FINAL

Former ASARCO East Helena Facility Interim Measures Work Plan—2014

Prepared for

The Montana Environmental Trust Group, LLC

Trustee of the Montana Environmental Custodial Trust

May 2014

CH2MHILL®

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Helena, Montana 59601

PDX/122710001
ES032612024219PDX

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Acronyms and Abbreviations

AMSL	above mean sea level
AOC	Area of Contamination
ARM	Administrative Rules of Montana
BERA	Baseline Ecological Risk Assessment
bgs	below ground surface
CAMU	Corrective Action Management Unit
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLOMR	Conditional Letter of Map Revision
CMS	Corrective Measures Study
COPC	constituent of potential concern
CSM	conceptual site model
Custodial Trust	Montana Environmental Custodial Trust
EHECTIC	East Helena Entire Cleanup Team in Coordination
ERM	Environmentally Regulated Material
ESA	Endangered Species Act
ET	evapotranspiration
FEMA	Federal Emergency Management Agency
FSAP	Field Sampling and Analysis Plan
GPR	ground-penetrating radar
HDS	high-density sludge
HEC-RAS	Hydrologic Engineering Centers River Analysis System
ICS	Interim Cover System
ICS 1	Interim Cover System 1 phase proposed to occur in 2014
IM	interim measure
IM Work Plan 2012	Interim Measures Work Plan 2012
IM Work Plan 2013	Interim Measures Work Plan 2013
IM Work Plan 2014	Interim Measures Work Plan 2014
LCCD	Lewis and Clark Conservation District
LOSA	Lower Ore Storage Area
MBTA	Migratory Bird Treaty Act
MCL	maximum contaminant level
MDEQ	Montana Department of Environmental Quality
MDT	Montana Department of Transportation

mg/kg	milligram(s) per kilogram
mg/L	milligram(s) per liter
MPDES	Montana Pollutant Discharge Elimination System
NWE	NorthWestern Energy
PCB	polychlorinated biphenyl
PPC	Prickly Pear Creek
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SLV	screening-level value
SPHC	South Plant Hydraulic Control
SPLP	Synthetic Precipitation Leaching Procedure
SSL	soil screening level
SWPPP	Stormwater Pollution Prevention Plan
TPA	Tito Park Area
TSCA	Toxic Substances Control Act
UOSA	Upper Ore Storage Area
U.S.	United States
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
WTP	water treatment plant
yd^3	cubic yard(s)

SECTION 1

Introduction

The purpose of this Interim Measures Work Plan 2014 (IM Work Plan 2014) is to provide information to support U.S. Environmental Protection Agency (USEPA) approval of the interim measures (IMs) phases proposed for implementation in 2014 at the East Helena Facility (Facility). This IM Work Plan 2014 focuses on work proposed for 2014 and, as appropriate, provides updates to information that was presented in the Interim Measures Work Plan 2012 (IM Work Plan 2012; CH2M HILL, 2012) and Interim Measures Work Plan 2013 (IM Work Plan 2013; CH2M HILL, 2013a).

Three interrelated, interdependent IMs were proposed in the IM Work Plan 2012, and subsequently conceptually approved by USEPA on August 28, 2012. Components of these IMs performed in 2013 were set forth in IM Work Plan 2013, which was approved by USEPA on January 21, 2013. The primary purpose of the IMs is to reduce the migration of contaminants in groundwater from the operating area of the former ASARCO Smelter (former Smelter site) in order to protect public health and the environment. The three IMs are summarized as follows:

- The South Plant Hydraulic Control IM (SPHC IM) has been proposed to reduce the migration of inorganic contaminants in groundwater by changing the hydrogeologic conditions at the south end of the former Smelter site.
- The Source Removal IM has been proposed to reduce the mass loading of contaminants to groundwater by reducing the volume of soil with high concentrations of inorganic contaminants that are in direct contact with surface water and leaching contaminants to groundwater.
- The Evapotranspiration Cover System IM (ET Cover System IM) is proposed to further reduce the potential for inorganic soil contaminants leaching to groundwater by eliminating or substantially reducing the amount of precipitation that infiltrates through contaminated materials. The ET Cover System IM will also eliminate human and ecological receptor exposure to inorganic-contaminated soil.

Implementation of the three IMs is occurring in phases over a number of years. The following phases were proposed and implemented in 2012 and 2013:

- **ET Cover System IM**: Phase 1 and Phase 2 demolition of the buildings and infrastructure on the former Smelter site. This work was required to help clear the site in preparation for future construction of the ET Cover System. Phase 1 demolition was completed in July 2013 and Phase 2 demolition was completed in October 2013.
- **SPHC IM**: Relocation of utilities located on the East Bench, including the City of East Helena water main, the NorthWestern Energy (NWE) distribution line and the CenturyLink communications cable in order to construct the Temporary Bypass for Prickly Pear Creek (PPC) (PPC Temporary Bypass). Construction of the PPC Temporary Bypass was required to route PPC flow around Smelter Dam, thereby dewatering the South Plant area and enabling demolition of Smelter Dam, removal of the Tito Park Area (TPA) (see discussion below), and reconstruct the PPC channel in mostly dry conditions. Construction of the PPC Temporary Bypass began in July 2013 and was completed in October 2013.

The IMs have been designed to be part of the final remedies for the Facility. Their performance will be evaluated as part of the Corrective Measures Study (CMS), and long-term monitoring plans will be designed to evaluate IM performance over time.

The following IM phases are proposed for 2014 and presented herein for USEPA review and approval as well as public review and comment:

- **Source Removal IM: Tito Park Area Removal**. This work will remove contaminated soil from the TPA, consisting of Tito Park, Upper Ore Storage Area (UOSA), Acid Plant Sediment Drying Area (APSD Area), and Lower Lake, and consolidate this material within the onsite Area of Contamination (AOC), which was approved

by USEPA as part of the IM Work Plan 2012. The earthwork will remove contaminated soil from an area that is susceptible to inundation and erosion due to potential future PPC flooding. In addition, removal of materials from the TPA is necessary to meet the functional needs of the PPC Realignment, support the development of wetland habitat in the PPC floodplain, and reduce the overall footprint of the final ET Cover System. Activities necessary to obtain permits for 2014 implementation of this IM are currently underway, as described further in Section 7.

- **ET Cover System IM: Interim Cover System (ICS) Construction**. The ICS is the first component of the final ET Cover System and serves as the foundation layer. The ICS will protectively manage soil and sediment removed from the TPA and consolidated within the AOC, and at the same time establish the subgrade for the ET Cover System. Native soil will cap the ICS to prevent stormwater from contacting contaminated soil and enable runoff to be shed offsite to perimeter drainages. ICS construction will occur in two phases. ICS 1 will occur in 2014 and ICS 2 will occur in 2015 to help balance material haul requirements, and successively reduce the quantity of contaminated "contact" stormwater that is currently collected and treated onsite. This will result in cost savings associated with reduced stormwater treatment. Relocation of the existing NWE 69-kilovolt (kV) power transmission line, demolition of the associated substation, and decommissioning of selected monitoring wells will be coordinated with ICS construction.

Engineering design and permitting required for construction of the PPC Realignment project, including Smelter Dam demolition, was started in 2013 and will continue in 2014. This work will support construction that is intended to begin in 2015 and continue at least through 2016. The work is discussed briefly in Section 7, and will be presented in appropriate detail in future IM Work Plan submittals.

Figure 1-1 shows the work proposed for implementation in 2014.

The Montana Environmental Trust Group, LLC, Trustee of the Montana Environmental Custodial Trust (Custodial Trust), is submitting this IM Work Plan 2014 in compliance with Paragraph 14 of the First Modification to the 1998 Resource Conservation and Recovery Act (RCRA) Consent Decree (First Modification; Dreher et al., 2012). Both the TPA removal and ICS 1 construction are elements of the IMs conceptually approved by USEPA on August 28, 2012, and meet the requirements for IMs specified in Paragraph 15 of the First Modification as follows:

- Removal of contaminated materials in the TPA will minimize the spread of hazardous constituents by reducing the volume of contaminated materials from an area that is susceptible to erosion during high flow events. The TPA removal action will support the implementation of the cleanup management strategy for the Facility and contribute to the performance of long-term remedies at the site.
- Construction of the ICS will minimize the spread of hazardous waste by providing a cover that will prevent erosion and transport of inorganics in stormwater runoff and windblown particulate. ICS construction will also minimize infiltration of precipitation and leaching of contaminants to groundwater. The ICS will contribute to the performance of long-term remedies at the site by protectively managing the consolidated TPA soil and by serving as subgrade for the final ET Cover System.

This IM Work Plan 2014 builds on information presented in IM Work Plans 2012 and 2013, and previous reports and technical memoranda prepared by the Custodial Trust. General background information on site history and conditions is presented in the draft *Phase II RCRA Facility Investigation—East Helena Facility* (draft Phase II RFI; GSI Water Solutions, Inc., 2011), and the Custodial Trust's approach to IMs for the Facility can be found in the IM Work Plans 2012 and 2013. A complete list of references is provided in Section 9 of this IM Work Plan 2014.

The Work Plan is organized into the following sections:

- **Section 1: Introduction**.
- **Section 2: Overview of 2014 Interim Measures Implementation** provides a summary-level description of the IMs proposed for implementation in 2014 and how they fit into the overall IM concept for the former Smelter site.

- **Section 3: Updated Conceptual Site Model** presents an updated conceptual site model (CSM) for the former Smelter site and areas associated with the 2014 IMs already described in the IM Work Plan 2013. This section focuses on Tito Park, UOSA, APSD Area, and Lower Lake, which are the additional areas associated with the 2014 IMs.
- **Section 4: Data Sufficiency** summarizes the existing data used in the development of the work proposed for 2014, determines whether additional data are needed to complete the design, and outlines the activities necessary to obtain additional data if necessary.
- **Section 5: Engineering Design and Construction Information for Proposed 2014 Projects** provides conceptual design information and outlines construction and implementation requirements for TPA removal, ICS construction and related activities, removal of the NWE substation, and relocation of a 69-kV transmission line, all proposed for 2014.
- **Section 6: Remediation Waste Management** describes how hazardous and nonhazardous remediation waste will be managed during 2014 IM implementation to meet the RCRA definitions of both remediation and Corrective Action Management Unit (CAMU)-eligible waste.
- **Section 7: Status of Permitting Activities and Approvals** provides an update on relevant activities associated with permitting and licensing requirements set forth in the IM Work Plans 2012, 2013 and 2014.
- **Section 8: Project Management and Schedule** provides an overview of project management activities and the proposed schedule for IM implementation. Updates to the organizational structure, lines of communication, public participation, deliverables and reporting, and the schedule are described in this section.
- **Section 9: References** contains a bibliography of documents cited in text.

Supporting information is provided in two appendixes. **Appendix A** contains the results of leaching tests performed as part of the draft Phase II RFI. **Appendix B** contains public comments received on the IM Work Plan 2014, with USEPA responses and a conditional letter of approval.

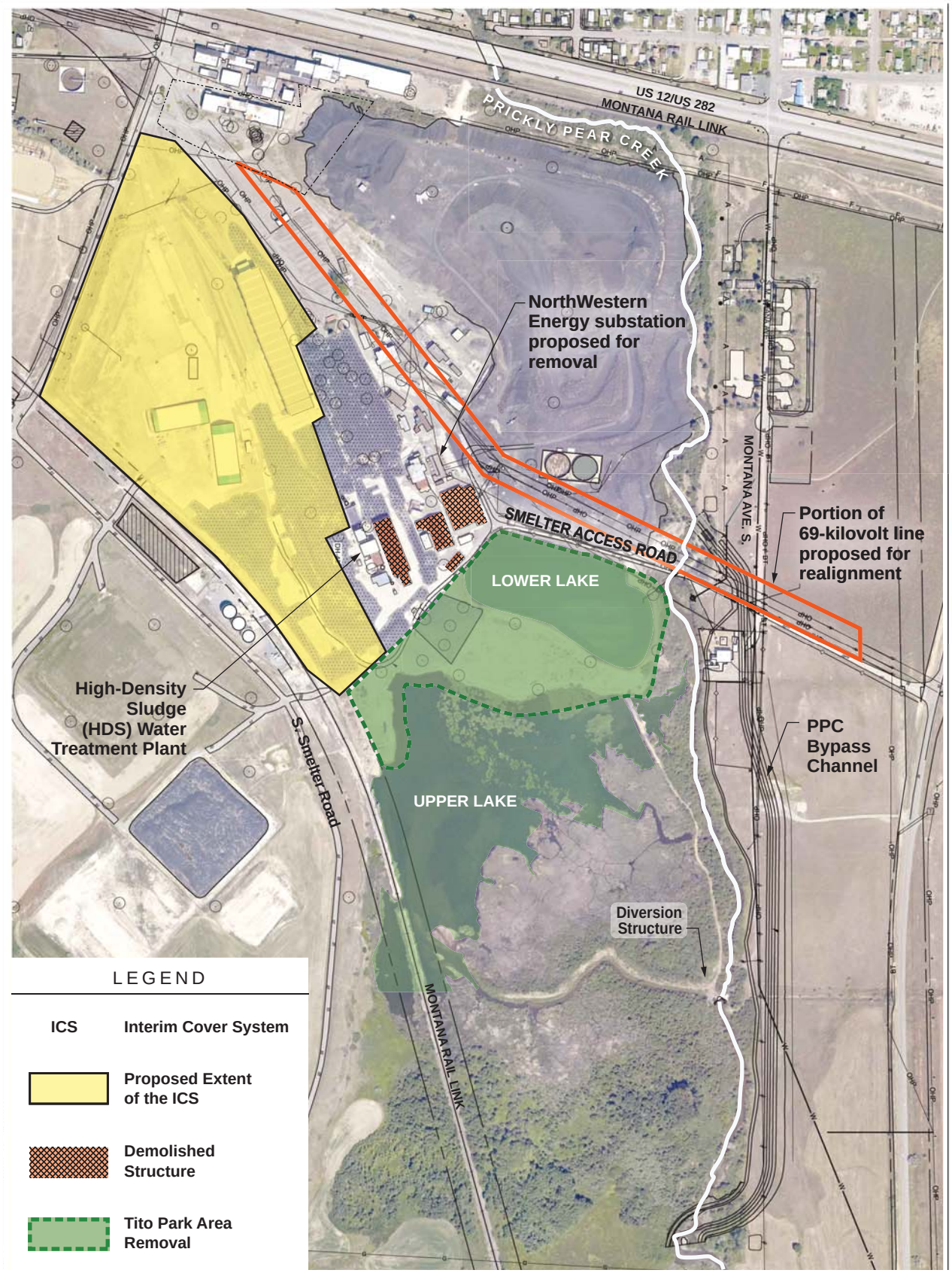


FIGURE 1-1
Interim Measures Components Proposed for Implementation in 2014
Interim Measures Work Plan–2014
East Helena, Montana

SECTION 2

Overview of Proposed 2014 Interim Measures Implementation

This section provides an overview of the IM activities proposed for implementation in 2014. The Source Removal IM proposed for implementation is TPA removal. The ET Cover System IM proposed for implementation is the Phase I ICS installation (ICS 1). A general description of how each phase aligns with the overall IM concept for the former Smelter site is provided in this section. The IMs are intended to function as permanent remedies. If they are determined to be effective for the long term and meet remedy performance standards, the IMs will comprise a significant portion of the final remedy. Additional information and engineering details for TPA removal and ICS 1 installation are provided in Section 5.

2.1 Source Removal Interim Measure: Tito Park Area Removal

The TPA removal will excavate soil and sediment from the TPA and consolidate it within the AOC under the ICS and future ET Cover System. Contaminated soil will be removed from the TPA, which is susceptible to future flooding, and will minimize the potential for transport of contaminants by erosion and floodwaters. Consolidating these materials on the former Smelter site will also reduce the areal extent and cost of the ET Cover System.

2.1.1 Objectives

The objectives of the TPA removal are as follows:

1. To meet the Source Control Remedy Performance Standard of reducing, to the extent practicable, the potential for surface water and groundwater to contact soil with COPC concentrations exceeding relevant protection to groundwater standards (i.e., soil screening levels [SSLs; USEPA, 2012] developed to be protective of groundwater MCLs, or background levels based on native Montana soil concentrations [Montana Department of Environmental Quality [MDEQ], 2007], whichever is greater).
2. Meet the proposed surface and creek channel elevations and grading of PPC Realignment and support the development of wetland habitat in the floodplain of the PPC.
3. Provide additional protectiveness for an area susceptible to future flooding:
    - Minimize the potential for contaminated soil to erode from the area from high water levels during future PPC flood events and be transported to downstream locations.
    - Minimize the potential for future contaminant migration by infiltration of water that inundates the area during periodic flooding events.

Overall TPA removal will minimize the risk of contaminant transport in the realigned PPC and provide flexibility in the final design and ultimate performance of the realigned PPC, which is critical to the implementation of the SPHC IM. The SPHC IM is envisioned to be part of the final corrective measures for the Facility aimed at lowering groundwater elevations. Lowered groundwater elevations will reduce the volume of groundwater in contact with contaminated soil, thereby reducing the volume of contaminant loading to groundwater, and reducing further offsite migration of contaminant plumes.

2.1.2 Description

The TPA, as shown in Figure 2-1, is defined to include the following locations:

- Tito Park
- UOSA
- APSD Area
- Lower Lake

Tito Park is an embankment constructed by ASARCO in the southeastern portion of the former Smelter site that separates Upper and Lower Lakes. Based on existing information regarding site operations, the area was used by ASARCO to stockpile soil and construction debris generated during Smelter operations. ASARCO records indicate that drums were handled and stored, and may have been buried in the eastern end of Tito Park. Tito Park is currently covered with a soil cap that was installed in 2001 following completion of required remedial actions in Lower Lake performed by ASARCO under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA).

The UOSA is an area adjacent to and southwest of Tito Park. The UOSA was used to store ore, smelting byproducts, soil, and other material produced at the Smelter. The UOSA is currently used by the Custodial Trust for equipment and scrap storage.

The APSD Area is located within the northern portion of the UOSA and was used from about 1977 to 1991 to store sludge from the Acid Plant Water Treatment Facility. In 2006, ASARCO enclosed contaminated soil and groundwater in the APSD Area within a slurry wall and placed a temporary geosynthetic cover system over the area.

Lower Lake is a human-made, unlined process wastewater pond constructed by ASARCO to provide water for and accept wastewater releases from historical Smelter operations. Lower Lake is connected to the local groundwater system, with the primary leakage/flow directions to the west (toward the main plant site) and to the east (toward PPC). Lower Lake is not a perched pond, but the groundwater elevations at TPA and Lower Lake are similar. Groundwater elevations immediately north of Lower Lake are approximately 9 feet lower because of the presence of low-permeability materials along the northern edge of the lake. Anecdotal information indicates that Lower Lake was first used as a plant water source in 1927. Beginning in 1975, Lower Lake was used to settle solids from the plant process water circuit. Untreated discharges to Lower Lake by ASARCO were discontinued following operational startup of the high-density sludge (HDS) water treatment plant (WTP) in 1994. Lower Lake currently accepts discharge from the HDS WTP outfall in accordance with an existing Montana Pollutant Discharge Elimination System (MPDES) individual permit (MT0030147).

At the request of the Custodial Trust, CH2M HILL evaluated three different grading options for the removal of contaminated soil from the TPA. Based on this evaluation, the Custodial Trust recommended the implementation of the option described herein (Custodial Trust, 2013) to USEPA on June 18, 2013. This option removes the largest quantity of contaminated soils, excavating the entire TPA down to the estimated post-PPC Temporary Bypass groundwater elevation of approximately 3,910 feet above mean sea level and removes up to 2 feet of contaminated sediment in Lower Lake. The excavation quantity was estimated to be approximately 238,000 cubic yards (yd^3). In addition, the evaluation recommended installing a low-permeability berm and riprap along the western and northern edges of the excavation areas (Figure 2-1). USEPA approved the Custodial Trust's recommendation by e-mail communication to the Custodial Trust on July 29, 2013, based on the understanding that additional information would be provided for USEPA, Beneficiary, and public review and approval as part of this IM Work Plan 2014.

TPA removal evaluations completed in mid-2013 also considered the installation of a low-permeability berm along the border between the former Smelter site and the TPA to provide additional protection. Future flood events have the potential to inundate the TPA, saturate shallow soil, and recharge groundwater in the South Plant area. Subsequent flood modeling completed for PPC Temporary Bypass permit applications indicates that implementation of the PPC Realignment project may lower floodwater elevations, thereby reducing the potential for flooding in the TPA and the need for the low-permeability berm. The environmental benefits of this berm will be reviewed during engineering design of the TPA removal.

