

**STATE OF NEW MEXICO
BEFORE THE WATER QUALITY CONTROL COMMISSION**

In the Matter of:)	
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)	
PROPOSED AMENDMENT)	No. WQCC 12-01(R)
TO 20.6.2 NMAC (Copper Rule))	
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)	

WRITTEN REBUTTAL TESTIMONY OF JIM B. FINLEY, JR.

My name is Jim B. Finley, Jr. I am presenting this written rebuttal testimony on behalf of Freeport-McMoRan Chino Mines Company, Freeport-McMoRan Tyrone Inc., and Freeport-McMoRan Cobre Mining Company (collectively, “Freeport”) regarding the Petition to Adopt 20.6.7 NMAC and Request for Hearing filed by the New Mexico Environment Department (“NMED”) on October 30, 2012, as modified by the Amended Petition filed on February 18, 2013 which includes the new rules for copper mines (“Proposed Rules”). My experience and qualifications are presented in my written direct testimony previously filed in this matter.

I. REBUTTAL TESTIMONY IN RESPONSE TO WRITTEN DIRECT TESTIMONY IN RESPONSE TO WRITTEN DIRECT ESTIMONY OF MR. ADRIAN BROWN

I have reviewed the direct written testimony submitted by Mr. Adrian Brown. While I generally agree with Mr. Brown’s testimony, I want to provide two comments regarding his direct testimony. First, in regard to Part 6.1.2, pages 11 and 12, of his direct written testimony, I believe that my discussion on pages 16 through 19 of my direct testimony provides a more explicit description of how the water management plan for an open pit and overall mine water management plan meets technical requirement for groundwater protection. I believe that my

direct written testimony supports the adoption of the Proposed Rules set forth in the Petition filed on October 30, 2012.

II. REBUTTAL TESTIMONY IN RESPONSE TO WRITTEN DIRECT TESTIMONY OF MS. CONNIE TRAVERS

I have reviewed the direct written testimony submitted by Ms. Connie Travers on behalf of the New Mexico Attorney General. In the 3rd bullet on page 3 of her written direct testimony, Ms. Travers asserts that the Proposed Rules rely on interceptor systems capturing groundwater degraded by seepage from waste rock and tailings impoundments rather than preventing degradation. I disagree with this statement. The purposes of the waste rock handling plan and material characterization plan set forth in the Proposed Rules are to identify materials that have potential to generate contaminants that can be released to percolating water and that can migrate to ground water and produce concentrations of constituents in ground water that are above applicable water quality standards. Thus, the Proposed Rules contain provisions and requirements that limit potential for degradation as well as measures and requirements if potential for degradation exists.

On page 6 of her direct written testimony, Ms. Travers states that mine facilities beneath the water table will be flooded after dewatering operations cease and sulfate mineral oxidation products in the geologic materials within these facilities can contaminate ground water as it flows through flood facilities. I disagree with this statement. There will be a period of flushing after dewatering in support of open pit mining operations ceases when sulfate mineral oxidation products can be leached by inflowing groundwater. This is the purpose of an open pit water management plan that addresses flows associated with mine facilities beneath the water table. Modern-day copper mining in New Mexico is done by open pit operations. The pit is advanced below the water table and remains as a long-term feature, which is the basis and foundation for

the parts of the Proposed Rules that address open pits. Once the oxidation products are flushed, the remaining sulfide minerals will not oxidize due to the submergence below the groundwater table. Ms. Travers failed to take this into account in her direct written testimony, which I disagree with.

On page 6 of her direct written testimony, Ms. Travers asserts that arsenic and selenium can be leached in non-acidic conditions. Ms. Travers is correct in terms of the geochemistry of arsenic and selenium. However, in the first full paragraph on page 6, Ms. Travers notes that the “primary contaminants of concern at copper mines are metals, such as copper, cadmium, lead, and zinc...” suggesting that while arsenic and selenium may be present, neither is present at elevated concentrations that normally produces water quality issues. This is consistent with my experience at open pit copper mines.

On page 7 of her direct written testimony, Ms. Travers asserts that tailings pore water has drained from tailings impoundments at the Chino and Tyrone Mines and degraded water. Further, she asserts that tailings can oxidize and form acidic drainage over time. In response to these assertions, I note that tailings impoundments are complicated systems hydrologically and geochemically. Depending on the mill process and mill efficiency, there could be measurable alkalinity (by way of unreacted lime) incorporated into the ultimate tailings stratigraphy. Additionally, the deposition of tailings creates spatially heterogeneous distribution of grain sizes depending on the method employed to build the tailings facility. If tailings are spigoted into the basin from the perimeter of the tailings basin, then the coarser materials will settle nearest to the discharge point with grain sizes decreasing with increasing distance from the spigot. Nearest the decant location, where tailings water accumulates during operation, there might be a zone of slime. As a result of the spatial heterogeneity of grain sizes, the vertical variability of grain size

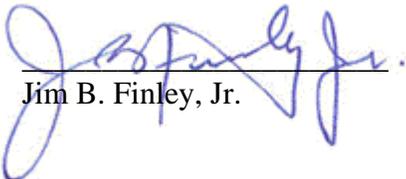
also occurs and there can be layers of fine grained (silt and finer) materials that act as vertical barriers to the percolation of infiltrating water. Oxidation of residual sulfide minerals can occur, but in my experience, acidic drainage is often preceded by neutral pH drainage that contains elevated concentrations of sulfate and total dissolved solids (“TDS”). As noted by Ms. Travers, the potential for acidic drainage from tailings basins depend on the closure measures applied, which are addressed by the Proposed Rules.

On page 22 of her direct written testimony, Ms. Travers contends that the Attorney General’s proposed amendments for waste rock stockpiles would require a liner or its equivalent if a waste rock stockpile may cause an exceedance of standards and not rely upon interceptor wells. I disagree with this statement. In response, I restate pages 11 through 13 of my direct written testimony, which addresses and refutes this contention.

For the reasons discussed above, I disagree with the changes to the Proposed Rule regarding waste rock stockpiles suggested in Ms. Travers’ direct written testimony and the exhibits presented by the Attorney General.

III. CONCLUSION

In conclusion, I urge the Water Quality Control Commission to adopt the Proposed Rules with some minor changes as suggested in Freeport’s testimony. This concludes my written rebuttal testimony.


Jim B. Finley, Jr.