



Date: August 2, 2006

J. Chris Pfahl  
Site Manager  
ASARCO LLC  
PO Box 440  
Wallace, ID 83873

Dear Mr. Pfahl:

The Forest Service has reviewed ASARCO's Draft Engineering Evaluation/Cost Analysis (EE/CA), Azurite Mine and Mill Site, including the revised risk assessment (RA) submitted on July 17, 2006. The following Forest Service comments are split into general, section specific and editorial categories.

Please submit written responses to these comments by August 16, 2006, prior to revising the EE/CA. In addition, I suggest that we arrange a conference call for August 9, 2006 at 9AM PST to discuss the comments prior to the formal written response. If ASARCO has a conflict at that time, please contact me to arrange a mutually acceptable time.

**Revised Risk Assessment Comments:**

1. **Human Health Risk Assessment:** The conceptual exposure model shows surface water ingestion as a complete pathway for humans under the recreational user scenario, but the report does not assess the risk. Please assess risk of surface water ingestion.
2. **Ecological Risk Assessment:** The report mentions that significant ecological impacts are expected for individuals. What can be said about the effects at the population level?

**General EE/CA Comments:**

1. **ARARs:** The table does not contain all of the ARARs provided to ASARCO by the Forest Service (e.g. Wilderness Act, National Forest Management Act, Executive Order 11593, Clean Air Act, Water Quality Standards for Surface Waters of the State of Washington, etc.). Please include them in the development of ARARs or provide justification for their exclusion.
2. **Stability Analysis:** The stability analysis performed is insufficient. Some of the deficiencies include: no analysis of the existing condition of the tailings and waste rock piles, many of the parameters for the analysis are assumed or are based on work at other sites, water surface for the analysis is assumed and only one elevation was considered, analysis assumed that the underlying materials of the piles are alluvial (i.e. not based on observation from cut bank, etc.), analysis didn't address potential effect on pile from stream erosion, and the talus source material for cap may have more fine material than is assumed. Please note that waste rock and tailings should have been collected during the September 2005 sampling event and used during the stability analysis.



3. **Scope of the Removal Action:** Section 5.2 states that the scope of the removal action is to control releases and will not address mine discharges. Please note that the scope of the removal action is to mitigate any unacceptable risk. One way to do this may be to manage releases. It can also include total site cleanup, site stabilization or adit discharge control. The mitigation of unacceptable risk in all media (soil, waste rock, tailings, adit discharge, and surface water) should be driving the evaluation and selection of removal alternatives.
4. **Removal Alternatives:** Approval from the Forest Service of preliminary screening results was supposed to occur prior to the more thorough analysis of the top 3-5 alternatives. The screening fails to provide adequate justification for the exclusion of alternatives. For example, physical and chemical stabilization is excluded due to high cost and significant energy input without quantifying either. The removal alternatives also failed to consider combinations of alternatives (e.g. stabilization and capping, reprocessing and partial removal, etc.). Provide more details about the identification and screening of removal alternatives. Provide quantitative reasons for excluding alternatives. In addition, the removal alternatives must address all of the removal action objections (i.e. mitigation of unacceptable risk in soil/waste rock/tailings/adit discharge/surface water).
5. **Offsite Repository:** The report assumes the use of an offsite repository located 20 miles away without identifying an available site. Any offsite disposal alternative must identify available sites. Also, would an onsite repository be possible?
6. **Time-Critical Removal:** This section states that the waste rock and tailings piles have remained stable over the past several decades. Is this supported by aerial photographs or other evidence? Please note that past stability does not guarantee future stability and the erosion of the pile by Mill Creek could significantly affect the stability of the pile. What does the stability analysis predict about the piles?
7. **Cost Analysis:** The cost estimates do not appear to capture road improvement costs. The cost to build a road to the site in this kind of terrain may be \$300,000-\$700,000 per mile, while the report uses \$10,000 per mile. Do the costs from Jack Waite mine (and other similar sites) that were used as reference, represent similar access conditions (i.e. 11 miles of ATV trail that would need to be upgraded to handle construction equipment)?