2.1.3 Technical Evaluations

The final design of the TPA removal will be informed by the following additional technical studies, which will build on the results of the *Tito Park Grading Options Analysis* (CH2M HILL, 2013b):

- A dewatering analysis will be performed to evaluate the potential effect of groundwater on construction activities occurring in the TPA. This analysis will focus on the dewatering needs associated with TPA excavation as well as dewatering needs for the PPC Realignment project.
- A materials balance analysis will be completed to estimate the volume of soil to be excavated from the TPA in order to establish grading requirements for fill in the ICS 1, and ultimately to coordinate with construction grades needed for the final ET Cover System.
- Design engineering is scheduled for completion in late 2013. Final construction drawings, specifications, and bid documents will be completed in early 2014 and address the following technical items:
  - TPA excavation
  - Need for a low-permeability berm
  - Need for a run-on diversion berm

2.2 ET Cover System Interim Measure: Interim Cover System 1 Construction

2.2.1 ICS 1 Construction

Implementation of the ET Cover System IM will start in 2014 with construction of ICS 1. The ET Cover System is planned to be a component of the final remedy for the Facility, preventing human and ecological receptors from direct contact with contaminated soils and reducing the leaching of contaminants to groundwater by minimizing the infiltration of precipitation. The ICS will provide a cover to protectively manage soil and sediment excavated from the TPA and consolidated within the AOC, and will function as the ET Cover System foundation layer over a significant portion of the west side of the former Smelter site. See Section 5.2 for additional details on how the ICS relates to the ET Cover System; Figure 5-4 provides a preliminary conceptual cross-section of the ET Cover System and an expanded cross-section of ICS 1. Site preparation for ICS construction started with two phases of demolition at the former Smelter site (completed in 2013). Work to date has removed all buildings and infrastructure within the ICS 1 construction footprint with the exception of monitoring wells and miscellaneous structures used for stormwater management. The existing NWE substation and 69-kV transmission line, which are located on the eastern side of the former Smelter site within the ET Cover System footprint, may be removed in 2014 as part of this IM to prepare for ICS 2 construction in 2015.

2.2.1.1 Objectives

The objectives of ICS 1 are as follows:

- Protectively manage the soil and sediment removed from the TPA and consolidate within the AOC.
- Provide a prepared subgrade on which to build the future final ET Cover System for the former Smelter site.
- Prevent stormwater from coming into direct contact with TPA soil and sediment and enable runoff to be shed to perimeter drainages in accordance with the site stormwater pollution prevention plan (SWPPP). This will reduce the volume of contaminated stormwater that is being collected and treated by the onsite HDS WTP.
- Replace the deteriorating geosynthetic temporary covers placed by ASARCO and provide positive surface grades to minimize infiltration of precipitation and associated leaching of COPCs to groundwater
- Cost-effectively reuse materials from the TPA removal and the 2013 PPC Temporary Bypass excavation.

2.2.1.2 Description

ICS 1 will form the foundation layer, or subgrade, of the ET Cover System on the western portion of the former Smelter site. The ICS will cover the soil and sediment to be removed from the TPA and consolidated within the AOC, protectively managing them during the interim period between excavation and construction of the final layers of the ET Cover System. In addition, utilizing excavated materials from both the PPC Temporary Bypass and the TPA removal will help ensure cost-effective construction of the foundation layer.

ICS 1 will also allow "noncontact" stormwater runoff to be shed to offsite drainage structures. Noncontact stormwater runoff is defined as precipitation that falls on the former Smelter site without coming into contact with soil affected by former Smelter operations. In contrast, "contact" runoff is defined as any stormwater that comes into direct contact with soil affected by former Smelter operations. Stormwater coming off the ICS would therefore be of the same quality as stormwater runoff from native soil in the area, in accordance with the SWPPP. The specific materials to be used as the surface layer of the ICS will be identified as part of the ICS final design, and will be sampled to document that they are of appropriate quality to achieve relevant stormwater quality standards and serve as an interim surface for the cover system.

The proposed minimum and maximum areal extents of ICS 1 are shown in Figure 2-2. The actual coverage extent will be established during detailed design; however, ICS 1 is expected to include, at the minimum, the stormwater basins that drain to the Rodeo Tank containment facility and portions of the adjacent drainage basins.

2.2.1.3 Technical Evaluations

Technical evaluations completed for the final ET Cover System will provide background information needed in the ICS 1 design. Expected final grades for the ET Cover System will be documented in the *ET Cover System 30% Basis of Design Report*, targeted for completion by the end of December 2013.

Additional evaluations are being conducted as part of the CMS and also will build on the results of the ET Cover System preliminary engineering and modeling as well as the TPA engineering activities (e.g., the materials balance) discussed in Section 2.1 above. The following additional evaluations will be completed:

- ICS cover soil borrow source evaluation, to evaluate the physical and chemical properties of native soil from three possible sources for the ICS. The evaluation will include consideration of expected runoff quality from each source, constructability, and cost.
- ICS 1 cover soil design criteria, to define specific properties needed to minimize the potential for wind and stormwater erosion of the cover and direct contact with underlying soil.
- Construction sequencing, to define the logic and order for construction implementation such that materials excavated from the TPA are managed as protectively and efficiently as possible.
- Drainage options analysis, to develop design concepts for runoff management that can accommodate peak flows from the ET Cover System while minimizing runoff contribution from the former Smelter site to adjacent Custodial Trust properties.
- Water management concept plan, to define approaches for stormwater, remediation water, and leachate management during and following IM implementation.
- ICS detailed engineering, to prepare contract documents needed for construction of the ICS. The contract documents will include drawings, construction specifications, and bidding documents.

2.2.2 Substation Removal and 69-kilovolt Transmission Line Relocation

2.2.2.1 Objectives

The objective of this work is to remove utilities that interfere with the location of the ICS and ET Cover System on the former Smelter site. Removal of the existing substation and relocation of the 69-kV transmission line will be completed by NWE.

2.2.2.2 Description

The existing substation is located on the southeastern portion of the former Smelter site north of Lower Lake. The substation provides electrical service to onsite facilities as well as service to NWE customers located east of the former Smelter site. The 69-kV transmission line enters the former Smelter site from the east and crosses to the northwest (Figure 1-1), exiting near American Chemet. The transmission line is supported on wood power poles.

NWE is negotiating with the Custodial Trust to decommission and demolish the substation and to relocate the 69-kV transmission line. This work will remove the transmission line that interferes with the ET Cover System before the construction of the ICS 2 scheduled for 2015 and final ET Cover System currently scheduled for 2016.

Surface soil samples collected around the perimeter of the substation in April 2013 were analyzed for the presence of polychlorinated biphenyls (PCBs) (Hydrometrics, 2013a). PCBs were detected at varying concentrations ranging from 0.019 milligram per kilogram (mg/kg) to 0.11 mg/kg. PCBs detected were Aroclor 1016, 1221, 1232, 1248, 1262, and 1268. While all concentrations are below USEPA's 1 mg/kg cleanup level promulgated under the Toxic Substances Control Act for high-occupancy areas, the presence of PCBs in soil suggests that additional investigation within the substation will be needed to characterize soil for disposal during substation demolition.

2.2.2.3 Technical Evaluations

Preliminary engineering evaluations for substation demolition and 69-kV transmission line relocation will be completed concurrent with detailed design and construction. Engineering evaluations will address:

- Removal and cleanup of the substation. This work will be completed by NWE in coordination with other work needed to deenergize the substation.
- Transmission line relocation evaluation to review and assess options for relocation of the transmission line. The preferred option will be selected jointly by NWE and the Custodial Trust.

2.2.3 Monitoring Well Decommissioning

2.2.3.1 Objectives

The objective of this work is to decommission existing wells that are located within the TPA and determine which wells located within the footprint of the ICS 1 are clearly no longer needed to effectively monitor groundwater quality within the ICS 1 area. Wells not needed for future monitoring efforts will be decommissioned and all others will be extended to be functional with the new grades of the ICS 1. Further evaluation and determination of the scope of long-term performance monitoring of IMs and final remedies is being done as part of the CMS.

The Custodial Trust is drafting goals for near-term IM performance monitoring, as well as long-term monitoring of final remedies, and evaluating the monitoring well network needed to provide the necessary data. This information, along with recommendations to achieve the performance monitoring goals, will be provided to USEPA for review and approval. This effort is one component of the overall goals and objectives of the groundwater program at the Facility.

2.2.3.2 Description

A large number of monitoring wells have been installed over a 30-year period at the former Smelter site for groundwater investigations and monitoring, and for delineation of the nature and extent of groundwater contamination. A number of these wells have not been sampled in years or are no longer needed to provide an effective monitoring network. The wells located in the footprint of the ICS and the ET Cover System will be evaluated for either decommissioning or retrofitting to meet new surface grades. Monitoring wells not required for current and future groundwater monitoring or located in the TPA construction zone will be decommissioned and abandoned. Wells in the ICS/ET Cover System footprint needed for future monitoring will be protected during construction (with elevated well casings to allow access for sampling after ICS construction).

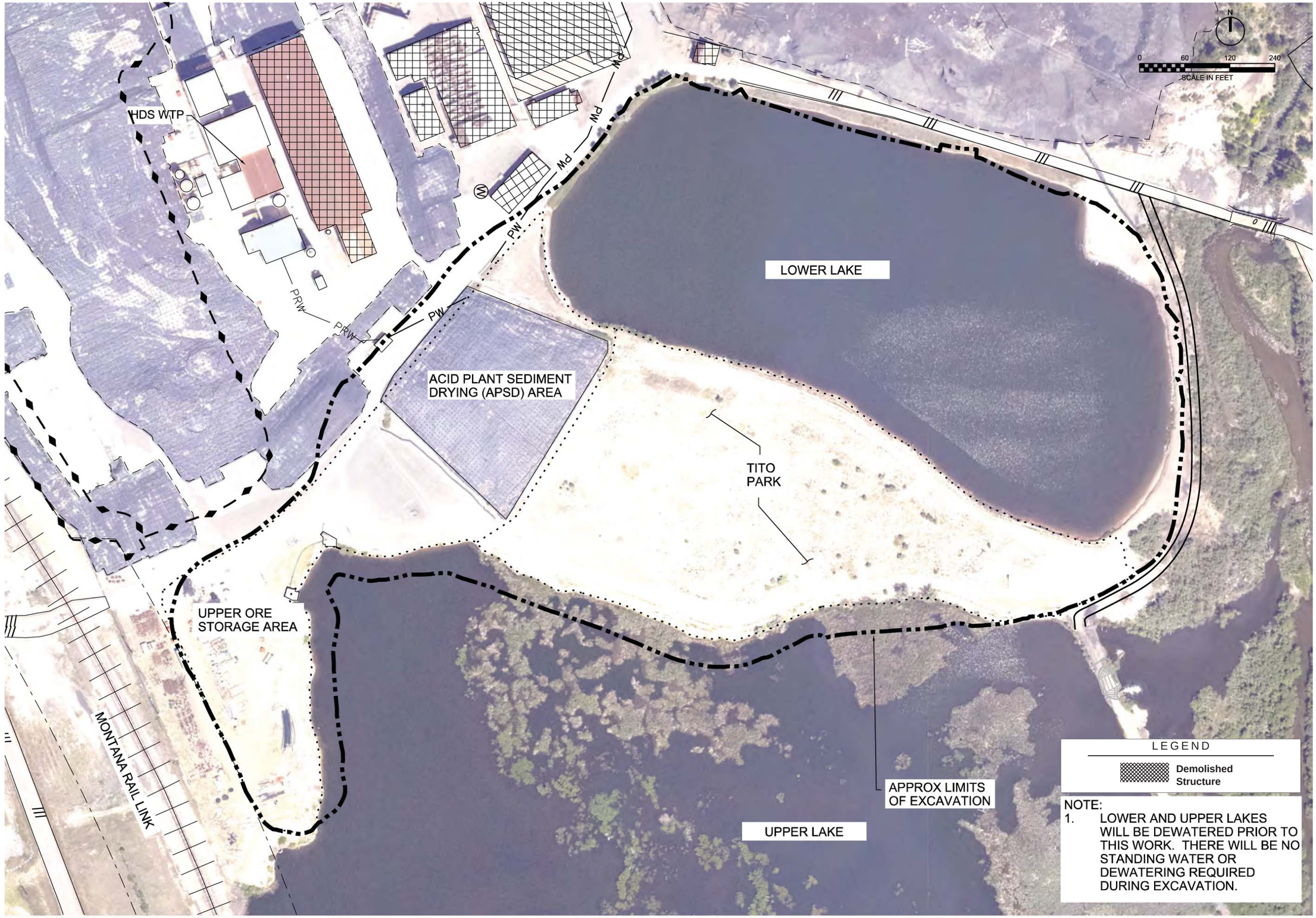
2.2.3.3 Technical Evaluations

A number of technical evaluations will be completed before selecting monitoring wells to be decommissioned. The purpose of the evaluations will be to guide the development of the decommissioning plan and provide recommendations for new monitoring wells to be installed. The following evaluations will be completed:

- Review of historical and current groundwater monitoring data with a focus on groundwater conditions beneath the extent of the ICS 1.
- Remedy performance standards, to be presented in the draft CMS Work Plan, which is scheduled for USEPA review in December 2013. Monitoring goals and objectives will be identified as part of the CMS, to establish criteria for monitoring the expected performance of the IMs implemented at the Facility. As part of this evaluation, a conceptual groundwater monitoring approach will be developed and reviewed with USEPA.

- Monitoring well decommissioning plan, to identify and select proposed monitoring wells for decommissioning. The plan will describe the means and methods for monitoring well decommissioning and the proposed implementation schedule. The plan will also identify existing monitoring wells located within the ICS construction boundary that are proposed for protection and extension through the cover. A detailed design will be developed to meet Montana State requirements for monitoring well extensions. The decommissioning plan specifics will be included in the annual groundwater monitoring report (referred to as the Field Sampling and Analysis Plan [FSAP] report). Following standard practice, required notifications will be made for any wells that are actually decommissioned.
- Monitoring well construction plan, to identify potential locations and proposed construction details for new monitoring wells that will be installed.

Technical evaluations will be limited to the decommissioning or preservation of monitoring wells in the ICS 1 area. The overall plan and strategy for monitoring the performance of the IMs and their effect on groundwater quality contamination is under development and not intended to be addressed in this IM Work Plan 2014.



PRELIMINARY NOT FOR CONSTRUCTION

NO.	DATE	DSGN	DR	CHK	APVD
0		N. BETTS	R. VILORIA	S. DETHLOFF	J. DEHNER
					APVD
					BY
					NB
					JD

90% INTERNAL REVIEW SUBMITTAL
REVISION

METG
Montana Environmental Trust Group

CH2MHILL
POWER BLOCK BUILDING
7 WEST 6TH AVE. # 519
HELENA, MT 59601-5036
PHONE: (406) 457-5494

FIGURE 2-1
Tito Park Area Removal
Interim Measures Work Plan–2014
East Helena, Montana

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2013
PROJ	467300
DWG	G-3
SHEET	3 OF 27

PRELIMINARY - NOT FOR CONSTRUCTION

ES081313034307PDX 467300.35.01.02 Rv2 12-09-13 lh

FIGURE 2-2
Interim Cover System Conceptual Layout
Interim Measures Work Plan–2014
East Helena, Montana

CH2MHILL

METG
Montana Environmental Trust Group

Jay Dehner | JD | PJK | PK

1"=100'

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

01-05-12
420947
FIGURE 3

Preliminary Concept

FILENAME: SOILREMOVAL FIGURE 3.DWG PLOT DATE: 25-Jul-13 PLOT TIME: 3:44 PM

SECTION 3

Updated Conceptual Site Model

This section provides updates to the former Smelter site CSMs presented in earlier documents (e.g., the IM Work Plan 2012 [CH2M HILL, 2012], the IM Work Plan 2013 [CH2M HILL, 2013a] and the draft Phase II RFI [GSI Water Solutions, Inc., 2011]). CSMs for the former Smelter site and Corrective Measures Study properties are evolving models, and as such will continue to be updated as new information from field activities, ongoing evaluations, and IM construction projects becomes available. This section is not intended to repeat earlier published materials; the IM Work Plan 2013 provides detailed descriptions of the following:

- Section 3.1 – general background information for the former Smelter site, such as location and setting, geology, and hydrogeology
- Section 3.2 – overall CSM for the former Smelter site (relevant to all work activities described in this IM Work Plan 2014)
- Section 3.3 – CSM for the Lower Ore Storage Area (LOSA) and adjacent features (relevant to work activities associated with the Interim Cover [Sections 2.2.1 and 5.2])
- Section 3.4 – CSM for the East Bench (relevant to work activities associated with the relocation of NWE's 69-kV transmission line [Sections 2.2.2 and 5.2])

The following sections focus on areas of the former Smelter site most relevant to the proposed 2014 work. The majority of the information presented below is based on site investigations conducted since 1987, including the following:

- Remedial Investigation of soil conducted in 1987 (CH2M HILL, 1987)
- Remedial Investigation/Feasibility Study conducted in 1990 (Hydrometrics, 1990)
- Current Conditions/Release Assessment conducted in 1998 (Hydrometrics, 1999)
- Investigative sampling conducted in 1999 to evaluate potential IMs and formally documented in the draft Phase II RFI (GSI Water Solutions, Inc., 2011)
- Phase I RFI in 2001 (Asarco Consulting, Inc., 2005)
- Phase II RFI in 2010 (GSI Water Solutions, Inc., 2011)
- Baseline Ecological Risk Assessment (BERA) (Gradient, 2010)

Investigation of Lower Lake sediment was also conducted in conjunction with planning and implementation of dredging activities from 1994 to 1996.

3.1 Updated Conceptual Site Model for Former Smelter Site

This section updates the CSM of the former Smelter site presented in the IM Work Plan 2013 with the results of evaluations of soil contamination performed in 2013 using a three-dimensional model to help visualize subsurface soil conditions. This section also presents updated (June 2013) groundwater plume maps. Figure 3-1 presents a graphical representation of the CSM of the former Smelter site.

The conservative screening-level values (SLVs) used in the draft Phase II RFI have been used as the reference for the preliminary evaluations soil and groundwater quality. With the exception of the USEPA maximum contaminant levels (MCLs) for those contaminants for which there are no DEQ-7 standards, the SLVs used in the Phase II RFI and herein do not reflect media cleanup standards for groundwater.

3.1.1 Soil Contamination

Surface and subsurface soil contamination is significant and widespread throughout the former Smelter site at concentrations that are orders of magnitude higher than levels considered protective of human and ecological receptors. Although some interim measures were implemented by ASARCO (buildings have been demolished, slurry walls were installed to isolate areas of deeper soil contamination, shallow contaminated soil has been excavated, and some areas of residual contamination were covered with temporary geosynthetic liners), exposed surface soil continues to present unacceptable risk for direct contact with human and ecological receptors and stormwater. Leaching of metals from surface and subsurface soil continues to pose a threat to groundwater quality within the former Smelter site.

To better understand the potential distribution and estimated mass of inorganic contaminants in soil, the former Smelter site was modeled three-dimensionally using Mining Visualization System (MVS) software. Soil contaminant distributions were generated using existing soil data. Kriging, an industry-standard geostatistical technique, was used for data interpolation between measured/analyzed soil data points. The top of the modeled domain corresponds to ground surface or top of the slag pile. The bottom of the modeled domain corresponds to the top of the Tertiary ash/clay layer. The fine-grained Tertiary ash/clay layer is generally considered to be the limit of the shallow alluvial groundwater system beneath the former Smelter site. Depending on location, the layer is present at approximately 3,850 to 3,900 feet above mean sea level (AMSL). The MVS model can generate different graphical illustrations of mass distributions depending on informational needs.

Graphical illustrations of arsenic and selenium in surface and near-surface soil, down to a depth of 8 feet, are provided in Figures 3-2 and 3-3. These illustrations were used to support soil removal evaluations that considered shallow excavation and consolidation of contaminated soil into a smaller area in order to reduce the size and cost of the ET Cover System. Graphical illustrations of mass distributions of arsenic and selenium in soil from ground surface/top of the slag pile down to the Tertiary ash/clay layer along select cross-sectional lines through the former Smelter site are provided in Figures 3-4 and 3-5. These illustrations were used to support soil removal evaluations of contaminated soil in contact with groundwater. Based on December 2013 data, the groundwater elevations in the TPA (southern portion of the former Smelter site) were measured at approximately 3,913 to 3,914 feet AMSL or 12 to 13 feet below ground surface (bgs). In contrast, the groundwater elevations along the northern portion of the former Smelter site were measured at an average of approximately 3,870 feet AMSL or 30 feet bgs or deeper.

For the purpose of corrective and interim measures evaluations, the nature and extent of arsenic and selenium are considered to be representative of the nature and extent of all inorganic contaminants for the East Helena Facility. Existing investigations have shown other inorganic contaminants are generally co-located with arsenic and selenium. It should be noted that there is greater certainty in the estimates and information presented for arsenic than selenium because more arsenic than selenium data are available from soil sampling. The results indicate the areas of residual contamination in the vadose zone correspond generally to the location of former smelter operations that have been identified as likely source areas. While the majority of soil contamination resides in shallow soil, significant soil contamination is present in deeper soil above groundwater, and to a lesser extent in contact with groundwater.

As illustrated in Figures 3-2 and 3-3:

- Contaminants are present at concentrations exceeding risk-based screening levels across the former Smelter site.
- The highest concentrations of both arsenic and selenium in soil are found in the central and southern portions of the former Smelter site, in areas associated with historical operations known to have released contaminants to the environment.
- Contaminant concentrations generally decrease with depth below ground surface, particularly in the northwesterly portion of the former Smelter site. Contaminant concentrations at depth are highest in the areas associated with the former process water circuit (former Acid Plant, APSD Area, and Speiss Dross area, which are labeled in the figures as numbers 3-2, 3-3, and 3-5, respectively).

