M/037/088

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
999 18th STREET - SUITE 500
DENVER, COLORADO 80202-2466

JUL 15 1996

Ref: 8EPR-EP

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JUL 22 1996
DIV. OF OIL, GAS & MINING

Kate Kitchell, District Manager
Moab District Office
Bureau of Land Management
82 East Dogwood Avenue
Moab, Utah 84532

RE: Lisbon Valley Copper Project, Draft EIS, Rated EC-2

Dear Ms. Kitchell:

The Region 8 Office of the Environmental Protection Agency has reviewed the Draft Environmental Impact Statement for the Lisbon Valley Copper Project and offers the following comments for your consideration. Pursuant to the authority under §309 of the Clean Air Act and §402 of the Clean Water Act, our review focuses on the ability of BLM to assure that the active mine and post-mine operations are both consistent in law and directed towards the elimination or reduction of liability to the United States from long-term environmental risks post-mining.

While the EIS is deficient in a number of analytical areas, particularly regarding post-mine pit water quality and the risks to individuals and wildlife of these remaining lake pits, we are also mindful of the relatively limited environmental resources at this location. Therefore, rather than attempting to seek additional information through a revised Draft EIS that might otherwise be warranted, EPA asks that BLM carefully consider combining elements of each of the proposed alternatives so that post-mine risks to the environment might be eliminated or reduced.

First, we request that BLM and the State of Utah define explicitly the assumptions and basis for mitigation, monitoring, and financial assurance for each alternative. Second, in order to develop a comprehensive mine plan to achieve the goal of avoiding long-term risks to the environment, we believe that BLM should amend the Final EIS significantly. By combining elements of the facility layout, selective handling, and elements of the pit backfill alternatives, long-term risks to the environment might be more appropriately handled. Specifically, we request that BLM combine elements of these three alternatives into a proposed agency action and then request that the applicant submit a CWA §402 Storm Water Pollution Prevention Plan (SWPPP) to the State of Utah Division of Environmental Quality for that proposed action. The applicant should first be informed of the basis for financial assurance for each alternative. After these actions are complete, BLM would then be prepared to develop the Final EIS and Record of Decision consistent with FLPMA requirements to avoid undue and unnecessary degradation.

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EPA's recommendations as to how to combine several elements of the proposed alternatives includes:

1) Facility layout: We concur with BLM regarding the agency preferred alternative that Waste Dump D should be combined with Waste Dump C. The Lisbon Valley drainage at this location would tend to erode the toe of Waste Dump D, or undermine the dump creating substantial sediment discharges during storm events. Therefore, we recommend that the Waste Dump D be relocated.

A major concern with the northern end of Sentinel Pit #1 is the extention of this pit into the Lisbon Valley drainage. Routing of this surface flow into the abandoned pit would create the potential for continued erosion and downcutting upstream due to this change in hydraulic gradient. This is described as Case #2 as "No post-mining recharge of surface water to groundwater at the Sentinel Pit." Although the DEIS states on page 4-21 that eliminating this surface inflow could adversely affect water quality since the higher quality surface water would dilute the evapo-concentration of constituents, we believe that partial backfilling of Sentinel #1 would avoid this result. Further, the allowing of this surface to flow into the Dolores River would reduce the obligations for flow replacement pursuant to the Endangered Species Act.

Consideration should be given to placing non-acid generating material on the benches within the remaining Centennial and GTO pits to cover acid-generating material. If the active bench within the coal-bearing Dakota Formation were covered with non acid-generating material, long-term acid generation potential from the pit might be further reduced.

2) Waste Rock Selective Handling: The static leachate testing results indicate that 22% of the tested samples are potentially acid generating. These samples are associated with coal or nearby coal-bearing units principally within the Dakota Formation. This results in an estimated 10% of the total amount of waste material with potential acid-generating characteristics. Experience at other mines indicates that this material could eventually release low pH leachates with elevated metal ions. Encapsulation, layering, and blending should be considered with emphasis on single-handling of material in order to reduce mine operational costs as appropriate. However, BLM should strive to make the applicant meet monitored conditions during mining and post-mine rather than defining the specific mine plan. The applicant should be advised as to the required response needed if monitored trigger-levels are exceeded. Thus, monitoring of sulfate concentrations should be requried as elevated sulfate concentrations above baseline conditions would be expected to precede decreases in pH values. The Final EIS should display these monitoring, mitigation and bonding assumptions such as recovering the full value of the costs associated with waste rock piles unless selectively placed so as to actually avoid future potential for acid-generating conditions.