#### **Specific EE/CA Section Comments:**

1. **Executive Summary, page ES-3:** The middle paragraph mentions institutional controls but fails to specify the type of controls. The paragraph also states that “restrictions on residential use would also be formalized using administrative controls”. Is this referring to a deed restriction? If so, please note that the Forest Service cannot add deed restrictions to land that it manages.
2. **Executive Summary, page ES-4:** The last sentence in the last paragraph states “...although an undisturbed area would be permanently modified due to the importation of nearly 88,000 cubic yards of tailings and mine waste material.” What idea are you trying to convey with this sentence? In addition, the next sentence states that the offsite repository alternative provides low to moderate degree of toxicity and mobility reduction. The reason for this is unclear and the “closure cover system” explanation is unclear.
3. **Section 2.1.7, Hydrology, page 9:** The third paragraph states that the waste rock pile has remained stable over the past several decades. Please note that past stability does not

guarantee future stability and the erosion of the pile by Mill Creek could significantly affect the stability of the pile.

4. **Section 2.1.11, Site Access, page 13:** Please note that there may also be weight limitations across the bridges. This should be considered when performing the cost analysis for removal alternatives.
5. **Section 4.3, Risk Based PRGs, page 33:** There was no mention of Washington State's standards for risk based PRGs (i.e.  $10^{-6}$ ).
6. **Section 5.3, Timeframes for the Removal Action, page 36:** The information in this section is too vague to be useful.
7. **Section 6.1, Screening of Removal Action Alternatives, page 38:** A list of alternatives and preliminary information used for screening was supposed to be provided to the Forest Service for concurrence on the final list of alternatives to be considered in detail. Please provide that information.
8. **Section 6.1.1.1, Removal Action Technologies for Solid Wastes, page 39:** The reprocessing alternative is excluded due to the need for additional studies and the need for infrastructure. The infrastructure requirements and associated costs must be quantified. Any pilot studies needed to evaluate alternatives should have been included in this EE/CA and site information needed for such studies (i.e. tailings samples, etc) should have been collected during the September 2005 sampling event.
9. **Section 6.2.1, Overall Protection, page 44:** An available offsite repository must be identified if it is to be considered as an alternative. Would an onsite repository be possible?
10. **Section 6.2.2, Short- and Long-Term Effectiveness and Permanence, page 45-46:** For the closure-in-place alternative, how is the 20% decrease in percolation by adding a 12 inch rock cover representative of "good long-term effectiveness"? In addition, how are the safety concerns (open mine adits and shafts) addressed by the closure in place alternative? For the complete removal alternative, the second paragraph is confusing. It is not clear whether it is referring to conditions at the mine site or the repository site. Also, as stated above, an offsite repository site must be identified to consider it an alternative.
11. **Section 6.2.5, Implementability, page 49:** For the closure-in-place alternative, please provide examples of small to medium size earthmoving equipment that would be used. What are the overall dimensions and weight of this equipment? Will extra road/bridge reinforcement be required to get the equipment to the site? How will this affect the cost estimates?
12. **Section 6.2.6, State and Federal Agency Acceptance, page 49:** Be specific when making claims about agency acceptance. For example, what does it mean that something may have low, medium or high agency acceptance? Can you relate it to ARARs or some other standard as a basis for acceptance? Is acceptance expected to differ between state and federal agencies (again, can you relate this to regulatory standards)?
13. **Section 6.2.7, Community Acceptance, page 49:** Please identify the community (e.g. property owners, city, county, environmental groups, etc.).

#### **EE/CA Editorial Comments:**

1. **PRG Acronym:** The report uses PRGs as an acronym for preliminary removal goals. I recommend that this acronym not be used to avoid confusion with EPA Region 9 PRGs.

2. **Presentation of Removal Alternatives:** In addition to the text, please provide two tables of the removal alternatives. The first table will contain all of the alternatives considered and the screening results. The second table will contain the top alternatives evaluated more thoroughly, and the evaluation results.

Sincerely,

Cheryl Woodall  
On-Scene Coordinator

cc: James Alexander-OGC  
Dick Sawaya – Forest Service  
Bob Fujimoto – Forest Service  
Rick Roeder – Washington Department of Ecology  
Tom Mullen – LFR Inc.