In order to estimate the potential for contaminants to leach from soil to groundwater, leaching tests using two methods: Synthetic Precipitation Leaching Procedure (SPLP) and Sequential Batch Leach, were performed as part of the Phase II RFI (see Appendix A for a copy of the test results presented in the draft Phase II RFI). The leaching test results were compared against arsenic and selenium MCLs, which are the same as the DEQ-7 numeric water quality standards for arsenic and selenium in groundwater (MDEQ, 2012). The SPLP test results indicate great variability in soil samples collected from different areas of the former Smelter site. Fourteen of the twenty soil samples tested leached arsenic at concentrations exceeding the MCL of 0.01 milligram per liter (mg/L). The highest leachable concentrations of arsenic were found in soil samples collected from the former Acid Plant and TPA. In contrast, eleven of the twenty soil samples tested leached selenium at concentrations exceeding the MCL of 0.05 mg/L. The highest leachable concentrations of selenium were found in soil samples collected from the main plant site, along the rail corridors and the former Acid Plant.

3.1.2 Groundwater Contamination

As previously described, arsenic and selenium are the primary COPCs in groundwater. Data also show that the other site-related contaminants (aluminum, antimony, cadmium, lead, manganese, mercury, thallium, vanadium, and zinc) are generally found within the areal extent of the arsenic and selenium plumes. Figures 3-6 and 3-7 show the groundwater concentrations of arsenic and selenium for June 2013. The lateral extent of the arsenic plume continues to be relatively stable or in a state of equilibrium over the past 10 years or more. The areal extent of the selenium plume continues to be evaluated because the period of record for data collection is too short to quantify long-term trends and the current status (for example, stable, advancing, or regressing) of the selenium plume.

3.2 Conceptual Site Model for Tito Park Area

This section presents the CSM for the TPA (Tito Park, the UOSA, the APSD Area, and Lower Lake [Figure 3-8]). Tito Park, the UOSA, and the APSD Area are grouped together because of their proximity, and common operational histories, releases, and historical remedial measures. Tito Park is a human-made area of approximately 4.5 acres and consists of primarily barren soil with sparse vegetative cover (grasses) in some areas. The UOSA, located adjacent to and southwest of Tito Park, is approximately 3 acres and primarily was used for equipment staging and storage, as needed. The APSD Area is located on the northern portion of the UOSA. Lower Lake is a human-made pond, formerly used for process water, located adjacent to and north of Tito Park.

3.2.1 Background and Historical Sources of Contamination

3.2.1.1 Tito Park, Upper Ore Storage Area, and Acid Plant Sediment Drying Area

Tito Park historically was used to stockpile soil and construction debris from the former Smelter site operations. Aerial photographs also indicate that ASARCO handled and stored drums for an unknown period of time on the eastern end of Tito Park. Similarly, until the late 1980s, the UOSA was used to store various materials including ore, smelting byproducts, soil stockpiles, and sludge from the Acid Plant Water Treatment Facility (stored in the APSD Area from 1977 to 1991). As part of the Lower Lake remediation project, which was conducted under CERCLA, the concrete pad at the APSD was sealed in preparation for its use as a staging area for Lower Lake sediment handling and treatment equipment. Dredged sediment from Lower Lake was handled in this area from 1994 to 1996, and ultimately transported to the LOSA (see Lower Lake discussion below).

Releases of arsenic and other metals to surface soil, subsurface soil, and groundwater occurred through leaching of metals from ore, concentrates, former Acid Plant process sludge, and other high-concentration materials such as excavated soil and construction debris stockpiled in these areas. Based on results of the 1998 process-water quality evaluation, which showed significantly elevated concentrations of inorganics in the water, the sludge placed in the APSD Area also likely contained elevated levels of arsenic, iron, lead, and sulfate.

With construction of the Ore Storage Building (also referred to as the Concentrate Storage and Handling Building) located near the LOSA in 1989-1990, ore and other process materials were no longer stored and handled at the UOSA and APSD Area. As a result, around 1991, direct loading to soil and groundwater from operational activities was eliminated as a contaminant release pathway in the UOSA and associated APSD Area.

In 2001, as part of remediation work ASARCO conducted under RCRA, all stockpiled soil was removed from Tito Park and placed in the Phase I CAMU 1 cell located offsite to the west of the former Smelter site. Tito Park was then covered with a soil cap. In 2006, the APSD Area was enclosed within a slurry wall and covered by a reinforced polyethylene cap to isolate the remaining metals-affected sludge and soil.

3.2.1.2 Lower Lake

Anecdotal information indicates that Lower Lake was first used as a plant water source beginning in 1927 for cooling water to support the zinc fuming operation. Beginning in 1975, Lower Lake was used to settle solids from the plant process water circuit. Essentially all process water for the plant was drawn from Lower Lake, which functioned as the main holding pond. Process water was used for washdown, moisturizing, and cooling, and eventually was pumped back to Lower Lake.

Releases of arsenic and other metals from Lower Lake to groundwater, soil, and PPC have been identified through multiple site investigations. Seepage of contaminated water through the lakebed and settling of process water solids contributed inorganic contaminants to Lower Lake sediment, the soil beneath the lake, groundwater, and the nearby reach of PPC. Completion of a new acid reclaim facility in 1992 resulted in additional process water being discharged to Lower Lake, and therefore additional contaminant loading to sediment. These releases continued until the startup of the HDS WTP in January 1994. As a result, increases in arsenic concentrations in Lower Lake were noted from 1992 to 1993, followed by a decreasing trend as noted in the lower values reported in 1998.

Changes to the main plant process water circuit began in 1990 with the construction of two 1-million-gallon storage tanks designed to replace Lower Lake. After construction of the storage tanks and the HDS WTP in late 1993, Lower Lake was no longer used to receive process water, although the lake remained a source of makeup water to the plant water system until the Smelter shut down in 2001.

Beginning in 1994 and ending in 1996, settled process sludge and the top 6 inches of the native marsh deposits (collectively referred to as Lower Lake sediment) were dredged from the lake as part of the Operable Unit-1 Record of Decision (USEPA, 1989) for the former Smelter site. The dredged sediment was mechanically dewatered, and the filter cake from the dewatering operation was transported to an interim covered stockpile in the LOSA. A total of approximately 31,000 yd^3 of dewatered Lower Lake sediment was transported to the LOSA, and ultimately disposed of in CAMU 1.

3.2.2 Soil and Sediment Contamination

Data collected in 2010 for and presented in the draft Phase II RFI confirmed that concentrations of metals are still present at concentrations exceeding the risk-based screening values identified in the draft Phase II RFI in surface and near-surface soil in the TPA. The ground surface elevation in the TPA ranges from 3,921 to 3,930 feet above mean sea level, with an approximate average of 3,925 feet above mean sea level. The highest concentrations of metals were generally detected within the upper 5 feet of soil (historical vadose zone), although soil concentrations collected in Tito Park in 2001 and 2010 indicate that concentrations increase from 5 to 10 feet bgs and subsequently decrease from 10 to 15 feet bgs. All samples collected indicate that the lowest soil concentrations are below 15 feet bgs (below approximately 3,910 feet above mean sea level), where the water table is anticipated once the SPHC IM is fully implemented. Although metal (arsenic) concentrations below 15 feet are generally consistent with what is found in naturally occurring native soil in the Helena Valley, the concentrations are still higher than the SLVs protective of groundwater (USEPA SSLs developed to protect groundwater quality from contaminants leaching from soil to groundwater at levels exceeding MCLs).

As shown in Figures 3-2 to 3-5, the soil concentrations detected in the TPA are comparable to other areas of the former Smelter site, such as the former Acid Plant, Speiss Dross area, and the rail corridors near the LOSA. Some of the highest subsurface soil concentrations are noted in the UOSA and APSD Area. The TPA received the majority of the stockpiled materials and the APSD Area received wastes from the former Acid Plant, which contained high levels of metals. Leaching test results of samples collected from the TPA showed levels of leachable arsenic similar to samples collected from the former Acid Plant. Leachable selenium concentrations were similar to those along the rail corridors and at the former Acid Plant.

As part of the BERA, Lower Lake bottom surface (0- to 0.5-foot) sediment samples were collected in 2010. These samples are considered generally representative of current conditions. Concentrations of arsenic, selenium, and several other metals exceeded their risk-based screening levels.

3.2.3 Groundwater Contamination

Over time, metals contamination in soil has leached to groundwater via infiltration of process water and stormwater percolating through contaminated soil. Some metals in soil at or near the pre-SPHC IM water table (around 5 feet bgs) have been leached from the fluctuation of the groundwater table across the affected soil. The affected groundwater then flows northerly under the former Smelter site and further affects groundwater downgradient. However, contaminant concentrations in groundwater from the South Plant area are low compared to other areas, such as the former Acid Plant and LOSA.

Selenium is generally the most mobile of the metals detected at the former Smelter site; however, it is not detected in groundwater beneath the TPA. The original releases of selenium are believed to have occurred downgradient of the TPA. Accordingly, with a few exceptions, only arsenic exceeds the DEQ-7/MCL in wells in the TPA and concentration trends are generally stable. Some of the highest arsenic concentrations are detected within the APSD Area where high concentration sludges from the former Acid Plant were stored.

3.2.4 Conceptual Understanding of Contamination and Contaminant Transport

The CSM for the TPA can be subdivided into land use areas (Tito Park, UOSA and APSD Area, and Lower Lake). The following summarizes the activities and subsequent effects to soil from the land use areas:

- Various process and waste materials were stored in the land use areas, such as ore, smelting byproducts, soil stockpiles, construction debris, and sludges.
- The stored materials affected surface soil through direct contact. The primary contaminants are arsenic, cadmium, and lead. These metals have been detected in soil throughout the area at elevated concentrations, especially within the upper 5 feet of soil. The surface soil concentrations exceed SLVs related to human and ecological health and protection of groundwater. The greatest effects on surficial media are noted in the western portion of the UOSA.
- Through vertical infiltration of water, the subsurface was also affected by the handling and storage of these materials, although to a lesser extent than the surface soil; the concentrations of metals in soil generally decrease with depth. Below 15 feet bgs, concentrations are several orders of magnitude less than surface soil concentrations; however, concentrations exceeding SLVs protective of groundwater for all three metals have been detected below 15 feet bgs.
- Sediment and surface water primarily were affected by the historical use of Lower Lake. During its use for settling of solids, materials with elevated metal concentrations affected lake floor sediment and to some extent surface water. However, the primary effects on surface water are noted before 1993 when process water was circulated through the plant before being returned to Lower Lake.
- Groundwater was contaminated by releases from all of the historical material handling and storage areas and process water activities. As a result of leaching and subsequent infiltration through soil and lake sediment, metals migrated to groundwater. Arsenic is the primary metal that exceeds the DEQ-7/MCL in area groundwater. Cadmium and lead, while detected in soil, have had minimal effect on groundwater in the area. Although leaching test results varied, several samples indicated that arsenic and selenium are leachable from materials stored in the land use areas and from Lower Lake sediment that has since been dredged and removed from Lower Lake.

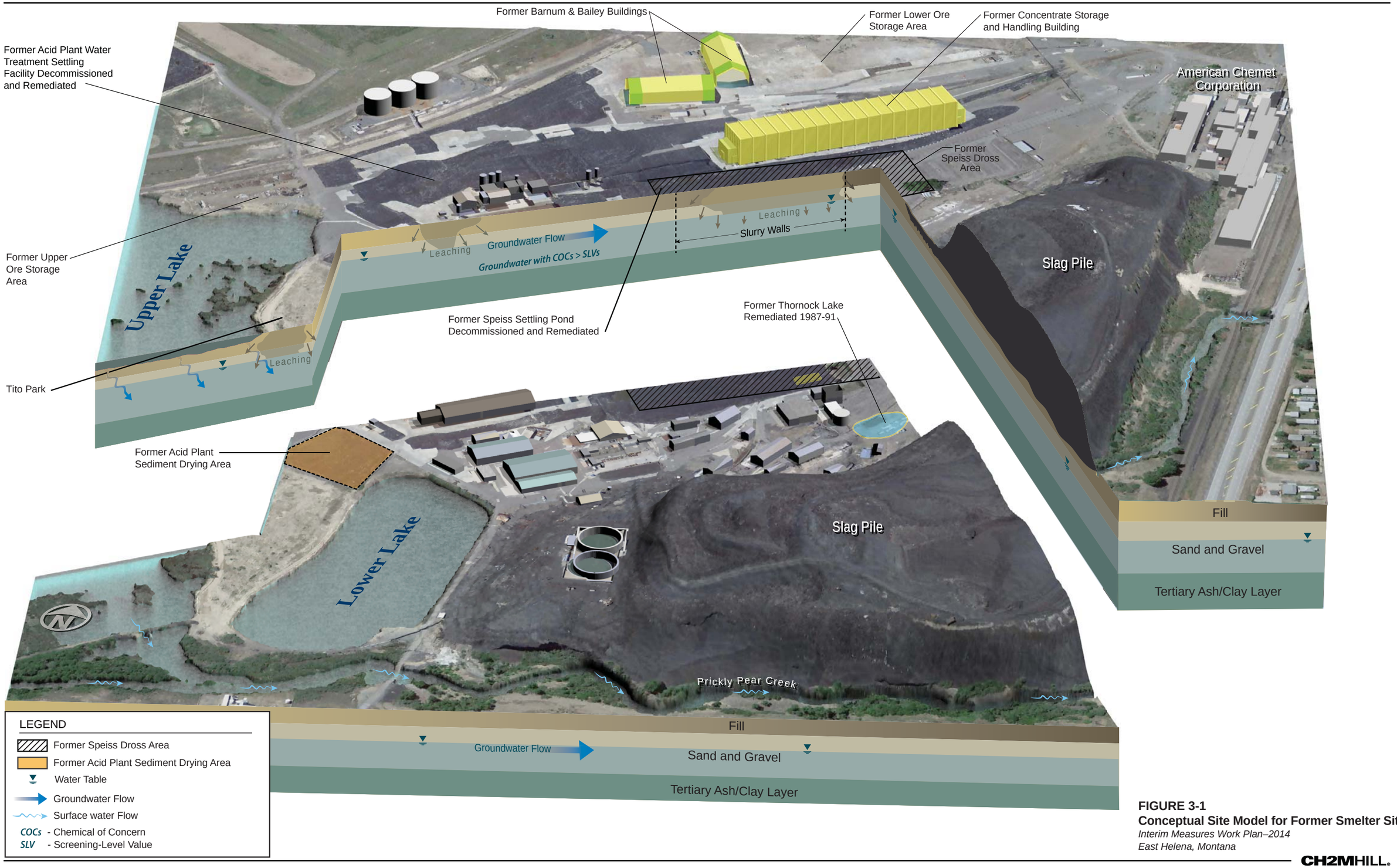
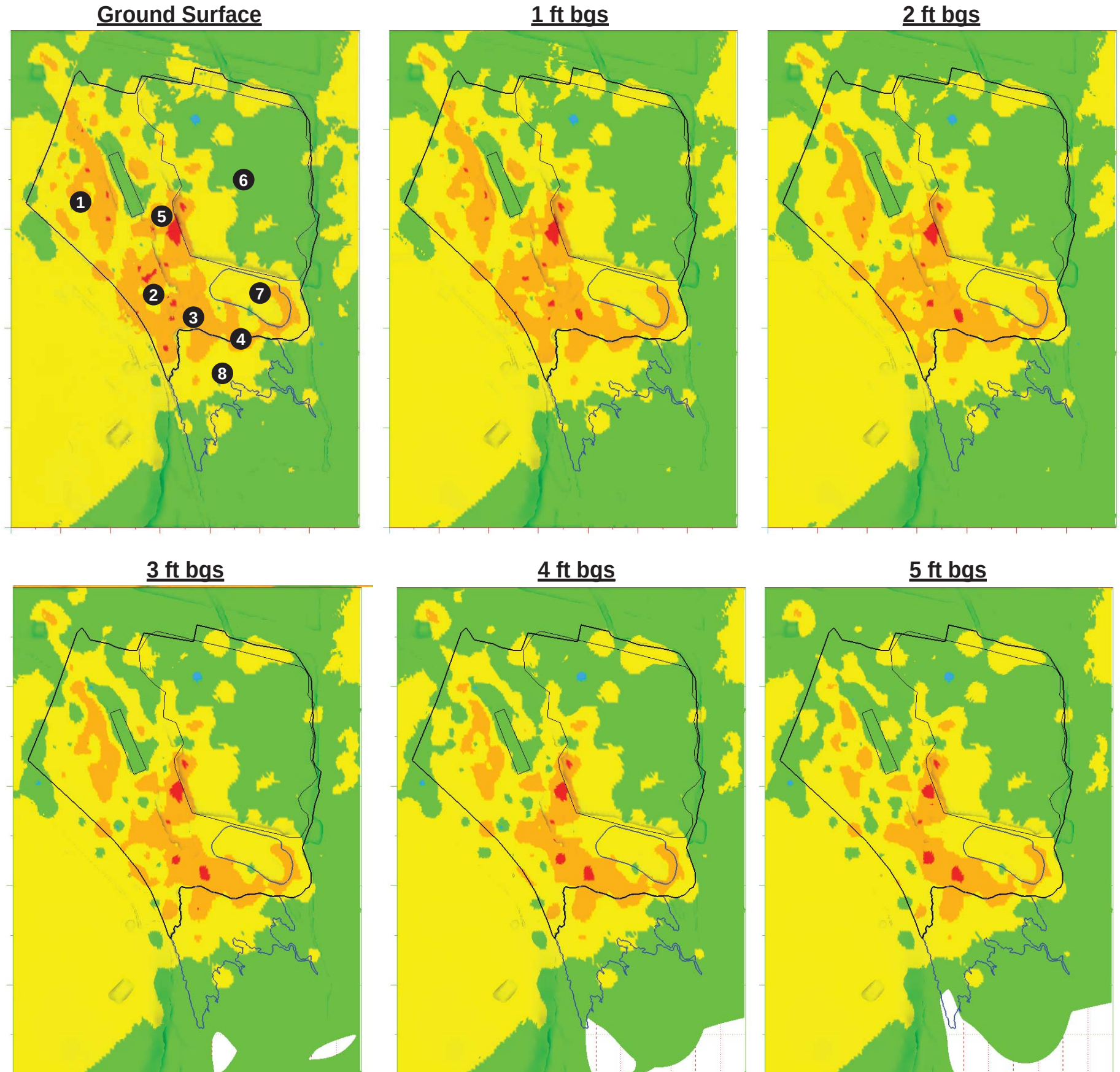


FIGURE 3-1
Conceptual Site Model for Former Smelter Site
Interim Measures Work Plan–2014
East Helena, Montana

CH2MHILL



LEGEND

Arsenic Concentrations

- Dark Blue: <0.29 mg/kg
- Light Blue: 0.29 - 2.9 mg/kg
- Green: 2.9 - 40 mg/kg
- Yellow: 40 - 290 mg/kg
- Orange: 290 - 2,900 mg/kg
- Red: >2,900 mg/kg

SLV for arsenic = 0.29 mg/kg

Abbreviations:
bgs = below ground surface
ft = foot/feet
mg/kg = milligram per kilogram
SLV = screening-level value

KEY:

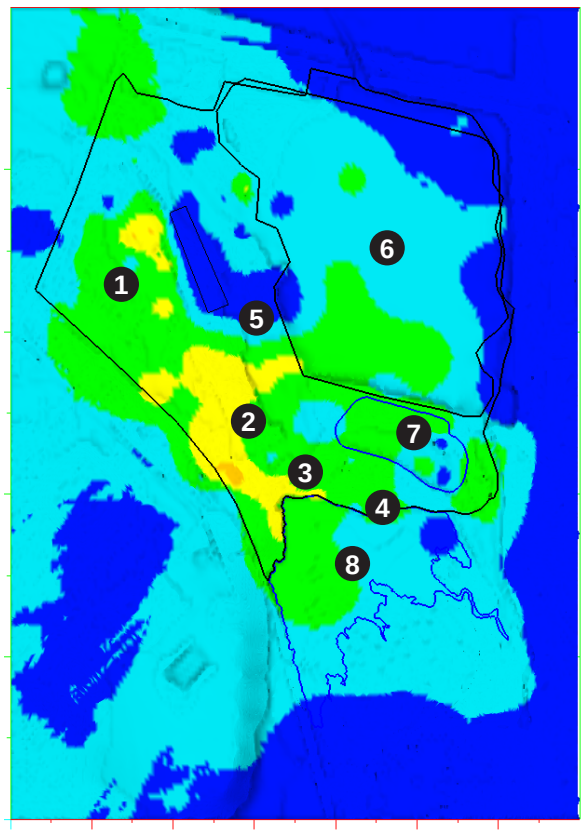
1. Former Lower Ore Storage Area
2. Former Acid Plant
3. Acid Plant Sediment Drying Area
4. Tito Park
5. Speiss Dross Area
6. Slag Pile
7. Lower Lake
8. Upper Lake

FIGURE 3-2
Arsenic Contamination,
Ground Surface to Depth of 8 Feet
Interim Measures Work Plan–2014
East Helena, Montana

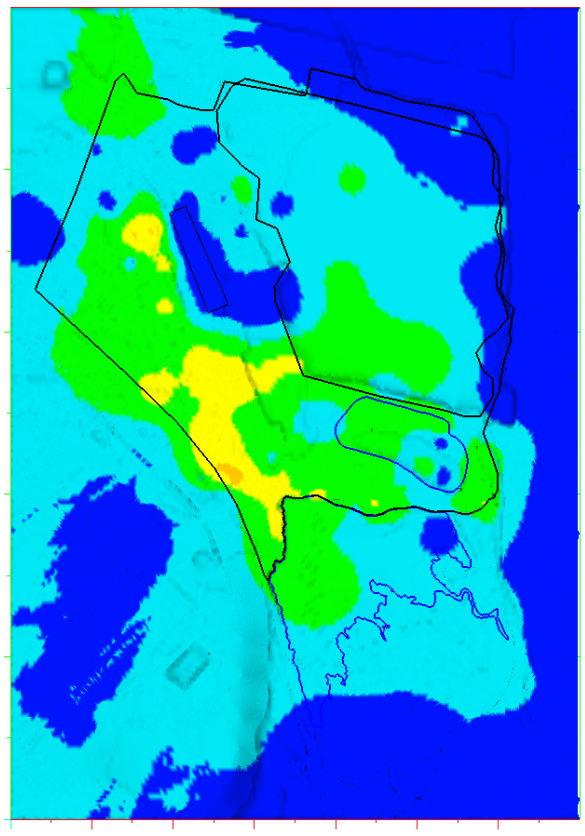
CH2MHILL

Note: White area of 3-ft bgs to 8-ft bgs figures corresponds to the Tertiary ash/clay layer.

