, it is an important part of being a responsible corporation and requires a reasonable and dedicated effort.

McKown⁵ addresses the subject in great detail and provides the principals of blasting as well as identifying the impacts of blasting. He notes that blasting has multiple side effects other than flyrock including vibrations, blast pressure, and permanent ground deformations, such as cracks or slides. He addresses the adequacy of the U.S. Bureau of Mines safe limits, and addresses a number of protective measures and mitigations which might be used. This includes the need to provide for a public relations plan that includes meetings with residents to review blast impacts, mitigation measures, likely things they will notice when blasting takes place, and answer any questions or address concerns they might have. In addition, he recommends that pre-blast condition surveys take place and that there be periodic progress meetings with residents.

IRMA's Standard for Responsible Mining Chapter 4.4 Noise and Vibration is intended to provide measures to preserve the health and well-being of nearby noise receptors and the amenity of properties and community values, and to protect offsite structures from vibration impacts. It includes the following Noise and Vibration Requirements:

4.4.1. Noise and Vibration Screening

4.4.1.1. The operating company shall carry out screening to determine if there may be significant impacts on offsite human noise receptors from mining project's noise and/or vibration. Screening is required at all new mines, and also at existing mines if there is a proposed change to the mine plan that is likely to result in a new source of noise or vibration or an increase in existing noise or vibration levels.

4.4.1.2. If screening identifies potential human receptors of noise from mining-related activities, then the operating company shall document baseline ambient noise levels at both the nearest and relevant offsite noise receptors.

4.4.2. Management and Mitigation of Impacts on Human Receptors

4.4.2.1. If screening or other credible information indicates that there are residential, institutional or educational noise receptors that could be affected by noise from mining-related activities, then the operating company shall demonstrate that mining-related noise does not exceed a maximum one-hour LAeq (dBA) of 55 dBA during the hours of 07:00 to 22:00 (i.e., day) and 45 dBA at other times (i.e., night) at the nearest offsite noise receptor. These hours may be adjusted if the operating company can justify that alternative hours are necessary and/or appropriate because of local, cultural or social norms.

⁵ <http://www.brooklinema.gov/DocumentCenter/View/6563>

4.4.2.2. The following exceptions to 4.4.2.1 apply:

- a. If baseline ambient noise levels exceed 55 dBA (day) and/or 45 dBA (night), then noise levels shall not exceed 3 dB above baseline as measured at relevant offsite noise receptors; and/or
- b. During periods of blasting the dBA levels may be exceeded as long as the other requirements in 4.4.2.4 are met.

4.4.2.3. If screening or other credible information indicates that there are only industrial or commercial receptors that may be affected by noise from mining-related activities, then noise measured at the mine boundary or nearest industrial or commercial receptor shall not exceed 70 dBA.

4.4.2.4. If screening or other credible information indicates that noise or vibration from blasting activities may impact human noise receptors, then blasting operations at mines shall be undertaken as follows:

- a. A maximum level for air blast overpressure of 115 dB (Lin Peak) shall be exceeded for no more than 5 % of blasts over a 12-month period;
- b. Blasting shall only occur during the hours of 09:00 to 17:00 on traditionally normal working days; and
- c. Ground vibration (peak particle velocity) shall neither exceed 5 mm/second on 9 out of 10 consecutive blasts, nor exceed 10 mm/second at any time.

4.4.2.5. Mines may undertake blasting outside of the time restraints in 4.4.2.4.b when the operating company can demonstrate one or more of the following:

- a. There are no nearby human noise receptors that will be impacted by blasting noise or vibration;
- b. Alternative hours are necessary and/or appropriate because of local, cultural or social norms; and/or
- c. Potentially affected human receptors have given voluntary approval for the expanded blasting hours.

4.4.2.6. If a credible, supported complaint is made to the operating company that noise or vibration is adversely impacting human noise receptors, then the operating company shall consult with affected stakeholders to develop mitigation strategies or other proposed actions to resolve the complaint. Where complaints are not resolved then other options, including noise monitoring and the implementation of additional mitigation measures, shall be considered.

4.4.2.7. All noise- and vibration-related complaints and their outcomes shall be documented.

4.4.3. Reporting

4.4.3.1. When stakeholders make a noise-related complaint, the operating company shall provide relevant noise data and information to them. Otherwise, noise data and information shall be made available to stakeholders upon request.

Recommendation: In addition to being required to do an analysis of blasting impacts on the local community, FMTI should provide a blasting plan that addresses public concerns. A robust, detailed and complete blasting plan, consistent with current best practice for construction and similar industries, should be produced and required if the intent is to address public concerns and perceptions with respect to blasting impacts from FMTI's proposed operation of the Little Rock Mine on nearby residents, or others such as businesses or services that might be impacted.