Open Pit Backfilling: It would appear that consideration of open pit backfilling has been limited due to the view that the increased costs of double handling cannot be justified based upon the relatively low value of the environmental resources at risk. First, we challenge if this is the case. Post mine lake pit water quality, while poorly analyzed in this document, is still thought to result in ever increasing concentrations of metal oxyanions. These lake pits are likely to be attractive and detrimental to area wildlife and remain a liability and safety concern in perpetuity. We suggest consideration be given to selectively backfilling at least the Sentinel #1 pit which might be accomplished during the proposed mining sequence using only single handling. Placement of non-acid generating material to backfill Sentinel #1 could be obtained from the final expansion of Centennial Pit is Year 5-6 or from the initial disposal of waste rock from the GTO pit in Year 7.

If BLM would display the obligated mitigation, monitoring and bonding requirements of each alternative and define these alternatives with appropriate management plans in response to triggered levels of monitoring, the applicant could identify an improved mine plan that might also best serve its own long-term interests in limiting its post-mine liabilities.

Based on the procedures EPA uses to rate the adequacy of the Draft Environmental Impact Statement, the Draft EIS for the Lisbon Valley Copper Project will be listed in the Federal Register as Category EC-2. This means we have environmental concerns with the proposed action and that additional information is needed in the Final EIS.

We request that BLM host a meeting with the State of Utah Division of Environmental Quality and the Division of Oil, Gas and Mining to consider these comments at your convenience.

Attached are additional detailed comments on the Draft EIS. Please contact Weston Wilson of my staff at (303) 312-6562 if we may further explain our concerns with the proposed action.

Sincerely,

Carol L. Campbell

Carol Campbell, Director
Ecosystems Protection

Enclosure
cc: UDOGM, SLC
Dennis Frederick, UDEQ, SLC
Elaine Suriano, EPA, Washington, D.C.

Detailed Comments by the Region 8 Office of EPA
Draft Environmental Impact Statement
Lisbon Valley Copper Project

- Pages 2-18, 2-19, Table 2-4. The storm water ponds for the process/lined area need to be sized for an entire wet season followed by the major storm event. Thus, the estimated water balance should include saturated conditions in the lined area due to prior precipitation events and then followed by the maximum 24 hour precipitation event. A good real-world example would be Summer 1992 - Winter 1993, when several "no discharge" Utah mines overflowed.

- As described in Table 1-1, the mine will need NPDES permits for discharges to surface waters. It should be noted that generally no process water discharge is allowed from copper mines. Lisbon Valley and any tributaries are surface waters, even though the streams rarely flow.

- The other aspect of NPDES is controlling sediment. The FEIS should have a summary of the measures that will be taken in the mine's Storm Water Pollution Prevention Plan (SWPPP). For example in the SWPPP, the mine may choose to revegetate the mine dumps as they are built, construct sediment basins for dumps and roads, install silt fences and hay bales, construct clean water diversion ponds around each waste rock dump, and construct containment of truck fuel and maintenance chemicals.

- Section 2.0 (General) -- It is recommended that the EIS describe the design and implementation of a ground-water monitoring program that will be adequate to detect impacts to ground-water quantity and quality from mining and post-mining activities in regional aquifers below the site. Well numbers and locations should be adequate to monitor the effects of the water management plans on ground water migrating downgradient in Lower Lisbon Valley. A ground-water monitoring program will also need to be developed and implemented for the purpose of monitoring the performance of specific mine features that will or may discharge to ground water where present and not impacted by pit dewatering; this program should be discussed in the EIS. Such facilities include heap leach pads, surface impoundments, and waste rock piles. Some features are designed to discharge with specific limits set for the effluent; compliance monitoring as per the State of Utah Ground-Water Discharge Permit would be required. Other features may be designed or constructed not to discharge to ground water; ground-water monitoring would then be necessary to confirm that there are no discharges.

How can well #'s + locations be adequate enough to monitor

- Section 2.2.4.2 (pages 2-12 to 2-18) -- Leaks are significant potential sources of pollutants at heap leach facilities. The heap leach pad design proposed here does not include a leak collection system and the DEIS does not include contingency plans for

repairing the heap leach pad liner if a leak develops. The lined heap leach system does not contain a leak collection design, only a leak detection system. Since all liners can leak, it is recommended that the EIS explain a design for pumpback of PLS that has leaked into the process circuit and contingency plans for repairs to damaged liner sections.

- Section 2.2.6 & Table 2-6 (pages 2-28 to 2-31) -- Under peak operational conditions, a water demand of approximately 900 gpm is projected. Based on regional studies of the Dakota and Burro Canyon Formations and the complexity of the site geology, it may be difficult to produce this quantity of water from dewatering activities at the site alone. It is recommended that the EIS consider the need for production wells in the Navajo Formation, the potential location(s) of such wells, and the impact of such production on regional ground-water resources.

