



STATE OF NEW MEXICO  
DEPARTMENT OF GAME & FISH

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26 October 2022

David Ohori  
Supervisor, Senior Reclamation Specialist  
Mining Act Reclamation Program  
Mining and Minerals Division (MMD)  
1220 South St. Francis Drive  
Santa Fe, NM 87505

***RE: Modification 22-1, Tyrone and Little Rock Mines, Freeport-McMoRan Tyrone Operations, Permit Nos. GR010RE and GR007RE; NMDGF No. NMERT-2079.***

Dear Mr. Ohori:

The New Mexico Department of Game and Fish (Department) has reviewed the above referenced mine permit modifications proposed by Freeport-McMoRan Tyrone Operations (Tyrone). Tyrone is requesting approval of the Little Rock Mine Precambrian granite waste rock as Reclamation Cover Material (RCM) for use in reclamation at the Little Rock and Tyrone Mines. Tyrone is also requesting permission to terminate the USNR Test Plot program. The USNR test plots (test plots) were designed to demonstrate the suitability of Precambrian granite excavated at the Little Rock Mine to support vegetation and material handling techniques for reclamation. Staff from the Department, MMD, and Tyrone conducted a site inspection of the test plots on 12 October 2022.

Tyrone states that test plot canopy cover and shrub density meet or exceed the Year 5 standard of 40% of the reference area. While the overall test plot vegetation appeared relatively dense, site inspection participants observed areas that contained coarse-textured materials where the vegetation was sparse. Current quality control of the proposed RCM consists of visual observation by an RCM technician to determine if the shovel load of waste rock is texturally acceptable to be used as RCM. The Department believes that improved material handling techniques, such as screening, would provide a higher quality, more uniform seed bed and would greatly reduce or eliminate areas where the cover material is too coarse to support adequate revegetation.

Golder Associates Inc. conducted testing that indicated that organic matter, phosphorus, and nitrate nitrogen concentrations in the Precambrian granite were low but adequate for the target plant species. However, Tyrone had to remediate some areas on the test plots that were too coarse-textured at the surface, underscoring the value of surface coverings more amenable than waste rock to plant germination, establishment, and growth. The remediation involved hauling in additional cover material that consisted of topsoil borrowed from a nearby, undisturbed area and creating a seed bed with an average thickness of four inches. The

difference in vegetation cover between the remediated area, with the additional topsoil, and areas with only Precambrian granite used as RCM is dramatic (Figure 1).



Figure 1. Remediated area is in the foreground, area with Precambrian granite only used for RCM is in the background. USNR test plots, October 2022.

The Department acknowledges that adequate topsoil was not salvaged at the Tyrone and Little Rock Mines for use across reclamation areas at both mines but does recommend that Tyrone consider the use of organic amendments to the Precambrian granite seed bed to increase reclamation success.

Thank you for the opportunity to provide comments on the proposed permit modifications. If you have any questions, please contact Ron Kellermueller, Mining and Energy Habitat Specialist, at (505) 270-6612 or [ronald.kellermueller@dgf.nm.gov](mailto:ronald.kellermueller@dgf.nm.gov).

Sincerely,

Matt Wunder, Ph.D.  
Chief, Ecological and Environmental Planning Division

cc: USFWS NMES Field Office