FMTI should voluntarily undertake the steps necessary to comply with IRMA's Standard for Responsible Mining's Noise and Vibration Requirements to address those impacts to surrounding landowners and residences (e.g. stakeholders). MMD should also consider these examples of best management practice with respect to their regulatory requirements to address operational impacts.

3. Lights and Visual Impacts

Lights and other visual impacts on the viewshed from the proposed mining operations will impact the local community and therefore an analysis of those impacts should be required. FMTI should also undertake to address public concerns with respect to lighting impacts from the proposed operations. Current best practice recognizes that lighting is a significant issue and that addressing this public concerns is something a responsible corporation takes seriously. We have developed mitigation plans for mine sites to address these specific issues, and like blasting plans, it starts with meeting with, explaining, and listening to residents. An effective mitigation plan using modern technology and practices can then be developed to address those concerns in a manner that benefits all parties.

Mining operations in terms of lighting impacts are similar to that of other industrial activities. Utility-scale energy projects are an example of most appropriate technology and best management practices for industrial activities. As noted by Donaldson⁶, visual mitigation measures for energy projects fall broadly into three categories: siting, design, and special circumstances. The measures are further described as:

- Siting measures for visual mitigation generally entail effective siting that either avoids visually sensitive areas entirely or limits the magnitude of visual impacts through locating the project so that it blends with its surroundings or is fully or partially screened from important views.
- Design measures for visual mitigation generally entail applications of various treatments, techniques, materials, or finishes that help blend project features with their surroundings or screen them from important views.
- Measures for special circumstances entail various techniques that may be applied in unique situations or limited areas to avoid, minimize, or offset visual impacts

Recommendation: In addition to being required to do an analysis of light and other visual impacts on the local community, FMTI should develop a mitigation plan for lighting and other viewshed issues for the proposed operations that is robust, detailed and complete and consistent with current best practice for energy scale projects and similar industries. One simple example would be to ensure all mine lights are directed away from residential areas, and that mine traffic is scheduled or routed in such a manner as to reduce the impacts to local residents.

4. Dust Mitigation and Monitoring

The local community will potentially be impacted by fugitive dust emissions. Fugitive dust emissions can be reduced through application of most appropriate technology and best management practices. As

⁶ Joseph J. Donaldson, MITIGATING VISUAL IMPACTS OF UTILITY-SCALE ENERGY PROJECTS, Visual Resource Stewardship Conference Proceedings <https://www.fs.fed.us/nrs/pubs/gtr/gtr-nrs-p-183papers/23-donaldson-VRS-gtr-p-183.pdf>

suggested by Reed and Organiscak⁷ and as identified by the Centre for Excellence in Mining Innovation's Fugitive Dust Best Practices Manual⁸ control measures to reduce fugitive dust emissions must take into account: a) identification and classification of fugitive dust emission sources; b) identification of the sources of fugitive dust emissions; c) fugitive dust characterization; d) development and implementation of the BMP plan; plus training and inspection/ maintenance.

IRMA's Standard for Responsible Mining Chapter 4 Air Quality Requirements address the following:

- 4.3.1. Air Quality Screening and Impact Assessment
- 4.3.2. Air Quality Management Plan
- 4.3.3. Air Quality Monitoring
- 4.3.4. Protection of Air Quality
- 4.3.5. Reporting

Specific to fugitive dust IRMA requires the following:

4.3.4.3. Dust deposition from mining-related activities shall not exceed 350 mg/m² /day, measured as an annual average. An exception to 4.3.4.3 may be made if demonstrating compliance is not reasonably possible through ordinary monitoring methods. In such cases the operating company shall utilize best available practices to minimize dust contamination.

Recommendation: In addition to being required to do an analysis of dust impacts on the local community, FMTI should develop and submit a formal dust mitigation and monitoring plan utilizing best practices. FMTI should voluntarily undertake the steps necessary to comply with IRMA's Standard for Responsible Mining's Air Quality Requirements to address those impacts to surrounding landowners and residences (e.g. stakeholders). MMD should also consider these examples of best management practice with respect to their regulatory requirements to address operational impacts.

