

APPENDIX A

**ASARCO LLC Hayden, Arizona, Site:
Summary of October 26, 2006 Ecological Risk
Assessment Kick-off Meeting**

meeting for various media should be considered “preliminary” until the final validation work is completed.

Because there are numerous studies conducted by the U.S. Fish and Wildlife Service (US FWS), Arizona Game and Fish Department (AGFD), and other researchers, the ERA will take into account other studies that are not currently in hand but may provide important information. The schedule for the ERA will be provided to EPA as the project progresses.

Goals of the Meeting

- Review available site characterization results for surface water and sediment data collected in March and August 2006.
- Review and discuss if revisions are needed for the final Ecological Risk Assessment Plan (ERA RAP), including the Eco Conceptual Site Model (CSM).
- Discuss the ERA site visit memorandum and the ERA RAP.
- Obtain concurrence from all project team members on the basic ERA procedures and next steps.

Eco Conceptual Site Model

- To clarify, soil in the Eco CSM and in the ERA RAP refer to the riparian and upland soil that supports ecological habitat. Soils collected from the residential/non-residential areas of the town of Hayden will not be evaluated because they lack habitats for ecological receptors; soils and water from the tailings piles will also not be evaluated because there is considered little to no habitat for ecological receptors.
- Based on the recent data collected, sediment appears to be a valid pathway and will be evaluated in the ERA. Amphibians will be evaluated using water benchmarks (the triangle symbol in the Eco CSM acknowledges possible complete exposure but at the SLERA stage, it will be evaluated using available literature-based benchmarks).
- No changes to the Eco CSM diagram are needed at this time.

Site Characterization Results

None of the surface water and sediment data has been validated. However, the data allow evaluation of any trends/current status for moving the project forward. The duplicates were treated as regular samples (no averaging). Figures 1, 2, and 3 from the October 26, 2006 draft technical memorandum (TM) will be revised (e.g., taking out the eco screening numbers since we are just focusing on the data in the RI at this stage).

Surface Water

- Deviation from the work plan: surface water sample could not be collected from the tailings piles for logistic and safety reasons. No further attempts will be made to collect water samples from the tailings piles.
- Reviewed key observations from surface water data in the surface and sediment sampling technical memo (see bulleted summary in the October 26, 2006 TM).
- Surface water data revealed some unexpected results in terms of spatial and temporal distribution. For example, (1) GR-SW-05 has the maximum turbidity but San Pedro locations (SPR-SW-01 and SPR-SW-02) have high conductivity but low turbidity; (2) GR-SW-04

temperature is very different from other locations, indicating that groundwater discharge may be occurring; (3) some data maybe concentrated or diluted due to dam release events, and additional research is needed on dam releases during the sampling events.

Sediment

- Sediment data appear to be much more variable by seasonal fluctuation in the surrounding environment (e.g. potential groundwater discharge, displacement of sediment by high water flow, and potential influence from an upgradient mine).
- Because the study area contains very fine-grained sediment, it will not necessarily require high water flow to re-distribute the chemicals. In planning for an appropriate reference site, keep in mind that there are mining activities upstream from the San Pedro River and to a lesser extent the Gila River (e.g. Christmas mine).
- John indicated that the tail water settling pond on site is unlined. Surface water from the surrounding area is also directed toward ponds near the toe of Tailings Pile AB/BC. Water may be seeping out from this area and may affect the groundwater and surface water sample quality.
- All agreed that data from the riparian soil sampling (April 2006) are needed to further evaluate the in-stream sediment data.

Eco Site Visit Technical Memo

- Discussed the key findings from the April 2006 site visit (Section 6 of the Site Visit TM).
- Noted that vegetation at the GR-04 location was stressed and there were many dead cottonwoods. Perhaps this is due to groundwater discharge on the ASARCO side of the river.

ERA RAP

- The final ERA RAP was unchanged from the draft final, and has been approved by EPA. Methodology for the ERA in the RAP is consistent with EPA guidance. To start, maximum concentrations will be used to compare against NOAEL/NOEC. Chemicals that get carried forward will be evaluated against background levels. Chemicals that exceed background levels will be analyzed using point-by-point evaluation. No spatial breakup will be used in doing the point-by-point evaluation. Spatial evaluation will be done if chemicals were to fail the point-by-point evaluation.
- Receptor-analyte-location that cannot be excluded will be subject to either (1) conduct further data collection, or; (2) propose a PRG that can be acceptable.
- The SLERA will follow the standard EPA guidance and since US FWS has considerable data for this area, the SLERA will incorporate their data to the extent possible.
- Went through a list of representative receptors to be evaluated:
 - Aquatic Insectivore: swallow
 - Piscivorous birds: kingfisher
 - Herbivore: mourning dove
 - Other birds: curve billed thrasher, red-tailed hawk, southwestern willow flycatcher
 - Mammals: little brown bat (as aquatic insectivore)
 - Piscivorous mammal: mink (will check to confirm the potential presence of this species)
 - Other mammals: desert cottontail, desert shrew (or other mammals with small home range), and coyote.