- Section 3.2.3.1 and Section 3.2.3.2 (pages 3-20 & 3-22) -- "The distribution of ground water at the project site is erratic and strongly controlled by geologic structure." "Ground water beneath the project site is present as discontinuous water-bearing units and appears to be structurally controlled." Based on these statements, it can be inferred that proposing a scheme for mine pit dewatering and estimating production rates is a difficult undertaking. Actual dewatering techniques and rates may not be known until in the field implementation occurs and progresses for some time. Therefore, as previously noted, it is recommended that the EIS consider the need for production wells in the Navajo Formation, the potential location(s) of such wells, and the impact of such production on regional ground-water resources.

- Section 3.2.3.3 (pages 3-30 & 3-31) -- Concentrations of gross alpha and gross beta in all ground-water samples exceed State of Utah drinking water standards. It is proposed in the DEIS that this water be used in various mining processes including dust suppression. It is recommended that the EIS consider the impacts of these radionuclides being sorbed onto surface soils and potentially transported off-site through sediment transport in runoff events. To eliminate this concern it is suggested that should Navajo Formation wells be installed for water production this ground water can be used for dust suppression as it is believed to be of better quality.

- Section 3.3.2 (pages 3-32 & 3-33) -- Static test analyses indicate that coal, coal-bearing, and units adjacent to or closely associated with coal beds are acid-generating based on sulfide/sulfur content. In all of the proposed mine alternatives such units within the Dakota Formation will remain exposed to the environment on various pit wall faces. It is recommended that the EIS evaluate the effects of these exposed units on future pit water quality and potential mitigation measures to inhibit the direct contact of precipitation with these units.

- Section 3.3.3 (pages 3-33 & 3-34) -- The EPA Method 1312 tests provide an indication of the constituents of the waste rock which can leach out under slightly

acidic conditions ie., pH=5. However, in terms of future pit water quality, the projected pH of the ponded pit water is slightly basic i.e., approximately 8. Therefore, these tests do not provide an indication of the post-mining pit water quality. Also, there is no indication in the DEIS as to the formations or locations sampled for these analyses. Based on a review of the cross-sections provided in this section of the DEIS and the projected pit water depths, this water will be primarily in contact with lower Burro Canyon, Morrison, and/or Cutler bedrock. It is recommended that the EIS consider future pit water quality based on contact with these geologic materials.

- Ore Grades Dilution: The following is a brief description of the Lisbon copper deposits in terms of the gradual decrease in ore grades from earliest discovery to the potential current operation by Summo USA Corporation, and why pit backfilling is a viable alternative that would not effectively preclude future recovery of economic deposits:

  A definition of an ore reserve is that part of a mineral deposit which could be economically extracted or produced at the time of the reserve determination. Any quoted ore reserve is actually an average grade, indicating that sought after minerals are erratically distributed both in terms of grade and concentration throughout the deposit. Among other criteria, this is essentially the definition that modern-day mining companies would use. Mining goes through phases or stages, each subsequent one depleting the previous ore reserve, until the deposit is exhausted, at least in terms of economic recoverability.

  At Lisbon Valley, copper mining began in the late 1800's and continued intermittently until the mid-1970's. Early efforts recorded ore grades of 1% to 2% copper (these are not ore reserve grades), whereas the proposed operation by Summa indicates an average grade of just 0.44% copper content of the ores. At current metal prices, this represents a viable mining operation. Once this reserve has been mined, at least in the current project area, what will be left in the ground will be nearing the economic limits no matter what the price of copper may reasonably reach. Assuming price increases or better metal extraction is not likely given that the ore grades would be lower than O.44%.

  Subsequent mining activities may incorporate in situ leaching as a economically viable option to historical practices of rock and ore extraction, so that whether the proposed pits are backfilled is not an issue in terms of limiting future recoverability.

- Mineralogy: The description of mineralogy presented in the Proposed Plan of Operation (PPO) and the Draft EIS are inadequate and incomplete. The statement on page 4 of the PPO indicates: "... copper mineralization consists of both sulphides and oxides...and include azurite, malachite (both of which are secondary or alteration products of sulfides (or supergene minerals), and sometimes cuprite (an important

secondary copper oxide ore mineral)..." We need to know what are the original sulfide minerals that produced the oxide minerals and if there is an estimate of what the ratio of oxide to sulfide minerals might be in the ore reserve. Did Summo drill deep enough to exit the oxide zone and reach the sulfide zone at depth? If so, what is this depth or elevation for each proposed pit?

- Post Mine Safety: What provisions are being made, besides the fencing along the main road, to deter access to pit rims and other mine openings? The final pit wall configuration may reach 60°, a dangerous and attractive nuisance. Pit back-filling may be less costly in the long-term than fencing each pit and maintaining that fence in perpetuity. This is a costly task as it entails as much as five miles of fencing.