We also recommend FMTI install portable air monitors in areas where the public lives in close proximity to the mine site. I have found the Met One portable E-BAM PM monitor to be one of the most effective, accurate, and easy to operate portable particulate monitors and have used it successfully for tailings fugitive dust monitoring in Montana. The E-BAM system offers the user real-time data reporting capability and links to EPA's AIRNOW website to provide the public with near real-time air quality information. <http://metone.com/air-quality-particulate-monitors/>

⁷ W.R. REED AND J.A. ORGANISCAK, Haul Road Dust Control: Fugitive dust characteristics from surface mine haul roads and methods of control. https://stacks.cdc.gov/view/cdc/8897/cdc_8897_DS1.pdf

⁸ <http://www.cemi.ca/SustainMine/fugitive-dust-best-practices-manual/>

Updated Closure/Closeout Plan for the Little Rock Mine, June 11, 2020

The Little Rock CCP Update for 2020 is highly consistent with recent CCP's developed for the Cobre/Continental, Chino, and Tyrone Mines, including with respect to deficiencies that have previously been noted with regard to climate change and storm events that are also noted herein.

Section 1.5 Description of Updated Plan

According to the CCP, "A recent evaluation... determined that 2020 is the highest reclamation cost year." In follow-up we asked MMD if FMTI provided the actual evaluation. MMD responded by providing a PowerPoint presentation and indicated that FMTI intended to submit an actual memo containing the evaluation. If the memo has not been submitted, FMTI should do so and the memo should be included as an appendix to the CCP or otherwise made available for review as part of the public record.

The presentation by itself is difficult to understand in terms of the "Highest Reclamation Year Calculations" and "Highest Liability Year Graph" which would be assumed demonstrate that 2020 is the highest reclamation cost year. However, the information as presented would instead suggest that 2024 is the highest cost year since it is the year when the greatest acreage of slope and regrade slope areas occur, and they have a significantly higher relative cost index as compared to flat slopes.

Recommendation: The "recent evaluation" needs to be provided in memo form and the methodology and results need to be further explained so as to support the suggestion that 2020 is the highest reclamation cost year.

Section 1.6

According to the CCP, "...to account for the current life of mine (LOM) plan." As the CCP does not account for the LOM plan as previously noted in these comments, the expansion of the Mining Area Design Limit as a whole is not addressed by the CCP.

Recommendation: If the CCP is intended to support the Mining Area Design Limit, included in part as the required operations analysis required by Section 69-36-5.B of the Act, then it should address the LOM rather than the period of 2020-2024 addressed in the CCP. Alternatively, the design limit expansion request should be modified to reflect the period 2020-2024.

Section 2.1.1

According to the CCP, "at closure (EOY 2024, a pit lake is expected to begin to form... rise to 5,660 ft at 30 years post-closure, to 5,669 ft 80 years after closure."

Recommendation: The CCP should note that mining would extend to a depth of 5,500 ft in 2024 and the rise would result in a pit lake depth of 160 ft at 30 years post-closure and 169 ft 80 years after closure.

Section 2.1.2

1) According to the CCP, "...waste rock... Pre-Cambrian Granite, a non-acid generating overburden material and are conditionally exempt from... Copper Mine Rule and the Water Quality Act during

operations and at closure.” (underline added) Review of the Copper Mine Rule and the Water Quality Act did not reveal any information as to conditional exemptions, however as explained by NMED this is based on FMTI’s assumption that if the waste rock is not predicted to result in an exceedance of applicable water quality standards, then it is conditionally exempt from regulation by the NMED. However, this begs the question then what happens if the prediction is wrong, and there is an exceedance of applicable water quality standards?

Recommendation: FMTI needs to better explain its assumptions in suggesting the overburden material from the Little Rock Mine will be conditionally exempt, and explain how it would anticipate the material being addressed if those assumptions are not met. FMTI should provide examples of other mine units where this assumption might be demonstrated.

2) According to the CCP, North and West Canyon waste rock stockpile reclamation has been “...colonized by native vegetation and no additional reclamation measures are proposed...” The CCP does not provide any information to support the suggestion that no additional reclamation measures are needed.

Recommendation: The CCP should provide supporting information including erosion and revegetation monitoring, and it should be reviewed and compared to reclamation success criteria and approved by MMD and ED, prior to FMTI proposing that no additional reclamation measures are necessary.

Section 2.1.4.1

According to the CCP, “There are currently 9 monitoring wells... During the 5-year mine plan, it is projected that 5 monitoring wells with average depth of 150 ft will be impacted... need to be replaced.”

Recommendation: The CCP should identify the proposed replacement well locations and approximate depths.

Section 2.3.2

According to the CCP, “...majority of waste rock... suitable as a reclamation cover material.” Could waste rock be removed and used at Tyrone for reclamation cover?

Section 2.3.3 Climate

Recommendation: This section should discuss climatological conditions over time for the site using the available historic records. This should include trend analysis for temperature, precipitation (overall and extreme events) and other data of interest in establishing likely future site climate characteristics. For the sake of brevity in these comments, we request that FMTI, MMD and ED consider our previous comments on the Tyrone Mine CCP in this regard.