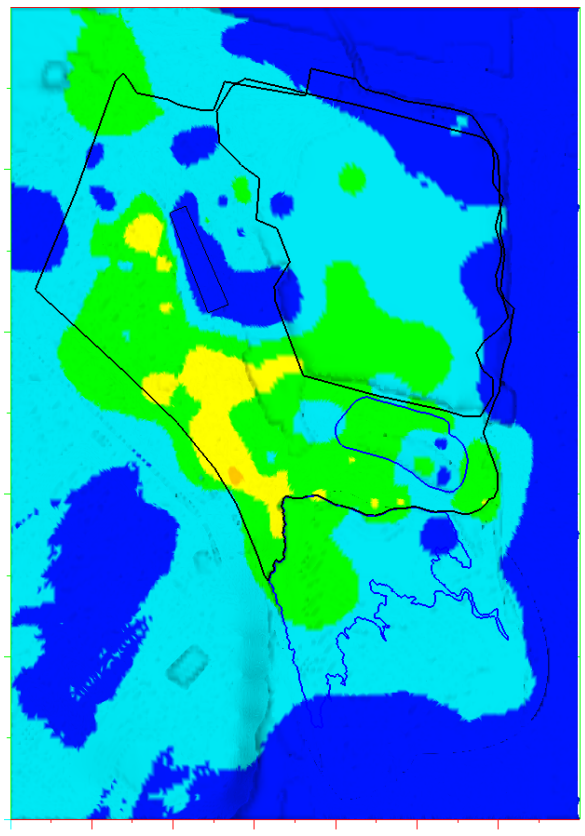
Ground Surface



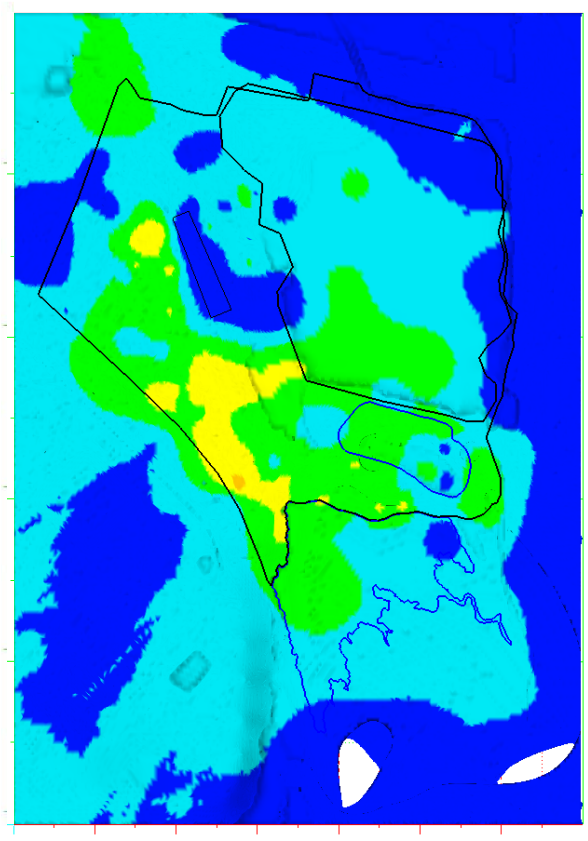
1 ft bgs



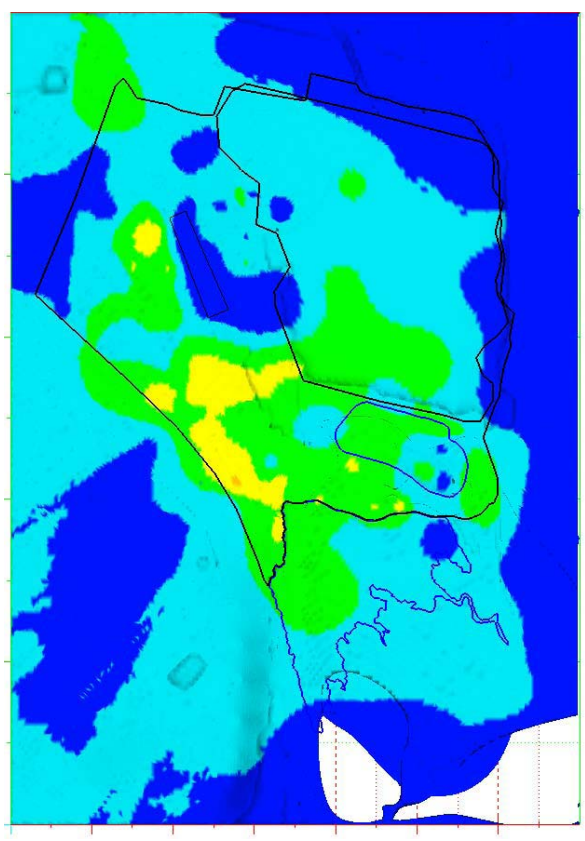
2 ft bgs



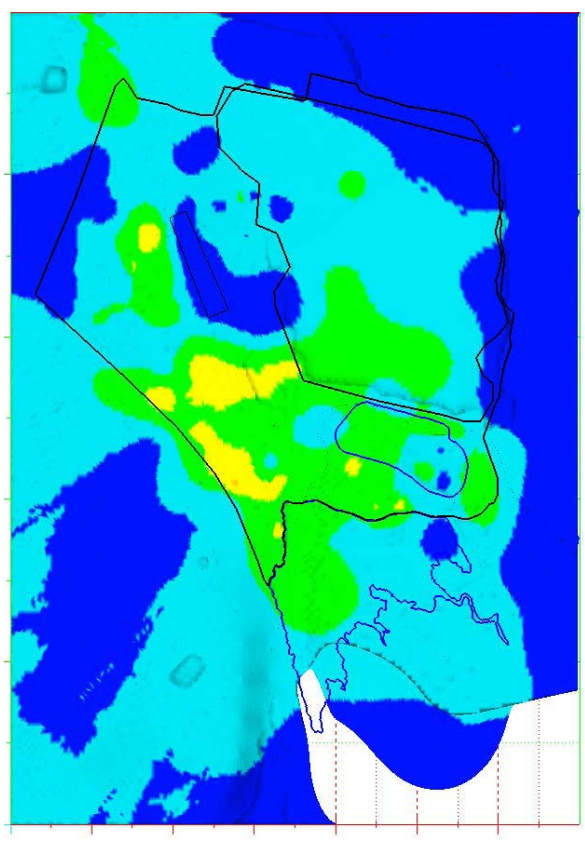
3 ft bgs



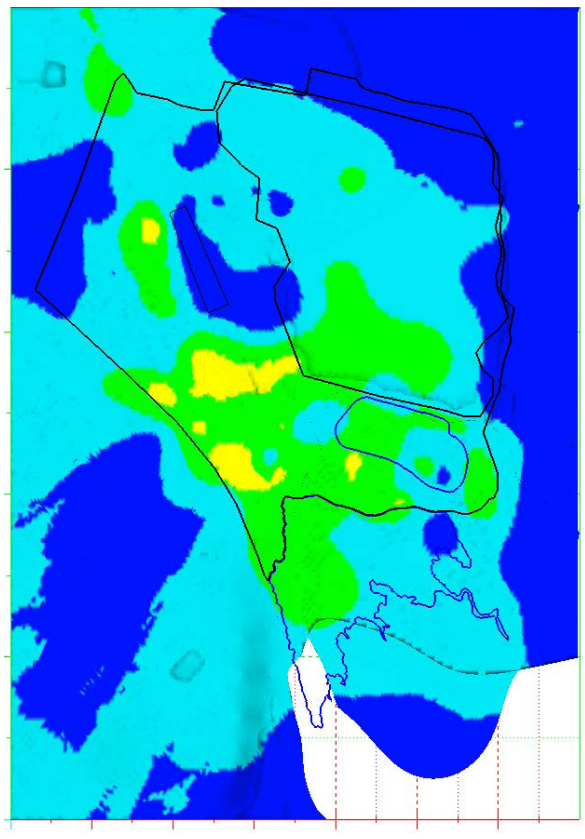
4 ft bgs



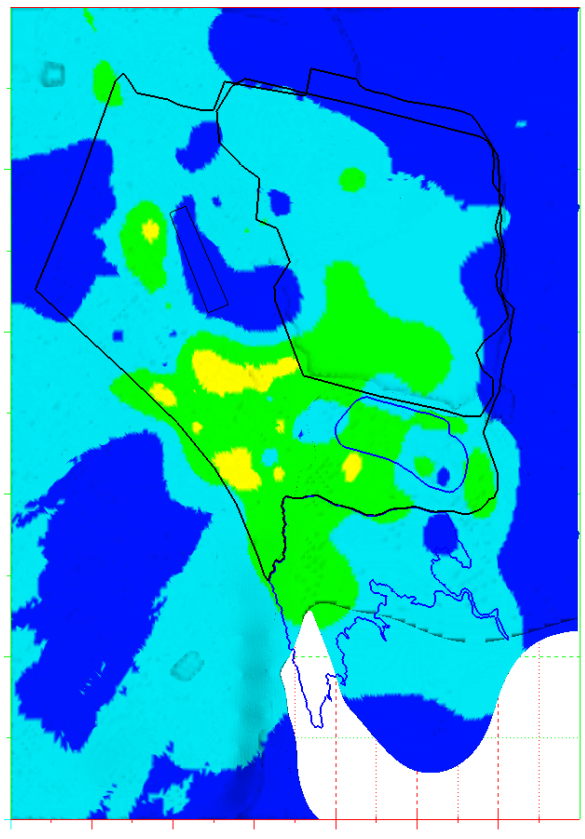
5 ft bgs



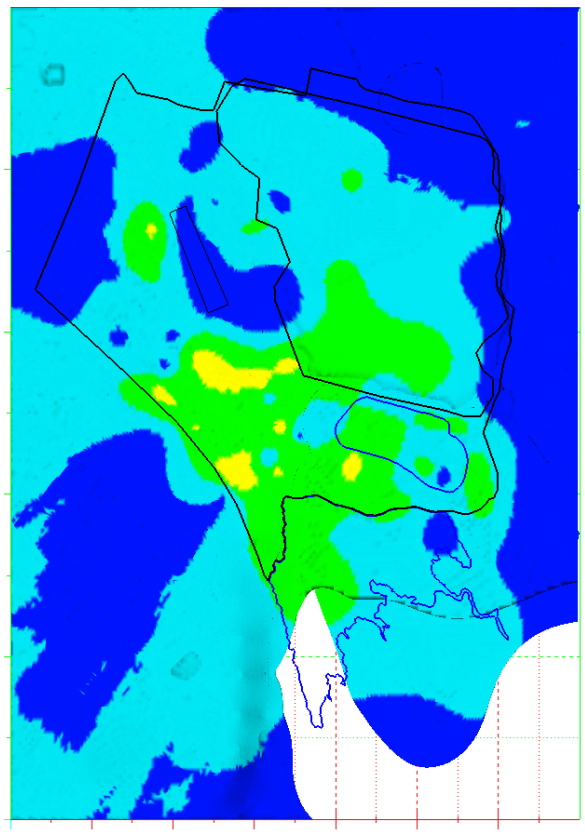
6 ft bgs



7 ft bgs



8 ft bgs



LEGEND

Selenium Concentrations

- Dark Blue: <0.26 mg/kg
- Light Blue: 0.26 - 2.6 mg/kg
- Green: 2.6 - 26 mg/kg
- Yellow: 26 - 260 mg/kg
- Orange: 260 - 2,600 mg/kg

SLV for selenium = 0.26 mg/kg

Abbreviations:
bgs = below ground surface
ft = foot/feet
mg/kg = milligram per kilogram
SLV = screening-level value

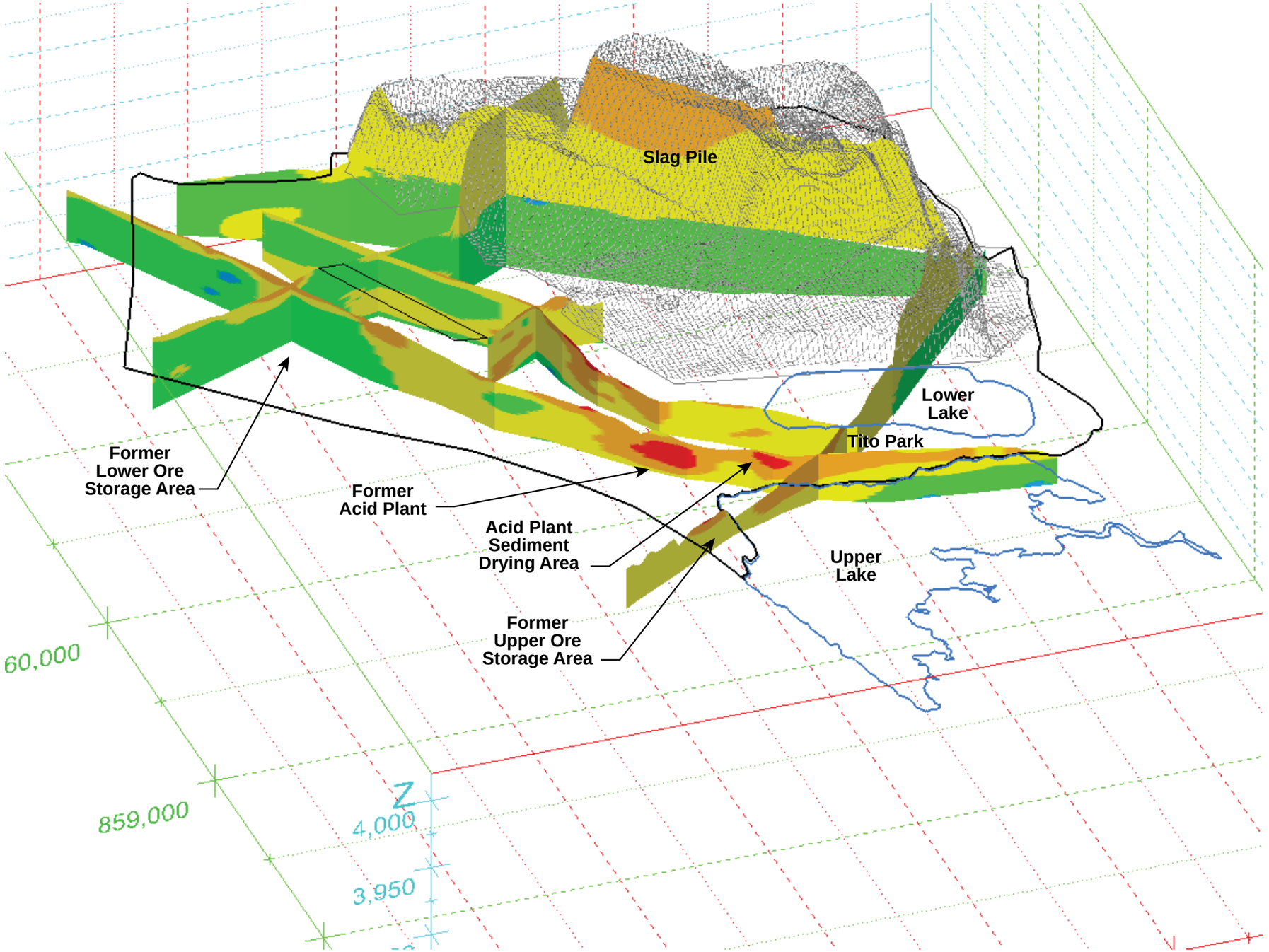
KEY:

1. Former Lower Ore Storage Area
2. Former Acid Plant
3. Acid Plant Sediment Drying Area
4. Tito Park
5. Speiss Dross Area
6. Slag Pile
7. Lower Lake
8. Upper Lake

FIGURE 3-3
Selenium Contamination
Ground Surface to Depth of 8 Feet
Interim Measures Work Plan - 2014
East Helena, Montana

CH2MHILL

Note: White area of 3-ft bgs to 8-ft bgs figures corresponds to the Tertiary ash/clay layer.



LEGEND

Arsenic Concentrations

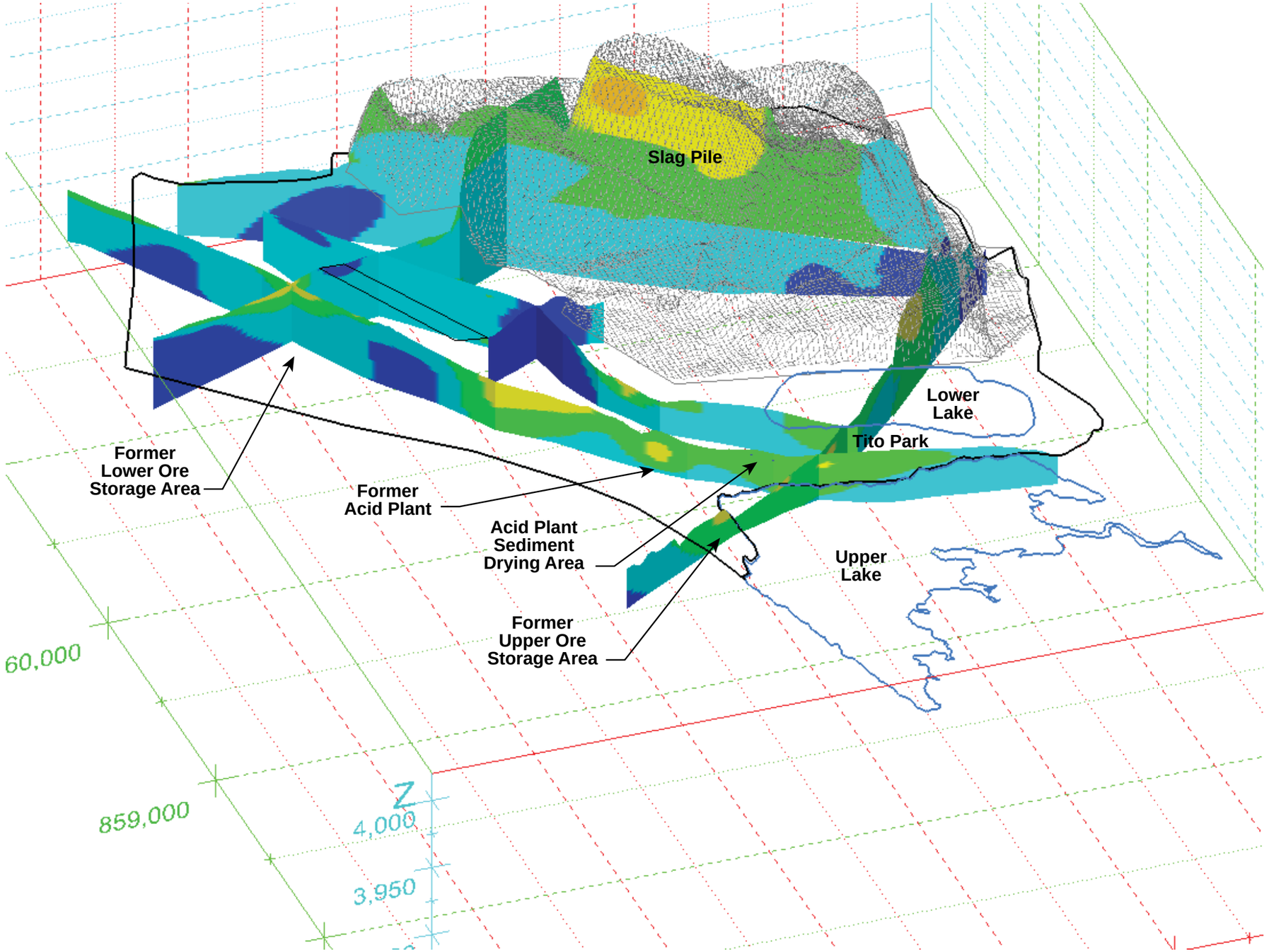
- Dark Blue: <0.29 mg/kg
- Light Blue: 0.29 - 2.9 mg/kg
- Green: 2.9 - 40 mg/kg
- Yellow: 40 - 290 mg/kg
- Orange: 290 - 2,900 mg/kg
- Red: >2,900 mg/kg

SLV for arsenic = 0.29 mg/kg

Abbreviations:
mg/kg = milligram per kilogram
SLV = screening-level value

Note:
Groundwater is approximately 12 to 13 feet deep in the Tito Park area, and 30 feet or deeper in the northern portion of the former Smelter site.