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- There are no known special-status mammals. The only other special-status species is the southwestern willow flycatcher.
 - John indicated that he would like Ned to review the site visit memo before it goes to final.

Web Page for Project Data and Reports

The EPA and CH2M HILL team members have password-protected access to the project website. Kevin indicated that the chemistry and GIS data are still considered draft at this time.

ERA Schedule/Selection of Milestones

A detailed schedule for ERA completion will be completed after data validation is complete, and the schedule will be submitted to EPA for review.

Action Items

The following action items were developed from the meeting.

1. Add the riparian sediment sample data (from April 2006) to the text, figures and tables within the surface water/sediment TM, and re-issue the TM.
2. Research TSS, TDS, and boron data from the August '06 surface water sampling event
3. For the revised surface water/sediment TM, revise Figure 1, 2, and 3 (remove eco screening numbers)
4. To better evaluate the two sampling events, pull the flow data and dam release info from Coolidge dam, precipitation data for the area, and find any additional gauging station(s) on the Gila or San Pedro rivers. These information sources may help explain the variation between the March and Aug data.
5. Look for any additional chemistry info (mainly from Gila River, but also the Coolidge reservoir and San Pedro River if available).
6. In August there was ~10,000 CFS measured at the Kelvin gauging station. Find out what the return period is and what flow would completely inundate the flood plain.
7. Plot the frequency of the flood events and do a trend analysis.
8. Examine the groundwater and surface water interaction by looking at groundwater data from monitoring wells. Conduct groundwater/surface water comparison by principal component analysis. Plot groundwater and surface water elevations to identify where groundwater discharge may occur. Identify any correlations to help understand the variation in the data.

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9. Review all available groundwater, surface water and sediment data to find out if data gaps exist with respect to the ecological risk assessment, and decide if any additional data are needed.
 10. Look into the dead cottonwoods observed by Ned near the GR-SW-04 location – follow this up with Gary Santolo to see if he recalls seeing any disturbance or oddities that existed in this area.
 11. Ned will provide any comments before the ecological site visit memo is finalized.
 12. Discuss ERA schedule and provide update to EPA.

Please contact Kevin Murdock at (480) 966-8577 x6246 if you have any questions.

**EPA Region 9: ASARCO, LLC, Hayden Plant Site, Hayden, Arizona
DRAFT Agenda Outline for Ecological Risk Assessment
"Kick-off" Meeting in San Francisco, CA - August 2006**

- I. Introduction
 - A. Scope of Meeting
 - B. Goals of Meeting
 - C. Review of Preliminary Conceptual Site Model and Expected Major Pathways/Routes of Exposure
 - D. Overview of ERA RAP

- II. Site Characterization Results – In Progress/Pending Technical Memos
 - A. Sediment Sampling – XRF and CLP Laboratory Results
 - 1. In-Stream Sediments (1st sampling event)
 - 2. Tailings Piles
 - 3. Riparian/Floodplain Soils - Include/differentiate stable and unstable riparian data
 - 4. XRF/CLP Correlation Results (follow up from what is determined/used for HHRA)
 - B. Surface Water (filtered/unfiltered from 1st event) – correlate w/in-stream sediment
 - C. Incorporating 2nd Sampling Event Data
 - D. Ecological Field Sampling/Survey

- III. Overview of Organization and Assumptions for Screening-Level ERA
 - A. Problem Formulation
 - 1. Assessment endpoints (Refer to Table 2-2 from ERA RAP – add draft specific receptors as needed)
 - 2. Measures – Described in Table 2-2 from ERA RAP
 - 3. Conceptual Site Model – Described in Figure 2-1 from ERA RAP
 - Note here and in exposure analyses section below, we need to discuss spatial subunits for soil, water, and sediment evaluation.
 - B. Analyses
 - 1. Exposure
 - describe approaches by media/receptor group(stable vs. unstable riparian)
 - Spatial subunits (discuss what is appropriate to support remedial decision-making)
 - 2. Effects – propose/verify approved effects data to be used
 - C. Risk Characterization
 - 1. Initial Screen: Max vs NOEC/NOAEL (or equivalent)
 - 2. Description of Uncertainties and Data Gaps
 - 3. Refined Screen: Consideration of Background (if available), bioavailability (as determined for HHRA), frequency/magnitude of exceedance, ecological realism, etc.
 - 4. Identification of Data Gaps, Retained Analytes, Locations, Receptors, etc.

- IV. Web Page for Project Data and Reports

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- A. GIS Interactive Format/Searchable
 - B. SW and Sediment Data/Summaries
 - C. Repository for Technical Memoranda and other Project Documents
 - D. Project Calendar
- V. ERA Schedule/Selection of Milestones
- VI. Summary of Meeting
- VII. Path Forward/ Action Items
- A. EPA
 - B. CH2M HILL