Section 2.3.4.2

1) According to the CCP, “The extraction rate from the... open pit was approximately 2.7 gpm in July 2013, increased to approximately 178 gpm August 2013 due to increased ...inflows, and the advance of mining.”

Recommendation: The relevance of this information for two months in 2013, apparently demonstrating the low and high flow rates for a given year, is not apparent and needs to be explained. The CCP instead should provide more useful information such as the monthly and annual extraction rates over the previous life of the mine, both in terms of rate, and in terms of volume. The information should also indicate what the bottom pit depth was at the time.

2) What is the pumping rate presently, in 2024, LOM?

Flows need to be segregated in terms of surface water/groundwater flows.

Section 2.3.7 Material Characteristics

Recommendation: The descriptions of the mineral types focus on acid generation related to mine-influenced water chemistry. The descriptions should also address the mineral types as they relate to neutral and alkaline water chemistry and the potential for metal leaching including for selenium and arsenic.

Section 3.1.2.2

1) The CCP references three reports, DBS&A 2012, 2014 and 2020. It is not clear from the description if it is based on the most current report, and the same memo (DBS&A 2020) is not included in the references. The Geochem report was obtained from NMED and the memo was identified as an appendix to that report.

Recommendation: The CCP should also address the memo findings showing the results of the groundwater flow model indicating that the pit lake will be a flow-through system at closure. At 100 years, groundwater inflow to the lake is 125 acre-feet per year (ac-ft/yr), while groundwater outflow from the lake is 38 ac-ft/yr. The evaporation loss from the pit lake would therefore be expected to be 87 ac-ft/yr.

Section 3.1.2.3

As noted in the CCP, an update to the geochemical model was to be completed and submitted separately to NMED in July 2020. The CCP suggested the predicted pit lake water quality for the EOY 2024 plan is not expected to fundamentally change the results of the 2014 model simulation results that were presented in the CCP.

The updated geochemical model was obtained from NMED and reviewed. The results are highly different from those contained in the CCP. As just one example, Table 3-1 in the CCP shows arsenic values following closure of 0.030 mg/L at 30 years and 0.040 mg/L at 100 years. Table 4a of the updated model shows arsenic values of 0.004 mg/L at both 30 years and at 100 years. Other large discrepancies in the two tables can also be noted suggesting a fundamental change in the results.

As noted in comments on the CCP by NMED's Surface Water Quality Bureau "The pit lake at closure will be considered a perennial water of the state and subject to water quality standards that are protective of the designated uses for unclassified perennial waters. These include warmwater aquatic life, primary contact, livestock watering and wildlife habitat. Numeric standards for applicable designated uses can

be found in 20.6.4.900 NMAC. The CCP does not adequately describe anticipated surface water quality, despite modeling for water quality standards described in 20.6.2.3103 NMAC.”

Recommendation: Section 3.1.2.3 of the CCP should be replaced with a revised section that explains the changes and results from the 2014 models and 2020 models and provide a comparison to all applicable water quality standards and for all potential contaminants of concern. The geochemistry model also should be revised to extend to at least 200 years and preferably 300 years so as to estimate any future impacts from evapotranspiration.

Section 3.2.1

The CCP does not identify design criteria with respect to conveyances of stormwater. However, we would anticipate consistent with the Copper Rule that the water conveyances and channels will be designed to convey the peak flow generated by the 100-year, 24-hour storm event. The current NOAA statistics for storm events are not highly accurate and events greater than predicted for 100-year events have occurred on a much more regular basis than can readily be explained. We can argue as to the cause or whether meaningful predictions for the future can be made, but in our experience that would not lead to progress on this issue. Instead, we recommend that FMTI conduct an engineering trade-off and risk analysis that compares 100-yr, 200-yr, 500-yr, and potentially the PMF, and first consider the results internally, and then provide the study to the agencies and GRIP as justification for either the existing criteria or for new criteria. In light of climate change variables, we believe FMTI might realize internally that the incremental cost of constructing to a 500-yr design event offsets the potential risk to valuable assets and from a business standpoint, at least in some circumstances such as where conveyances are critical for the protection of covers or other reclamation features, application of a more conservative storm event should be performed. We also believe this is an example of where the Copper Rule and other regulations that include design criteria need to be revisited periodically to determine whether they reflect current regulatory and industry approaches.

Recommendation: Additional consideration should be given by FMTI to incorporating a more conservative design storm event as a risk reduction measure and incorporating that design as a voluntary measure in future CCPs. GRIP recommends that the agencies require Tyrone to undertake a program that measures stormwater and related cover maintenance requirements over time and in particular following storm events that exceed the current design standard.