FIGURE 3-4
Arsenic Contamination in Soil – Surface to Top of Tertiary Ash/Clay Layer
Interim Measures Work Plan–2014
East Helena, Montana



LEGEND

Selenium Concentrations

- Dark Blue: <0.26 mg/kg
- Light Blue: 0.26 - 2.6 mg/kg
- Green: 2.6 - 26 mg/kg
- Yellow: 26 - 260 mg/kg
- Orange: 260 - 2,600 mg/kg

SLV for selenium = 0.26 mg/kg

Abbreviations:
mg/kg = milligram per kilogram
SLV = screening-level value

Note:

Groundwater is approximately 12 to 13 feet deep in the Tito Park area, and 30 feet or deeper in the northern portion of the former Smelter site.

FIGURE 3-5
Selenium Contamination in Soil – Surface to Top of Tertiary Ash/Clay Layer
Interim Measures Work Plan–2014
East Helena, Montana

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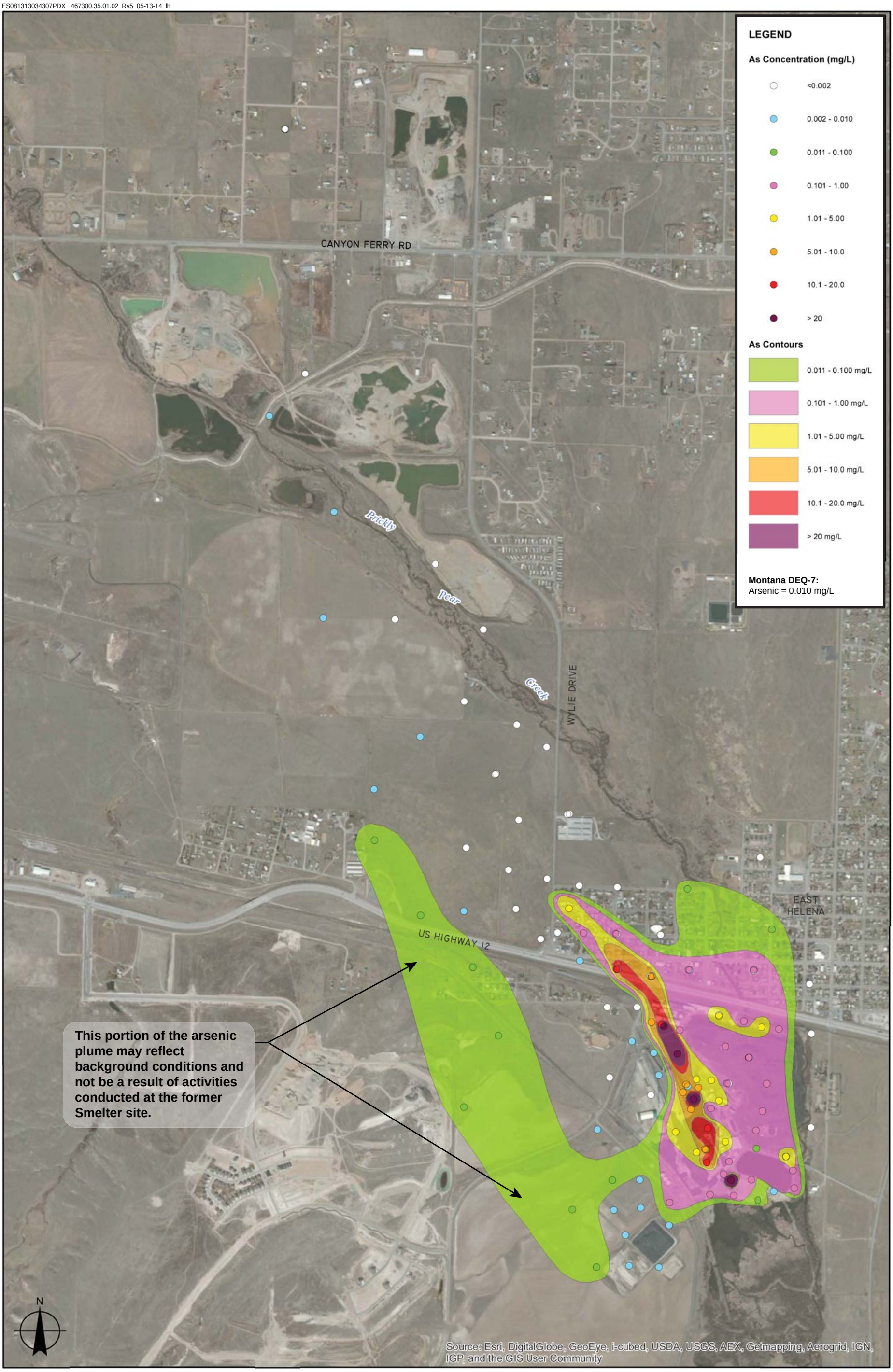

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Hydrometrics, Inc.
Consulting Scientists and Engineers

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Scale in Miles

Date Saved: 8/26/2013 5:06:20 PM

Notes:

DEQ-7: The Montana Department of Environmental Quality (DEQ) Circular DEQ-7 *Montana Numeric Water Quality Standards* (October 2012).

mg/L = milligram(s) per liter

FIGURE 3-6
Dissolved Arsenic Concentrations in Groundwater—June 2013
Interim Measures Work Plan–2014
East Helena, Montana

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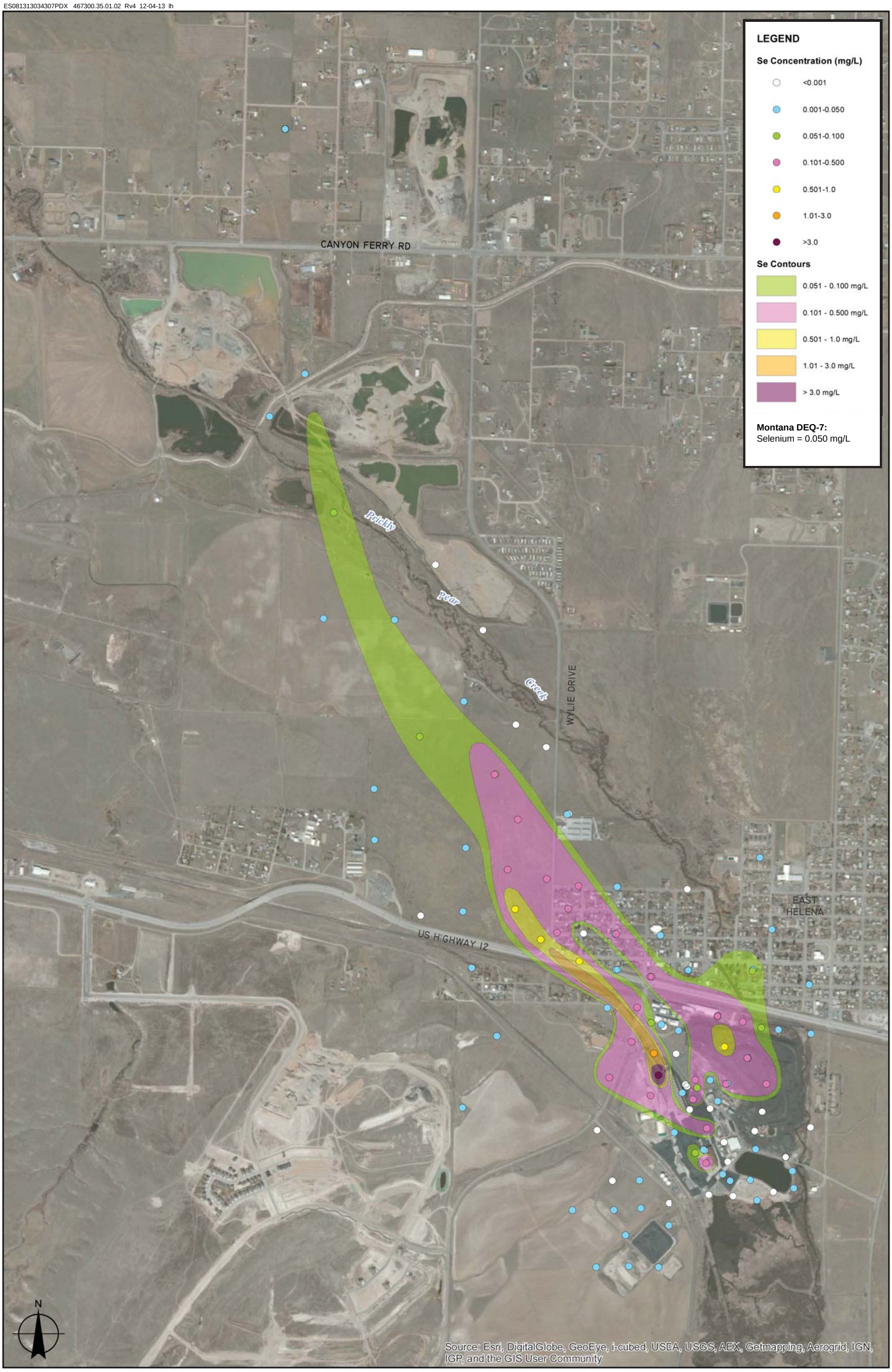
ES081313034307PDX 467300.35.01.02 Rv4 12-04-13 lh



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Hydrometrics, Inc.
Consulting Scientists and Engineers

0 0.125 0.25 0.5
Scale in Miles

Date Saved: 8/26/2013 11:07:37 AM

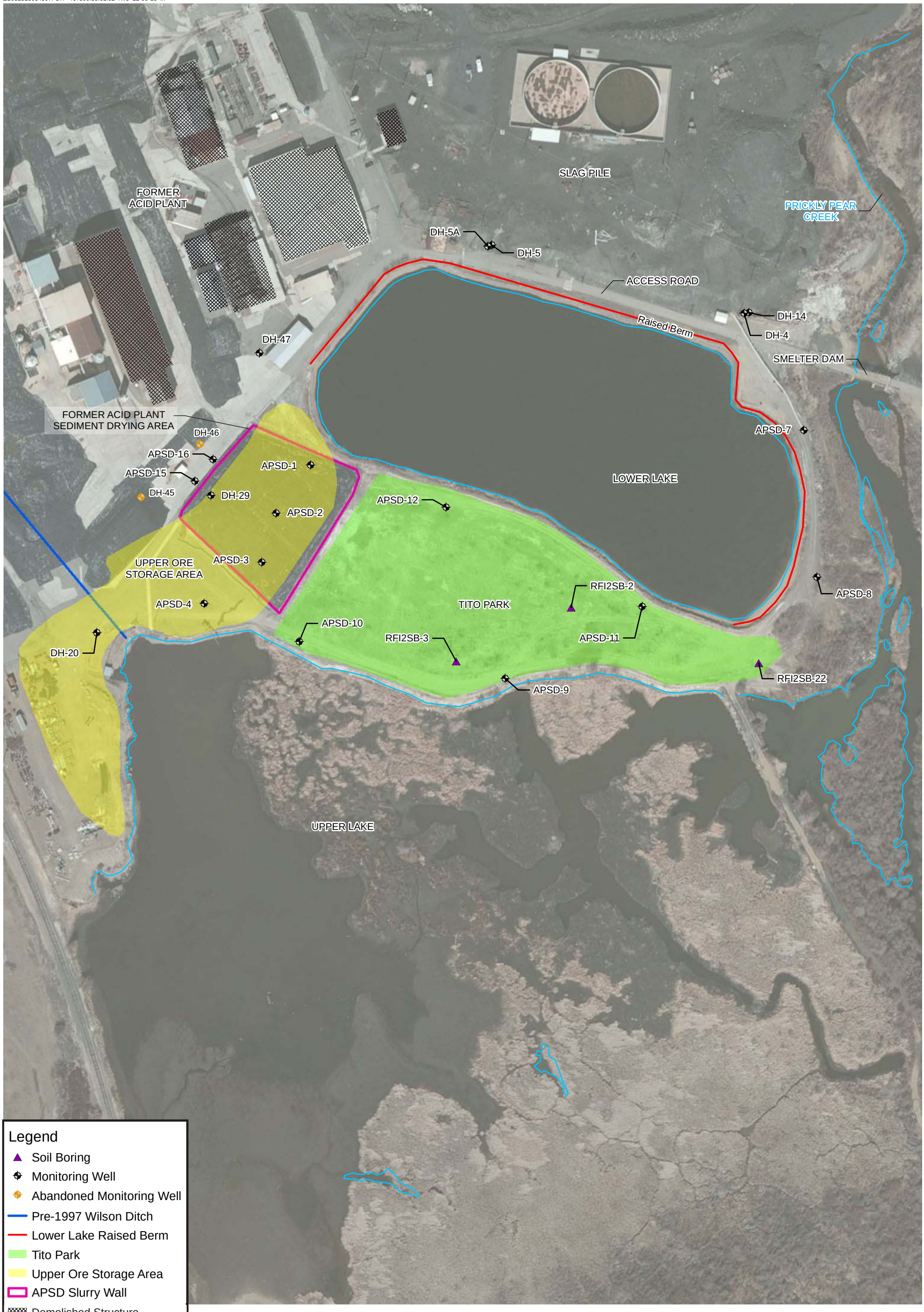
Notes:

DEQ-7: The Montana Department of Environmental Quality (DEQ) Circular DEQ-7 *Montana Numeric Water Quality Standards* (October 2012).

mg/L = milligram(s) per liter

FIGURE 3-7
Dissolved Selenium Concentrations in Groundwater—June 2013
Interim Measures Work Plan–2014
East Helena, Montana

CH2MHILL



Legend
- Soil Boring
- Monitoring Well
- Abandoned Monitoring Well
- Pre-1997 Wilson Ditch
- Lower Lake Raised Berm
- Tito Park
- Upper Ore Storage Area
- APSD Slurry Wall
- Demolished Structure

Note:
1) APSD - Acid Plant Sediment Drying Area

0 150 300
Scale in Feet

N

FIGURE 3-8
Tito Park Area
Interim Measures Work Plan–2014
East Helena, Montana

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Modified from Hydrometrics, Inc., 10/11/2012

SECTION 4

Data Sufficiency

This section discusses the sufficiency of data needed for conceptual development of the IMs and design of the projects proposed for implementation in 2014. Included in this section are a summary of existing data and a list of potential data needs for the 2014 work.

4.1 Summary of Existing Data

A variety of data are needed to evaluate, design, and construct the work described in this IM Work Plan 2014. The current data collection status was originally presented in the IM Work Plan 2012 and updated in the IM Work Plan 2013. Updates relevant to the proposed 2014 work incorporate information collected and completed through the third quarter of 2013. Updates are summarized as follows:

- Hydrogeology—The understanding of groundwater conditions at the former Smelter site and offsite areas is updated based on the results of quarterly and semiannual monitoring by the Custodial Trust, as summarized in the FSAP (Hydrometrics, 2013b). Available data collected during the 2013 FSAP sampling will be incorporated as appropriate into final IM designs, as will results of the groundwater monitoring to be performed when the PPC Temporary Bypass is in operation (see Section 4.2). Groundwater and surface water sampling will continue under an FSAP for 2014.
- Stream flow— Ongoing. Data are collected for the purposes of PPC Temporary Bypass, TPA removal, and PPC Realignment design needs. Recently collected flow modeling data are summarized in the Conditional Letter of Map Revision (CLOMR) permit application submitted to the Federal Emergency Management Agency (FEMA) for the PPC Temporary Bypass floodplain permit and in the *PPC Realignment Channel Stability Analysis and Engineering Design Report* (Pioneer Technical Services, July 2013).
- Soil chemistry—Completed. Data are summarized in the draft Phase II RFI. Additional test pits were excavated in the former LOSA in the fall of 2012. Soil chemistry data from the test pits were compiled and input into the project environmental database. Available soil chemistry data were recently compiled into a soil contaminant distribution model constructed using MVS software. The MVS model is being used to support an ongoing soil removal evaluation.
- Groundwater chemistry—Ongoing. The draft Phase II RFI summarizes work conducted through 2010. Groundwater monitoring pursuant to the annual FSAP provides updated information on a quarterly basis.
- Stormwater flows, chemistry, and discharge data—Ongoing. Data are available from former Smelter site personnel operating the HDS WTP, data collected as required under the MPDES permit, and stormwater permits.
- Utility types and locations—Completed. Existing utility drawings and underground utility information obtained by the Custodial Trust have been used to identify and locate as many underground utilities as possible.
- Structures—Completed. ASARCO engineering drawings available onsite have been compiled and reviewed as needed for engineering design and construction.
- ET Cover System Test Plot—Cancelled. An ET Cover System test plot was considered as a small-scale pilot test to provide site-specific performance data, but was cancelled when the cost of construction was estimated to be over $500,000. The Custodial Trust has proposed, and USEPA has agreed, that existing performance data on ET Cover Systems (including systems in Montana and the Helena Valley) provide sufficient information to complete evaluations and design.
- Borrow sources and geotechnical data—Ongoing. Existing data are summarized in the draft Phase II RFI. Additional test pits were excavated along the East Bench in January 2012 to determine soil types and aggregate sizes to estimate quantities of construction materials. Test pits were also excavated in the Valley View Landfill stockpiles in January 2013 to define soil characteristics for ET Cover System modeling using

HYDRUS software. Additional borrow area evaluations may be performed to verify onsite or offsite sources of low-permeability materials for use in the ICS design.

- Environmentally Regulated Material (ERM) Survey—Completed. An ERM Survey was performed during the summer of 2012. The Phase 1 demolition area was surveyed between July 18 and 20, and the remainder between August 14 and 19. The Phase 2 work summary was completed in October 2013. Data from the ERM survey are summarized in the Demolition Phase 1 and Demolition Phase 2 contract documents.

4.2 Additional Data Requirements for 2014 Work

Additional data requirements for engineering and construction of the work identified in this IM Work Plan 2014 are limited at present. The following data are being developed and will be factored in to the final design and implementation of the 2014 IMs described herein:

- South Plant area groundwater levels before and after implementation of the PPC Temporary Bypass Project—Groundwater levels in the South Plant area are expected to decline substantially following startup of the PPC Temporary Bypass. Groundwater level monitoring will be conducted before and after startup of the PPC Temporary Bypass to document the extent and rate of water level declines. For the purposes of this IM Work Plan 2014, those sets of conditions will be referred to as pre- and post-PPC Temporary Bypass. Actual field results will be compared to projections made using the groundwater numerical flow model. These measurements also provide additional calibration data for continued refinement of the flow model.
- TPA and South Plant area construction dewatering requirements—Pre- and post-PPC Temporary Bypass groundwater levels will be used to support an evaluation of construction dewatering requirements for TPA excavation and future PPC Realignment implementation.
- TPA geophysical survey—Aerial photographs indicate that drums were stored by ASARCO in the past on the eastern end of Tito Park. It is believed that all drums were removed from this area by ASARCO during previous demolition activities. Preliminary results of a ground-penetrating radar (GPR) survey of the TPA conducted in November 2013 have identified areas of anomalies which indicate the potential presence of metal debris. TPA removal plans will include localized excavations to determine the source of the anomalies, and specifications for the safe removal and proper disposal of any materials encountered. If necessary, a contingency to over-pack the drums and dispose of them offsite will be added.
- TPA Lower Lake Sediment Removal—Hand cores will be performed in select areas of Lower Lake to evaluate thickness and consistency of sediment that remains in the lake, and the potential effects of sediment on access and removal activities.
- Substation Soil Chemistry Data Collection—Soil samples collected in 2013 by Hydrometrics along the perimeter of the substation indicate presence of low-level PCB aroclors in the ground surface. Additional surface and subsurface soil samples will be collected by NWE during the planning and engineering design phase for substation decommissioning. Collection of these soil samples will be timed to coincide with deenergizing the facility. The results will be used to determine the extent of required soil excavation to be completed during substation demolition and requirements for disposal of this soil. NWE will be responsible for the testing and final disposition of the soil.
- IM Performance Evaluation—The groundwater flow model was used to predict the performance of the SPHC IM (NewFields, 2013). The flow model simulated changes in hydrologic conditions over time to evaluate the efficacy of the SPHC IM at different operational stages: when the PPC Temporary Bypass is completed, when the PPC Realignment-North section is completed, and when the PPC Realignment is completed in its entirety. Actual groundwater elevation data will be collected at the different stages of operation, and used to refine the flow model.

SECTION 5

Engineering Design and Construction Information for Proposed 2014 Projects

This section summarizes engineering design and construction activities associated with the TPA removal, ICS construction, NWE substation removal and 69-kV transmission line relocation, and monitoring well decommissioning proposed for implementation in 2014. A schedule for task implementation is provided in Section 8.

5.1 Tito Park Area Removal

5.1.1 Key Design Objectives

Key design objectives associated with the TPA removal are summarized as follows:

1. Perform all work in a manner that is protective of human health and the environment, efficient, cost-effective, and in compliance with applicable regulations and permits.
2. In consultation with USFWS, avoid to the extent possible and technically feasible the disturbance of migratory bird nest areas during nesting season.
3. Manage stormwater runoff during construction in accordance with applicable regulations.
4. Remove soil in Tito Park and the UOSA down to the post-PPC Temporary Bypass groundwater table.
5. Design an excavation with geotechnically stable slopes and an excavation bottom.
6. Remove contaminated sediment from Lower Lake.
7. Implement construction “best management practices” to minimize erosion of contaminated soil as it is placed in the ICS 1 subgrade layer.
8. Consider measures to protectively handle soft and potentially wet soil.
9. Consider measures to stabilize or armor the soil left exposed in the excavation bottom and slopes.
10. Provide transportation routes to protectively move excavated soil to consolidation locations.

5.1.2 Design and Construction Features

Contaminated soil will be removed from the TPA in a single excavation event. The design will address requirements to excavate and haul soil for consolidation in the ICS 1 area within the AOC. The design will also consider soil stabilization measures for final configuration of the excavated surface. Elevations and grades needed to provide wetlands and permanent soil stabilization of the excavation area will be evaluated and established as part of the PPC Realignment engineering and design.

Figures 5-1 and 5-2 illustrate the preliminary excavation plan for the TPA removal project. The depth of excavation in Tito Park and the UOSA will be based on the groundwater surface elevation projected for post-PPC Temporary Bypass conditions (expected to be approximately 3,910 feet above mean sea level) (Figure 5-3). Sediment in Lower Lake will be removed until native soil is encountered or up to a maximum depth of 2 feet.

The TPA removal design will consider the need for constructing a low-permeability berm on the side slopes abutting the former Smelter site, which would serve as a wall between this area and the former Smelter Site. The purpose of this berm would be to stabilize the graded area from exposure to a flood event. The berm would serve a different purpose than any berm constructed for the PPC Realignment. Initial hydraulic flow modeling has already been completed to predict the PPC water levels during the 100- and 500-year flood events. These levels will be reviewed and used to determine the potential for floodwaters to recharge groundwater at the former Smelter site.

5.1.3 Construction and Quality Management

Implementation challenges associated with the TPA removal include coordination of haul activities with construction of ICS 1 and protectively removing, handling and consolidating potentially soft and wet sediment from the Lower Lake area. The excavation sequencing and dewatering requirements will be determined during detailed design. The excavation elevation will be measured during construction by ground survey methods. Surface soil samples will be collected after the completion of excavation activities and analyzed for the presence of metals to document environmental conditions remaining following the soil removal.

5.1.3.1 Materials Management

Removal of the TPA to the elevations noted in Section 5.1.2 will require the excavation, transport, and consolidation of approximately 238,000 yd^3 of material considered to be remediation waste. This material will be consolidated within the AOC to form the subgrade of the ICS. As part of final design, evaluations are being conducted to determine whether soil from the APSD Area will be taken to CAMU 2 or consolidated within the AOC. The volume of remediation waste placed in CAMU 2 to date has not reached the unit's design capacity, and as a result additional materials are needed to achieve the final grades identified in the USEPA-approved design of the CAMU's final cover. The APSD Area soil is being considered for placement in the CAMU because concentrations of contaminants in groundwater within the APSD Area are significantly higher than surrounding areas. Therefore, the residual pore water in this soil may contain higher contaminant concentrations and the CAMU's leachate collection system would provide an additional measure of containment.

Native soil will be placed as a cover over the consolidated materials to prevent erosion, windblown dust, and stormwater contact, as discussed in Section 5.2.

Specific materials management procedures for TPA removal will be defined by the selected construction contractor. Soil removal will most likely occur by working the area from east to west and south to north beginning first in Tito Park, then UOSA, and ending in Lower Lake. Because the overall excavation depth in Tito Park could reach 20 feet in places, it is expected that the excavation contractor will work the TPA at different levels and hence may need to construct access ramps between levels for haul vehicle traffic. Drier soil located at higher elevations in the work area may be blended with damp soil expected at lower elevations to improve soil properties for loading and haul. Additional moisture conditioning will be provided by the ICS 1 contractor as necessary for compaction of the engineered fill.

Sediment removal in Lower Lake is planned to proceed from east to west. First, sediment in the eastern portion of the lake bottom will be removed and a soil berm built of newly exposed native materials to separate the east and west parts of the lake. Next, a new, smaller MPDES discharge basin will be constructed in the northeastern corner of Lower Lake and the existing MPDES discharge outfall will be extended to this location. This will enable the MPDES discharge to remain functional during excavation and dewatering of the west half of Lower Lake (see dewatering discussion below). The western portion of the Lower Lake area will be excavated following relocation of the MPDES outfall.

Because the TPA is a fill constructed over many years during operation of the former Smelter, it is possible that material unsuitable for use in ICS 1, such as miscellaneous rubble or organic solid waste, will be identified during excavation. Material unsuitable for use in ICS 1 will be separated at the point of detection and disposed of in accordance with applicable regulations.

Construction dewatering of the TPA excavation footprint is expected to be required as the soil removal advances toward the projected cut limits in each area. Dewatering is required only at the lowest excavation points and for only the duration required to complete work at this elevation. Based on preliminary engineering, construction dewatering will be accomplished by installing a pumping sump at the topographic low in west Lower Lake, and also possibly within the UOSA. A total pumping rate of 50 gallons per minute or less is expected to be adequate to dewater each area. The quality of water pumped from the construction area will be tested and, if required, treated in the HDS WTP prior to discharge in accordance with the approved MPDES discharge permit.

Groundwater contained within the existing APSD Area slurry walls will be pumped down by the Custodial Trust prior to start of TPA removal. Dewatering of the APSD Area will occur at a rate consistent with expected water

level declines that will result from implementation of the PPC Temporary Bypass project. Groundwater pumped from the APSD Area will be stored in existing tanks at the main plant site, periodically batch-treated in HDS WTP, and discharged in accordance with the approved MPDES permit.

Existing groundwater monitoring wells located within the TPA excavation footprint will be decommissioned by the excavation contractor. Monitoring wells APSD 7 and APSD 8 located on the eastern berm of Lower Lake will be protected and retained for future use.

5.1.3.2 Protective Measures During Implementation

Removal of the TPA will include specific requirements to ensure that work is conducted in a manner that is safe and protective of the environment. The design and contract specifications will require measures to safely handle wet material, and to control erosion of contaminated material during TPA excavation and consolidation for ICS 1 construction. Measures will be taken to prevent spillage during transport. Construction will take place in accordance with applicable permits, laws, and regulations. Required construction permits (for example, dust control and stormwater) will be obtained. Traffic routes, laydown and parking areas, and other temporary facilities and controls will be specified. In addition, temporary erosion and sedimentation control plans (including the SWPPP, as discussed under permitting in Section 7.1.4) will be implemented for work areas.

5.1.3.3 Preliminary List of Drawings and Specifications

Because the TPA removal and ICS 1 installation are expected to be completed as a single construction effort, the preliminary lists of drawings and technical specifications for the combined projects are provided together in Tables 5-1 and 5-2, respectively, after Section 5.2, Interim Cover System 1 Construction.

5.2 Interim Cover System 1 Construction

5.2.1 Key Design Objectives

Key design objectives for the ICS 1 construction are summarized as follows:

1. Construct an interim cover that will protect consolidated soil and sediment until the final ET Cover System is constructed.
2. Design the ICS surface and finished grades to enable noncontact runoff to be shed to perimeter drainages.
3. Manage stormwater runoff during construction in accordance with applicable regulations.
4. Perform all work in a manner that is protective of human health and the environment, efficient, cost-effective, and in compliance with applicable regulations.
5. In consultation with USFWS, avoid to the extent possible and technically feasible the disturbance of migratory bird nest areas during nesting season.
6. Incorporate soil consolidated from the TPA into a prepared subgrade on which to build the future ET Cover System.
7. Provide adequate engineered fill capacity to consolidate all of the excavated soil removed from the TPA.
8. Provide a native cover soil layer that prevents direct contact with the consolidated TPA soil, protects the soil from erosion, and minimizes future ET Cover System construction costs.
9. Potentially provide for future construction of a Montana Rail Link spur near the slag pile. This rail spur will be used for future slag recovery load-out operations.

5.2.2 Design and Construction Features

ICS 1 will be constructed over the western portion of the former Smelter site and include, at a minimum, areas that currently drain stormwater runoff to the Rodeo Tank containment facility and portions of the adjacent drainage basins (see Figure 2-2). ICS 1 will be constructed in three layers. The lowest layer in ICS 1 will be consolidated material from the TPA excavation. The middle layer, located directly on top of consolidated TPA soil,

will provide a cover over the soil excavated from the TPA. The top, exposed surface layer will provide erosion control for the cap. Figure 5-4 provides a cross-sectional view of ICS 1 as it is currently planned to be constructed.

The engineered fill layer of ICS 1 will be designed and constructed to provide a subgrade capable of supporting the future ET Cover System. This layer establishes grade and provides the prepared foundation on which to build the future ET Cover System. The engineered fill layer is expected to consist solely of material excavated from the TPA.

The middle layer of ICS 1 is planned to be constructed of 6 to 8 inches of uncontaminated native soil. This layer will serve as a cover for the TPA soil during the time period between construction of ICS 1 and construction of the final ET Cover System, to prevent direct contact with the underlying contamination and enable noncontact stormwater runoff to be directed to perimeter drains. Soil with suitable engineering properties was recently excavated and stockpiled on the East Bench during construction of the PPC Temporary Bypass. This soil is a naturally occurring ash/clay material that was excavated at about 10 feet bgs from a location near the southern end of the PPC Temporary Bypass. While other possible material sources for the middle layer in ICS 1 will be considered, given the suitability, close proximity, and low cost (based on transport only) of the available ash/clay material, the East Bench stockpile is expected to be preferred source of material for construction of the middle layer of ICS 1.

The top layer of ICS 1 will provide erosion protection for the cap and serve as a biobarrier layer for the future ET Cover System. This top layer in ICS 1 is planned to be 6 inches thick and constructed of native 3 inch plus sized rock also recently excavated from the East Bench during construction of the PPC Temporary Bypass. This biobarrier rock will be processed from a large existing stockpile of mixed sand, gravel, and rock located on the East Bench adjacent to the PPC Temporary Bypass.

Construction of ICS 1 will require that existing drainage features at the former Smelter site be removed or repurposed prior to subgrade placement. Drainage modifications will be incidental to ICS 1 construction and specific requirements will be defined during detailed design.

The ditches and swales that will be installed on and around ICS 1 will be designed to convey the volume of runoff expected from ICS 1 or the final ET Cover System, whichever is greater. This approach will reduce overall ET Cover System construction costs by enabling these ditches and swales to be constructed only once. The ditches will be lined to prevent infiltration of runoff near the edges of the ET Cover System. The lining method will be determined during design but will be robust enough to resist puncture and other damage. Detailed engineering design and construction criteria are being developed that will meet RCRA Corrective Action remedy performance standards.

5.2.3 Construction and Quality Management

Implementation challenges associated with constructing ICS 1 include coordination of the TPA excavation and haul operations, placement, compaction, and grading of the subgrade materials; management of stormwater runoff collection and treatment during construction; and erosion control during and following construction.

5.2.3.1 Materials Management

Construction of ICS 1 will involve the excavation, transport, and placement of approximately 238,000 yd^3 of contaminated soil from the TPA. For cost effectiveness and construction efficiency, as noted in Section 5.1.3.1, TPA excavation will be sequenced concurrently with ICS 1 construction. Soil excavated from the TPA will be loaded into haul trucks and transported directly to the ICS 1 consolidation location within the AOC where it will be moisture conditioned (if required) and compacted into place. Sequencing construction in this manner will facilitate protective and efficient implementation by minimizing handling activities, stockpiling requirements, and will enable one contractor to complete both projects at the same time.

TPA soil will be consolidated on top of soil with similar types and concentrations of contaminants. The nature and extent of contamination in the TPA has been characterized by numerous site investigations completed in the area, which show contaminant concentrations to be highest near the ground surface and decrease with depth. As a result, an attempt will be made to place the more contaminated layers of TPA soil into the lower and interior lifts of ICS 1. Doing this will bury the highest concentration TPA soil deep within the ICS 1 engineered fill layer, away from the perimeter, and overlay them with progressively less contaminated material.

Construction of the cap and erosion protection layers of ICS 1 will take place after the engineered fill has been brought to grade. The construction contractor will be required to sequence construction of the top two layers of ICS 1 such that all contact runoff is contained onsite and either captured in the existing stormwater collection system (to be treated and discharged through the HDS WTP) or allowed to infiltrate within the construction footprint. Infiltration of contact runoff will be for the shortest possible timeframe needed to allow for safe and cost-efficient construction. As early in the construction sequence as possible, the top layers of ICS 1 will be placed and noncontact runoff directed to perimeter drainages.

5.2.3.2 Protective Measures During Implementation

Construction of ICS 1 will include specific requirements to ensure that work is conducted in a manner that is safe and protective of the environment. The design and contract specifications will require measures to safely handle and control erosion of contaminated material from the TPA during consolidation of this material within the ICS 1. Measures will be taken to prevent spillage during transport. Construction will take place in accordance with applicable permits, laws, and regulations. Required construction permits (for example, dust control and stormwater) will be obtained. Traffic routes, laydown and parking areas, and other temporary facilities and controls will be specified to reduce effects on nearby residences and the environment. In addition, temporary erosion and sedimentation control plans (including the SWPPP, as discussed in Section 7.2) will be implemented for work and material processing areas.

Only uncontaminated native materials will be used in construction of the top layer of ICS 1. Quality criteria for selection of these materials are described in Section 5.2.2. Based on preliminary review of available characterization data, it is anticipated that the East Bench materials discussed above for use in the ICS 1 cap will meet these quality criteria.

5.2.4 Preliminary List of Drawings and Specifications

A single set of contract documents for excavation of the TPA and construction of ICS 1 will likely be issued. Table 5-1 contains a preliminary list of drawings to be prepared during design of the TPA removal and ICS 1.

TABLE 5-1
Preliminary Drawing List for Tito Park Area Removal and Interim Cover System 1 Design

Sheet Number	Drawing Number	Drawing Title	Drawing Description
1	G-1	Title, Location and Vicinity Map, Index to Drawings	See drawing title
2	G-2	Legends, Abbreviations, and General Notes	See drawing title
3	G-3	Overall Site Plan	Overall work areas, traffic routes, laydown areas, borrow areas
4	C-1	TPA Excavation Plan 1	Existing and excavation grade for approximately 1/2 of excavation
5	C-2	TPA Excavation Plan 2	Existing and excavation grade for approximately 1/2 of excavation
6	C-3	TPA Finish Grading Plan	Finish grade for area
7	C-4	TPA Sections	Section view of existing, excavation, and finish grade
8	C-5	TPA Details	Armoring, slope stabilization, and berms
9	C-6	ICS 1 Demolition Plan	Subgrade preparation
10	C-7	ICS 1 Overall Grading Plan	Existing and finish grade for entire cover
11	C-8	ICS 1 Finish Grading Plan 1	Existing and finish grade for approximately 1/2 of cover
12	C-9	ICS 1 Finish Grading Plan 2	Existing and finish grade for approximately 1/2 of cover
13	C-10	ICS 1 Sections	Section view of existing and finish grade
14	C-11	ICS 1 Civil Details	Cover system, typical road sections, special slopes
15	C-12	ICS 1 Drainage Plan	DWG C-7 with drainage overlay
16	C-13	ICS 1 Piping Plan	Close-up plan of Rodeo Tank and associated piping

TABLE 5-1
Preliminary Drawing List for Tito Park Area Removal and Interim Cover System 1 Design

Sheet Number	Drawing Number	Drawing Title	Drawing Description
17	C-14	ICS 1 Piping Sections and Details	Detailed drawings of pipes and pipe demo
18	EC-1	ICS 1 Temporary Erosion Control and Stormwater Plan	Short-term erosion control/stormwater measures for construction
19	EC-2	ICS 1 Soil Stabilization Plan	Longer-term erosion control/stormwater measures post-construction
20	EC-3	ICS 1 Erosion, Stormwater, and Stabilization Details	Ditches, ditch lining, waddles/bales, sediment fences, etc.

Table 5-2 contains a preliminary list of technical specifications to be prepared during design of the TPA removal and ICS 1.

TABLE 5-2
Preliminary Technical Specifications List for Tito Park Area Removal and Interim Cover System 1 Design

Section Number	Section Title
01 11 00	Summary of Work
01 29 00	Payment Procedures
01 31 13	Project Coordination
01 31 19	Project Meetings
01 32 00	Construction Progress Documentation
01 33 00	Submittal Procedures
01 42 13	Abbreviations and Acronyms
01 45 16.13	Contractor Quality Control
01 50 00	Temporary Facilities and Controls
01 57 13	Temporary Erosion and Sediment Control
01 61 00	Common Product Requirements (if needed)
01 77 00	Closeout Procedures
02 41 00	Demolition
31 10 00	Site Clearing
31 23 13	Subgrade Preparation
31 23 16	Excavation
31 23 19.01	Dewatering
31 23 23	Fill and Backfill
31 32 00	Soil Stabilization
32 11 23	Aggregate Base Courses
31 32 19	Geotextile (if needed)
31 37 00	Rip Rap (if needed)
33 05 01	Conveyance Piping General
33 05 13	Manholes (if needed)
33 41 01	Storm Drain and Sanitary Sewer Drainage Piping
33 47 13.01	High-Density Polyethylene and Low-Density Polyethylene Liner (if needed for ditch lining)

5.3 Substation Removal and 69-kV Transmission Line Relocation

5.3.1 Key Design Objectives

Key design objectives for removal of the NWE substation and relocation of the 69-kV transmission line are summarized as follows:

1. Perform all work in a manner that is protective of human health and the environment, efficient, cost-effective, and in compliance with applicable regulations.
2. In consultation with USFWS, avoid to the extent possible and technically feasible the disturbance of migratory bird nest areas during nesting season.
3. Manage stormwater runoff during construction in accordance with applicable regulations.
4. Remove electrical utilities from the former Smelter site that would prevent and/or interfere with construction of the future ET Cover System.
5. Provide NWE adequate means of accessing the relocated transmission line to complete all needed long-term maintenance activities.
6. If present, remove contaminated soil from the substation as required for compliance with applicable state and federal regulations. Note that NWE will be responsible for all activities related to removal and proper disposal of the substation.
7. Provide for temporary power supply to HDS WTP and other onsite buildings until they are demolished.

5.3.2 Design and Construction Features

Specific design and construction features associated with substation demolition and transmission line relocation are not currently available. Design criteria and construction features will be provided by NWE by early 2014.

5.3.3 Construction and Quality Management

Construction and quality management requirements associated with substation demolition and transmission line relocation are not currently available. Information related to construction and quality management will be provided by NWE by early 2014.

5.4 Monitoring Well Decommissioning

5.4.1 Key Design Objectives

Key design objectives for monitoring well decommissioning are summarized as follows:

1. Perform all work in a manner that is protective of human health and the environment, efficient, cost-effective, and in compliance with applicable regulations.
2. Decommission monitoring wells that are within the ICS 1 footprint and will not be needed for long-term remedy performance monitoring. Identify monitoring wells to be retained, protect them during construction, and extend the casings through the ICS 1 surface.

5.4.2 Design and Construction Features

Monitoring wells completed at the former Smelter site are constructed of 2- or 4-inch-diameter schedule 40 polyvinyl chloride casing and screen. Each monitoring well uses a silica sand pack around each screen and the borehole annulus is sealed with a bentonite grout from the top of the filter pack to the ground surface.

Monitoring wells at the former Smelter site will be decommissioned in accordance with the *Borehole Abandonment Plan for the Former Asarco East Helena Facility* (Hydrometrics, 2010). Decommissioning procedures will be in accordance with the Administrative Rules of Montana (ARM) 36.21.810.

The general monitoring well decommissioning procedures are as follows:

1. Remove all equipment from the monitoring well.
2. For monitoring wells less than 20 feet deep, fill the borehole with the specified sealing material while removing the casing. Keep the level of sealing material just below the bottom of the casing at all times to prevent sloughing.
3. For monitoring wells greater than 20 feet deep, do not attempt to remove the casing. Fill the well casing with the specified sealing material starting at the bottom and working upward.
4. In both cases, seal borings to within 3 feet of the ground surface. Fill the upper 3 feet with native soil.

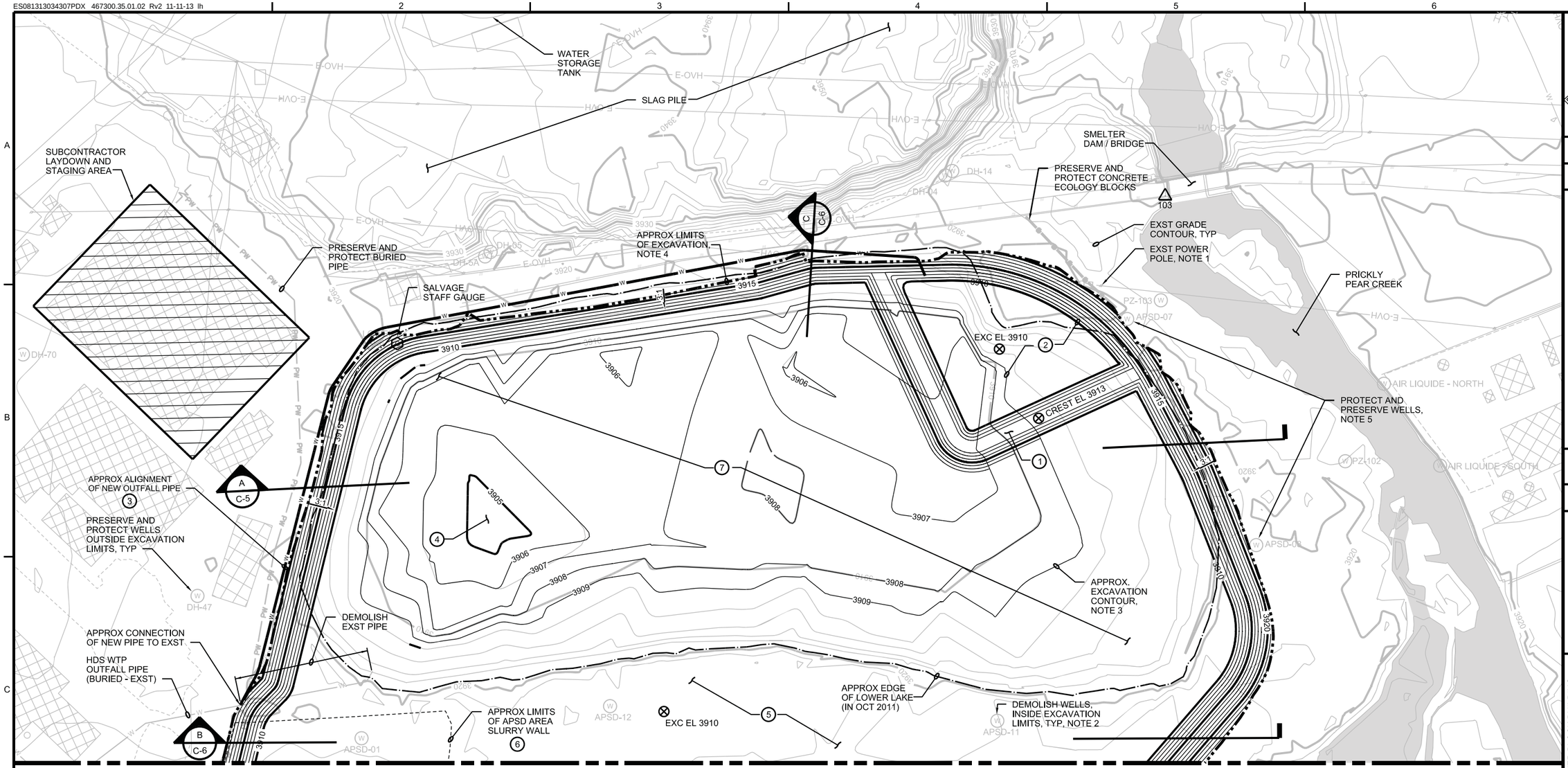
Sealing materials are specified in 36.21.810 and include concrete slurry, cement bentonite slurry, and bentonite pellets or chips.

5.4.3 Construction and Quality Management

In accordance with the *Borehole Abandonment Plan for the Former Asarco East Helena Facility* (Hydrometrics, 2010), proper steps will be taken to ensure that the following occurs:

- All subsurface boreholes requiring abandonment are abandoned in a manner that effectively and permanently prohibits the movement of water (vertically and horizontally) within the abandoned borehole.
- Proper information is recorded for all abandoned boreholes, including borehole location, depth, and date and means of abandonment.

Materials will be sealed with special precautions to guard against bridging or uneven placement of sealing material within the borehole. Proper grout placement procedures will be followed during decommissioning activities. Procedures may vary but generally consist of using a proper slurry mix that is free of clumps, using a tremie pipe to direct the sealing material to the proper depth, filling from the bottom to the top of the borehole, and applying the proper grout volume for the borehole diameter. If bridging does occur during borehole abandonment, the bridge will be removed before continuing abandonment procedures. A borehole abandonment documentation form will be completed for each monitoring well that is decommissioned.



CONSTRUCTION SEQUENCE NOTES (COMPLETE IN NUMERICAL ORDER):

1. BUILD SEPARATION BERM IN NE CORNER OF LL. EXCAVATE SEDIMENT AND PREPARE SUBGRADE WITHIN BERM FOOTPRINT. DEWATER AS NEEDED AND SPECIFIED. (1 / C-5)
2. EXCAVATE SEDIMENT WITHIN BERMED PORTION OF LL BY EXCAVATING TO FIRST ENCOUNTER WITH NATIVE SOIL. THE FIRST ENCOUNTER WILL BE DETERMINED IN THE FIELD SOLELY BY THE CONTRACTOR AND BASED ON VISUAL SOIL IDENTIFICATION. DEWATER AS NEEDED AND SPECIFIED.
3. MOVE DISCHARGE POINT OF HDS WTP OUTFALL PIPE INTO NORTHEASTERN PORTION OF LOWER LAKE BY WELDING ADDITIONAL PIPE LENGTHS ONTO EXISTING PIPE. PROVIDE NEW HDPE PIPE THAT MATCHES EXISTING. PROVIDE FITTINGS, SWEEPS, AND BENDS AS NEEDED TO INSTALL PIPE. COORDINATE EXACT ALIGNMENT AND INVERT ELEVATION IN FIELD WITH CONTRACTOR. (2 / C-10)
4. PROVIDE A DEWATERING SUMP IN LOWEST POINT OF LL AND BEGIN DEWATERING LL. SUMP BOTTOM EL WILL BE 3903. DEWATER AS SPECIFIED.
5. REMOVE USOA AND TPA TO ELEVATIONS SHOWN. PROVIDE DRAINAGE TRENCHES AND POSSIBLY ADDITIONAL SUMPS TO DRAIN WATER TO THE DEWATERING SUMP. PROVIDE TRENCHES BEFORE EXCAVATION REACHES EL 3912. DEWATER AS SPECIFIED.
6. REMOVE APSD AREA CONCURRENT WITH UOSA AND TPA. REFER TO SPECIFICATIONS FOR ASPD-SPECIFIC REQUIREMENTS.
7. REMOVE SEDIMENT FROM THE REST OF LL BY EXCAVATING TO CRITERIA DEFINED ABOVE. PROVIDE DRAINAGE TRENCHES IN LL AS NEEDED. DEWATER AS NEEDED AND SPECIFIED.

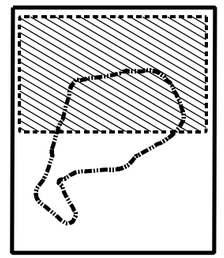
NOTE:
FINISH GRADE CONTOUR INTERVAL = 1 FOOT
EXST GRADE CONTOUR INTERVAL = 2 FEET

NOTES:

1. COORDINATE WITH CONTRACTOR AND OWNER AS SPECIFIED FOR DEMOLITION BY OTHERS.
2. DEMOLISH WELLS INSIDE EXCAVATION LIMITS AS SPECIFIED.
3. ACTUAL EXCAVATION SURFACE MAY BE IN PROXIMITY TO GROUNDWATER AND SOFT SUBGRADE SOILS ARE EXPECTED, ESPECIALLY IN LOWER LAKE. REFER TO SPECIFICATIONS FOR EXCAVATION REQUIREMENTS.
4. SEE TABLE FOR EXCAVATION CONTROL POINTS (TO BE ADDED AT 90%). SURVEY AND STAKE LIMIT BEFORE STARTING EXCAVATION. COORDINATE WITH CONTRACTOR TO SET EXACT LIMIT IN FIELD.
5. PROVIDE 12 FOOT WIDE GRAVEL ACCESS ROAD BETWEEN SMELTER DAM, WELLS, AND BERM BREACH.

N

0 50 100 150
SCALE IN FEET



KEY MAP

PRELIMINARY NOT FOR CONSTRUCTION

NO.	DATE	REVISION	CHK	APVD
0	10/22/13	60% EXTERNAL REVIEW SUBMITTAL	S. DETHLOFF	J. DEHNER

DR R. VILORIA
DSGN P. KRYCH
BY NB
APVD JD

METG
Montana Environmental Trust Group

Former ASARCO Smelter Site
East Helena, Montana
Montana Environmental Trust Group
East Helena, Montana

CH2MHILL
POWER BLOCK BUILDING
7 WEST 6TH AVE, # 519
HELENA, MT 59601-5036
PHONE: (406) 457-5494

FIGURE 5-1
Tito Park Area Excavation Plan - North
Interim Measures Work Plan–2014
East Helena, Montana

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	OCTOBER 2013
PROJ	467300
DWG	C-1
SHEET	4 OF 10

PRELIMINARY - NOT FOR CONSTRUCTION

FILENAME: P034C001D_467300.dgn PLOT DATE: 2013\10\22 PLOT TIME: 9:22:00 AM

MATCHLINE SEE DWG C-1

HDS WTP OUTFALL PIPE (BURIED - EXST)

PRESERVE AND PROTECT WELLS OUTSIDE EXCAVATION LIMITS, TYP

PRESERVE AND PROTECT BURIED PIPE

PRESERVE AND PROTECT METER HOUSE AND SUMP

APPROX. LIMITS OF ICS

APPROX. LIMITS OF APSD AREA SLURRY WALL

6

SALVAGE STAFF GAUGE

DEMOLISH TRUCK FILL STATION

DEMOLISH PUMP HOUSE

5

EXC EL 3910

PONDED WATER, NOTE 7 ON DWG G-3

DEMOLISH WILSON DITCH INTAKE STRUCTURE, NOTES, 2 AND 7

APPROX. RAILROAD ROW LIMIT, NOTE 3

DEMOLISH WELLS INSIDE EXCAVATION LIMITS, TYP, NOTE 8

APPROXIMATE EXCAVATION CONTOUR, TYP, NOTE 4

APPROX LIMITS OF EXCAVATION, NOTE 6

C-6

EXST DRAINAGE DITCH, NOTE 9

UPPER LAKE

PRESERVE AND PROTECT EXST EMBANKMENT AND ROAD

REMOVE 30" DIA REGULATOR PIPE, NOTES, 2 AND 5

FILL BERM BREACH, NOTE 5

1 / C-5

SALVAGE STAFF GAUGE

PRICKLY PEAR CREEK

EXST GRADE CONTOUR, TYP

NOTES:

1. REFER TO DWG C-1 FOR KEYED CONSTRUCTION SEQUENCE NOTES.
2. VERIFY ELEVATIONS AND CONFIGURATION OF STRUCTURES.
3. SURVEY AND STAKE ROW ALONG EXCAVATION LIMIT BEFORE STARTING WORK. DO NOT ENTER ROW. PRESERVE AND PROTECT ROW AND ASSOCIATED INFRASTRACTURE.
4. ACTUAL EXCAVATION SURFACE MAY BE IN PROXIMITY TO GROUNDWATER AND SOFT SUBGRADE SOILS ARE EXPECTED, ESPECIALLY IN LOWER LAKE. REFER TO SPECIFICATIONS FOR EXCAVATION REQUIREMENTS.
5. REMOVE RIPRAP, BENCH SLOPES AS REQUIRED, AND PROVIDE COMPACTED EARTHFILL. MATCH ELEVATION OF ADJACENT BERM CREST. BACKFILL THE EXCAVATION CREATED BY REMOVING THE PIPE WITH EARTHFILL. REUSE RIPRAP FOR SLOPE ARMORING.
6. SEE TABLE FOR EXCAVATION CONTROL POINTS (TO BE ADDED AT 90%). SURVEY AND STAKE LIMIT BEFORE STARTING EXCAVATION. COORDINATE WITH CONTRACTOR TO SET EXACT LIMIT IN FIELD.
7. EXCAVATE FROM END OF PIPE TO ROW, CUT AT ROW, AND REMOVE PIPE AND INLET STRUCTURE. FILL END OF PIPE LEFT IN PLACE WITH 10 FEET OF CONCRETE. BURY BELOW FINISH GRADE. COORDINATE DEMOLITION WITH CONTRACTOR TO MEET MRL REQUIREMENTS.
8. DEMOLISH WELLS INSIDE EXCAVATION LIMITS AS SPECIFIED.
9. LOCATION SHOWN IS APPROXIMATE. RELOCATE DITCH AS NECESSARY TO DEWATER AND EXCAVATE.

NOTE:
FINISH GRADE CONTOUR INTERVAL = 1 FOOT
EXST GRADE CONTOUR INTERVAL = 2 FEET

N

0 50 100 150
SCALE IN FEET

KEY MAP

PRELIMINARY NOT FOR CONSTRUCTION

NO.	DATE	DSGN	DR	CHK	APVD
0	10/22/13	P. KRYCH	R. VILORIA	S. DETHLOFF	J. DEHNER

60% EXTERNAL REVIEW SUBMITTAL

REVISION	BY	APVD
	NB	JD

METG
Montana Environmental Trust Group

Former ASARCO Smelter Site
East Helena, Montana
Montana Environmental Trust Group
East Helena, Montana

POWER BLOCK BUILDING
7 WEST 6TH AVE. # 519
HELENA, MT 59601-5036
PHONE: (406) 457-5494

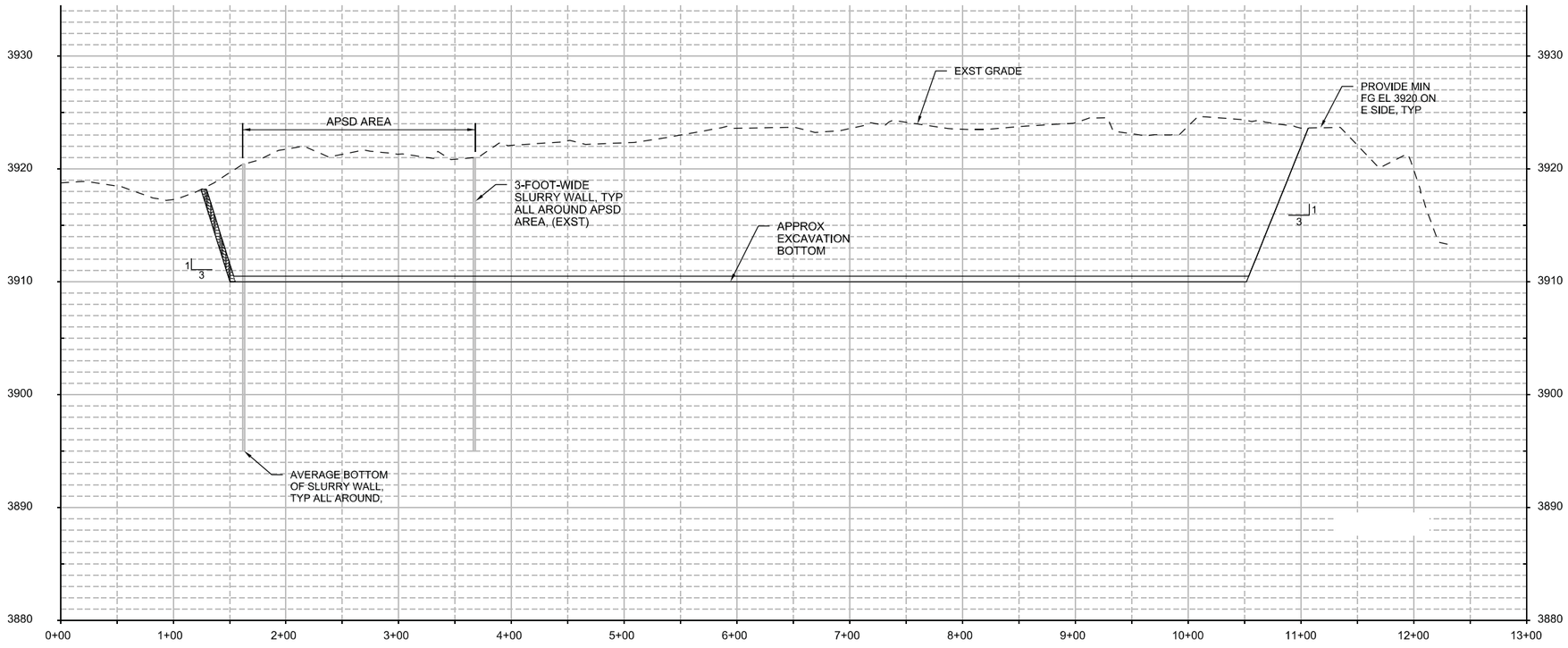
CH2MHILL

FIGURE 5-2
Tito Park Area Excavation Plan - South
Interim Measures Work Plan–2014
East Helena, Montana

PRELIMINARY - NOT FOR CONSTRUCTION

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	OCTOBER 2013
PROJ	467300
DWG	C-2
SHEET	5 OF 10



B SECTION - TITO PARK
H 1"=60'
V 1"=6'

PRELIMINARY NOT FOR CONSTRUCTION

NO.	DATE			
0		DSGN	DR	CHK	APVD
		P. KRYCH	R. VILORIA	S. DETHLOFF	J. DEHNER
				NB	JD
				BY	APVD

90% INTERNAL REVIEW SUBMITTAL
REVISION

PRELIMINARY - NOT FOR CONSTRUCTION

METG
Montana Environmental Training Group

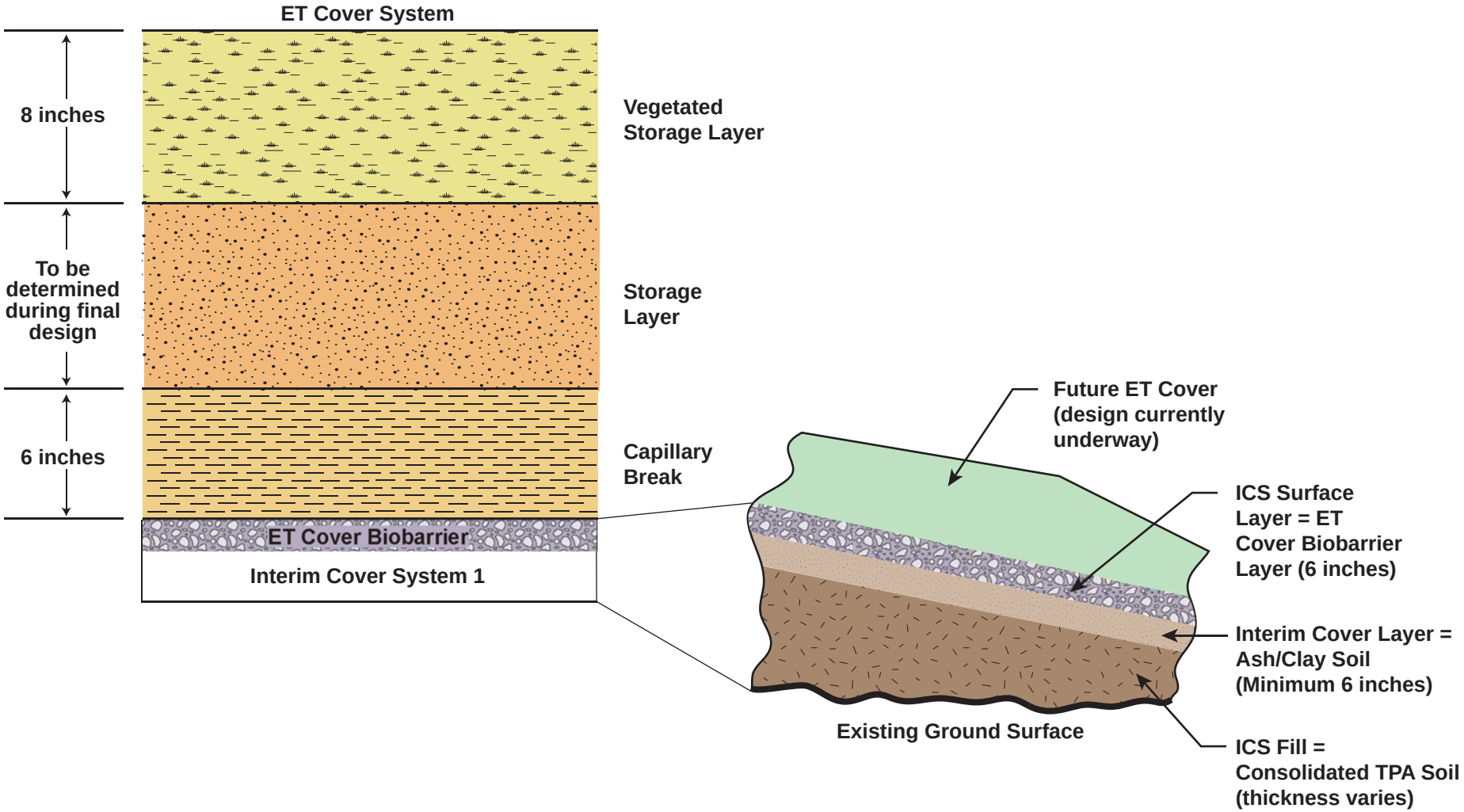
CH2MHILL
POWER BLOCK BUILDING
7 WEST 6TH AVE. # 519
HELENA, MT 59601-5036
PHONE: (406) 457-5494

FIGURE 5-3
Tito Park Area Cross-Section
Interim Measures Work Plan–2014
East Helena, Montana

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2013
PROJ	467300
DWG	C-6
SHEET	9 OF 27

FILENAME: IMWP-SECTION_467300.dgn PLOT DATE: 2013\12\09 PLOT TIME: 10:50:22 AM



Notes:

The biobarrier is part of the ET Cover System and will be installed during ICS 1 construction.

All the layer thicknesses for the ET Cover System are estimated based on preliminary engineering and may change during final design.

ET = Evapotranspiration

ICS = Interim Cover System

FIGURE 5-4
ET Cover System and Interim Cover System 1 Cross-Section
Interim Measures Work Plan–2014
East Helena, Montana

SECTION 6

Remediation Waste Management

This section describes the proposed approach for managing remediation waste associated with implementation of the proposed 2014 IM elements.

6.1 Use of the Area of Contamination

The description and rationale for the AOC at the East Helena Facility was approved by USEPA in their conditional approval of the IM Work Plan 2012, dated August 28, 2012. All 2014 IM activities will be conducted within the AOC boundary. As shown in Figure 6-1, the AOC covers Parcels 16 and 19 (the former Smelter site operating area); the area of Parcel 15 containing CAMUs 1 and 2, portions of Tito Park, Lower Lake, and Upper Lake; the portion of Parcel 8 west of State Highway 18; and Parcels 10, 11, 12, 17, 18, and 23. The ability to consolidate hazardous remediation waste within the designated AOC will allow interim and final remedial measures to be conducted in a protective, efficient, sustainable and cost-effective manner, and will also reserve CAMU capacity for the management and treatment (if needed) of other hazardous remediation waste that clearly should be segregated from site soil.

The IM Work Plan 2012 also described the intended use of onsite CAMUs to manage remediation waste, consistent with practices at the Facility since the late 1990s. CAMUs 1 and 2 were constructed by ASARCO on Parcel 15 and the southwestern corner of Parcel 19. CAMU 1 has been closed and the remaining capacity in CAMU 2 will continue to be used to manage remediation waste and debris from operations and IM activities (including demolition) that are deemed unsuitable for salvage and recycling. Evaluations are currently underway to determine if soil removed from the APSD Area will be placed in CAMU 2.

6.2 Remediation Waste Management in 2014

The remediation waste expected to be associated with implementation of the 2014 IM components is summarized in Table 6-1 and described briefly in the following paragraphs. Detailed work plans, as appropriate, for each of the components described will be prepared during final design, or will be required submittals as part of the construction contract(s).

TABLE 6-1
Interim Measures Remediation Waste Management

IM Component	Remediation Waste	Disposition
Tito Park Area Removal	Soil	Consolidate within AOC.
	APSD Area soil and groundwater	Consolidate soil within AOC or place in CAMU 2. Collect and treat APSD Area groundwater in the onsite HDS WTP. Discharge treated water per MPDES permit (MT0030147)
	Construction and decontamination water	Collect and treat in the onsite HDS WTP. Discharge treated water per MPDES permit (MT0030147).
	Tito Park Area construction dewatering	Test water and, if required, collect and treat in the onsite HDS WTP. Discharge treated water per MPDES permit (MT0030147). If treatment is not required, discharge in accordance with Best Management Practices or a Construction General Dewatering Permit (if required).
	Debris	Depending on type and characteristics, consolidate within AOC, place in CAMU 2, or dispose of in accordance with applicable regulations.
Interim Cover System 1 Construction	PPE and decontamination waste	Place in CAMU 2 heavily soiled PPE and solid decontamination waste.
Removal of Substation and Relocation of 69-	TSCA and non-TSCA PCB waste	If encountered, NorthWestern Energy will transport PCB materials to an appropriately permitted offsite disposal facility.

TABLE 6-1
Interim Measures Remediation Waste Management

IM Component	Remediation Waste	Disposition
kilovolt Line		
Monitoring Well Decommissioning	Debris[a]	Evaluate decommissioning debris for placement in CAMU 2 or consolidation onsite.

Note:

[a] Debris is expected to consist of well screens, casings, and concrete.

Abbreviations:
AOC = Area of Contamination
APSD Area = Acid Plant Sediment Drying Area
CAMU = Corrective Action Management Unit
HDS WTP = high-density sludge water treatment plant
MPDES = Montana Pollutant Discharge Elimination System
PCB = polychlorinated biphenyl
PPE = personal protective equipment
TSCA = Toxic Substances Control Act

6.2.1 Tito Park Area Removal

The TPA soil removal activity is estimated to require the excavation of more than 238,000 yd^3 of soil. All excavated material is considered remediation waste and may be consolidated within the AOC boundary. Appropriately detailed soil and remediation waste management plans will be prepared as part of final design for the IMs. The plans may include testing if necessary to determine the appropriate management of excavated material.

Final design plans include physical screening to be conducted during excavation in order to separate out debris that may not be suitable for use in the ICS. Debris that is unsuitable for the ICS will be disposed of in CAMU 2.

Limited sampling and analyses will be conducted post-excavation to document the quality of soil left in place following the removal action. The surfaces created during removal (anticipate completion in the fourth quarter of 2014) are planned to be regraded during future PPC Realignment and wetlands construction (anticipate completion in the fourth quarter of 2016). This final exposure surface will meet media cleanup standards protective of direct contact for human and ecological receptors. In the interim period, access by trespassers to the TPA will be restricted, and the surfaces created will be on average less contaminated than current site conditions. Protocols for stockpiling, transportation, and dust suppression to minimize potential contaminant migration during construction will be specified during detailed design.

6.2.2 Interim Cover System Construction

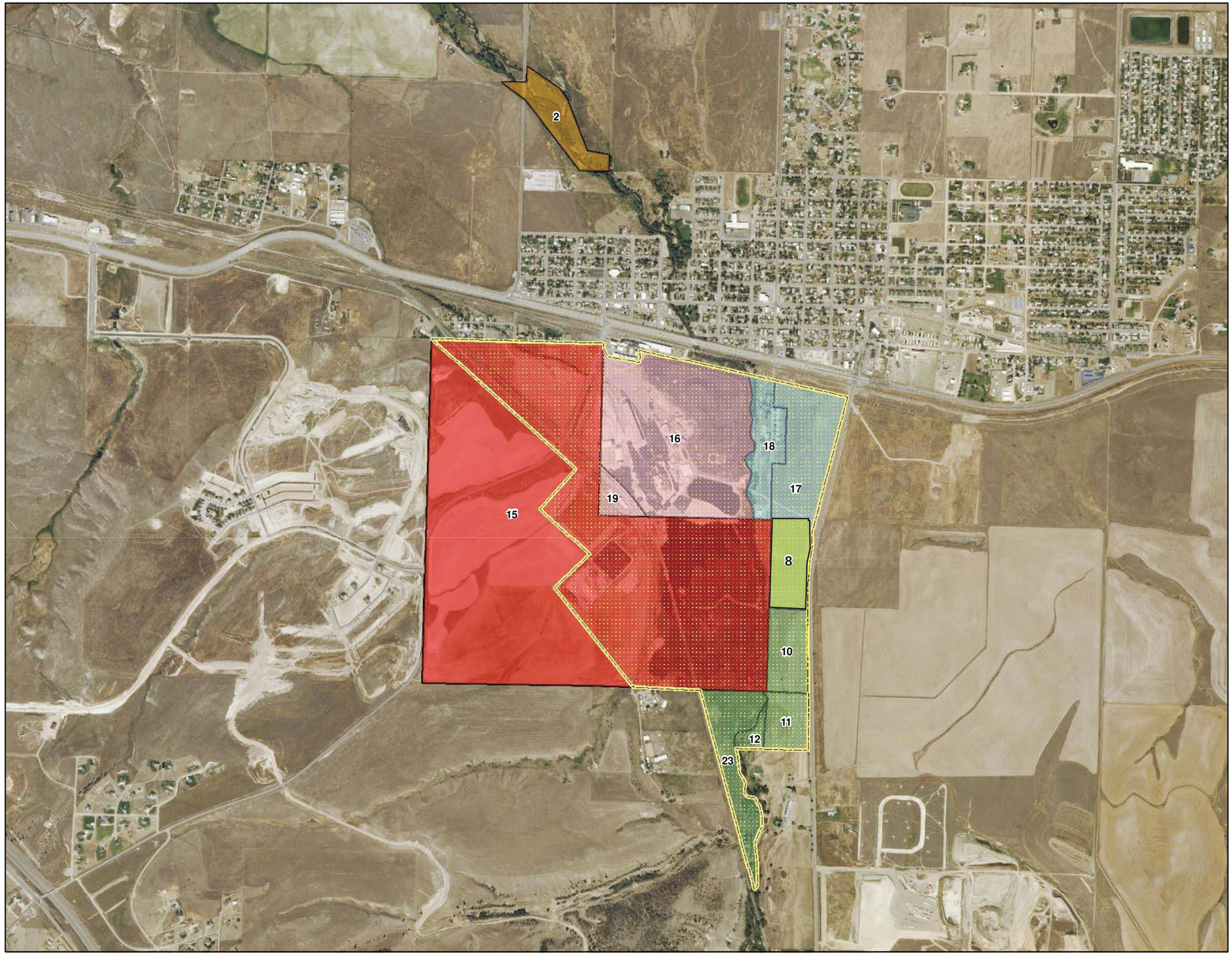
No remediation waste is expected to be generated during construction of the ICS, with the exception of personal protective equipment and decontamination waste.

6.2.3 Substation Removal and Transmission Line Relocation

NWE will be conducting the work associated with removing the substation and relocating the 69-kV transmission line. Any remediation waste management associated with this work will be handled by NWE.

6.2.4 Monitoring Well Decommissioning

For monitoring wells less than 20 feet deep, well casing and screens will be pulled. Any decommissioning debris will be evaluated for placement within CAMU 2.



VICINITY MAP

LEGEND

- Portion of Parcel 2 near Prickly Pear Creek
- Portion of Parcel 8 West of State Highway 518
- Parcel 15
- Parcels 16 and 19
- Parcels 17 and 18
- Parcels 10, 11, 12, and 23
- Area of Contamination Boundary

N

0 750 1,500
Feet

FIGURE 6-1
Area of Contamination Boundary
Interim Measures Work Plan–2014
East Helena, Montana

CH2MHILL

SECTION 7

Status of Permitting Activities and Approvals

This section provides an update to the federal, state, and local permit and licensing measures outlined in the IM Work Plans 2012 and 2013, and discusses the permits under evaluation for 2014.

7.1 Past Permitting and Authorization Activities

7.1.1 Joint Application and Conditional Letter of Map Revision

The Joint Application for Proposed Work in Montana's Streams, Wetlands, Floodplains, and Other Water Bodies (Joint Application) is used to simultaneously apply for several different water resource permits from multiple permitting agencies. In September 2012, Joint Application No. 1 for the PPC Temporary Bypass project was submitted to the City of Helena, the U.S. Army Corps of Engineers (USACE), the MDEQ, and the Lewis and Clark Conservation District (LCCD). This work was conducted concurrently with the submittal of the CLOMR No. 1 for the PPC Temporary Bypass.

The CLOMR No. 1 approval was received in December 2012, and all other agency approvals under Joint Application No. 1 (including the 404, 318, 310, and City of East Helena Floodplain Permit) were received by February 2013.

7.1.2 Montana Dam Safety Act

In May 2013, the Dam Safety Office of the Montana Department of Natural Resources and Conservation issued a determination that Smelter Dam does not impound at least 50 acre-feet of water. Therefore, a downstream hazard evaluation will not need to be performed, an operating permit will not be required, and a demolition permit will not need to be obtained for removal of the dam.

7.1.3 National Emissions Standards for Hazardous Air Pollutants (NESHAP) Compliance

In compliance with Montana Administrative Rules, Title 17, Chapter 74, Subchapters 3 and 4, NESHAP notifications were submitted for Demolition Phase 1 and 2 activities in 2013. Acknowledgements were received from MDEQ for Demolition Phase 1 originally on April 8, 2013, and subsequently (as related to project revisions) on June 12 and July 11, 2013. Acknowledgements were received from MDEQ for Demolition Phase 2 on June 25, 2013 (with no follow-on revisions).

7.1.4 Stormwater Pollution Prevention Plan

The former Smelter site is permitted to discharge stormwater associated with industrial activities to waters of the United States pursuant to Montana General Discharge Permit for Stormwater MTR000072. The former Smelter site has no ongoing industrial operations and is undergoing active remediation pursuant to the USEPA Corrective Action Program under RCRA. In accordance with permit requirements, stormwater management at the site is accomplished in accordance with an approved Stormwater Pollution Prevention Plan (SWPPP). The original SWPPP was prepared by ASARCO when the facility was operated as a primary lead smelter. However, there have been no smelting operations at the plant site since April 2001. An updated SWPPP, representing current site conditions, was prepared for the Custodial Trust by Hydrometrics and submitted to MDEQ on July 31, 2013. A copy of the SWPPP is maintained on site at all times.

7.1.5 Endangered Species Act Compliance

Endangered Species Act (ESA) compliance must be demonstrated for any federal permit approval that may be necessary during the course of IM implementation. A technical memorandum entitled *Montana Environmental Trust Group Endangered Species Act Compliance* (CH2M HILL, 2013c) was issued to the U.S. Fish and Wildlife Service (USFWS) on September 5, 2012. USFWS concurrence that the project complies with the ESA was received by CH2M HILL for the Custodial Trust on September 19, 2012.

7.1.6 General Permit for Construction Dewatering

Construction of the PPC Temporary Bypass channel required construction dewatering. Water was pumped from the work area into sediment ponds, from which the water either percolated into the ground or flowed over a weir and into PPC. A General Permit for Construction Dewatering was applied for and approved by MDEQ. This work was completed in October 2013.

7.2 Anticipated 2014 Permitting and Authorization Activities

The following permits and authorizations are necessary for execution of the proposed 2014 site activities, including the placement of the ICS, removal of the NWE substation and relocation of the 69-kV line, and soil removal in the TPA.

7.2.1 Joint Application (U.S. Army Corps of Engineers 404, Montana Department of Environmental Quality 318, and Lewis and Clark Conservation District 310 Permits)

Joint Application No. 1 was submitted to USACE in September 2012 to address work necessary to install the PPC Temporary Bypass and did not include the proposed soil removal actions for the TPA. However, the proposed TPA actions will not disturb additional wetlands beyond those identified in Joint Application No. 1. Therefore, a request will be made to USACE, MDEQ, and the LCCD to provide an administrative authorization of the actions as an amendment to Joint Application No. 1. A technical memorandum summarizing the proposed activities, with figures illustrating the work, is planned for submittal to these agencies as part of the authorization process. Preliminary communications conducted with the USACE have indicated that this permitting approach for the TPA is likely to be acceptable.

7.2.2 Floodplain Development Permit

Because the excavation in Tito Park will alter the location and elevation of the regulatory floodplain to a greater degree than was shown in CLOMR No. 1, an updated Floodplain Development Permit will need to be obtained from the City of East Helena. Additional Hydrologic Engineering Centers River Analysis System (HEC-RAS) modeling, reflecting the removal of Tito Park, will be performed and submitted to FEMA for their PPC project file. A request will be made to FEMA for a written letter of concurrence that the TPA source removal project is consistent with the CLOMR issued for the PPC Temporary Bypass (Case No. 12-08-0919R, December 4, 2012), and that it meets the minimum requirements of the National Flood Insurance Program. The concurrence letter from FEMA will provide the basis for subsequent TPA source removal authorization amendments to the existing PPC Temporary Bypass 404, 318, and 310 permits (by USACE, MDEQ, and LCCD as discussed in 7.2.1 above) and an updated Floodplain Development Permit from the City of East Helena. It is not anticipated that the City or FEMA will require preparation of an additional CLOMR for the updated permit. As part of the permit process, and prior to issuing the updated permit, the City of East Helena will solicit public comments on the application for a 15-day period.

7.2.3 Montana Pollutant Discharge Elimination System Construction Dewatering Permit MTG070000

The purpose of the MPDES Construction Dewatering General Permit is to regulate the construction dewatering discharges from dewatering cofferdams, excavations, or trenches where sediment-laden infiltration of groundwater or surface water may be discharged to a state surface water. Construction dewatering discharges are subject to effluent limitations, monitoring requirements, and other conditions. Effluent characteristics (water quality data less than 1 year old) must be provided as part of the application for coverage under this permit.

7.2.4 Montana Pollutant Discharge Elimination System Construction Activity Stormwater General Permit MTR100000

Construction activity that results in the “disturbance” of equal to or greater than 1 acre of total land area necessitates coverage from this permit. Obtaining coverage under this permit would require preparation of a Notice of Intent and a SWPPP.

7.2.5 Montana Department of Transportation Permits

Any work done within the Montana Department of Transportation (MDT) right-of-way will require the appropriate permit. MDT will be contacted to secure all required permits in advance of starting construction activities.

7.2.6 Montana Pollutant Discharge Elimination System Permits

The goal of the MPDES program is to control point source discharges of wastewater such that water quality in the receiving streams is protected. The Custodial Trust holds the following two MPDES permits: (1) an individual permit (MT0030147) that provides authorization to discharge treated effluent from the HDS WTP to an outfall in Lower Lake, and (2) authorization under the General Permit for Stormwater Discharges associated with industrial activity (MTR000072).

7.2.6.1 Evaluation of MPDES Individual Permit MT0030147

The Custodial Trust currently holds an MPDES Minor Industrial Individual Permit No: MT0030147 for authorization to discharge under the MPDES program. This individual permit regulates wastewater discharges from point sources that do not fall under the guidelines of General Permits. Individual permits undergo a more rigorous process and address specific conditions of the facility or activity. This permit allows for the discharge of treated effluent from the HDS WTP to an outfall located on Lower Lake. The current permit is valid until July 31, 2015.

Modifications to this permit would be necessary if the outfall location is moved to a new receiving water because of the dewatering and excavation activities that are planned for implementation in Lower Lake. As part of the more rigorous nature of the individual permit, a public comment process would be required to change the outfall location to a new receiving water.

At present, engineering concepts developed for TPA excavation activities do not involve moving the MPDES discharge to a new receiving water. The current plan is to extend the existing 4-inch HDPE outfall pipe less than 500 feet to the east and discharge to small portion of Lower Lake retained to support IM implementation. Engineering drawings will be prepared that depict the proposed modifications to Lower Lake and the outfall pipe. The proposed modifications will be reviewed with MDEQ to confirm that these changes have no effect on the current MPDES individual permit. The Custodial Trust will note to MDEQ that the changes are needed on a temporary basis only until the HDS WTP is decommissioned. HDS WTP decommissioning is scheduled to occur in 2015; however, the Custodial Trust is currently discussing options for extending the existing limits under the MPDES permit with MDEQ.

7.2.6.2 Modification of MPDES General Permit for Stormwater Discharges (MTR000072)

The Custodial Trust currently holds an MPDES General Permit for Stormwater Discharges. Because the site is undergoing active remediation under RCRA, the SWPPP (submitted to MDEQ in July 2013 as discussed in Section 7.1.4 above) will be kept up-to-date to reflect current conditions on the site. Also in accordance with the SWPPP, updates will not be submitted to MDEQ unless specifically requested.

7.2.7 Stormwater Pollution Prevention Plan

As discussed above in Section 7.1.4, stormwater management at the site is accomplished in accordance with an approved SWPPP. An updated SWPPP representing current site conditions was prepared and submitted to MDEQ on July 31, 2013. A copy of the SWPPP is maintained onsite at all times.

7.2.8 Migratory Bird Treaty Act

The Custodial Trust will continue to coordinate and consult with USFWS and USEPA regarding deterrence activities aimed at minimizing non-compliance with the Migratory Bird Treaty Act (MBTA) associated with all IMs.

SECTION 8

Project Management and Schedule

This section provides an overview of project management activities and the proposed schedule for 2014 IM implementation. Organization and lines of communication, public participation, documentation and reporting, and the preliminary schedule are described.

The Custodial Trust will manage all IM activities as part of the responsibilities and obligations set forth in the Settlement Agreement and First Modification to the 1998 Consent Decree. The Custodial Trust will communicate relevant information about the IM task plans, results, and progress to USEPA, as Lead Agency, as well as to the federal and state beneficiaries of the Custodial Trust. Communication will occur on a frequent and timely basis, to review progress on the IMs, to solicit input from the beneficiaries, and to ensure that the beneficiaries are kept well informed of activities onsite.

8.1 Organization and Lines of Communication

The Custodial Trust will procure the services of consultants and contractors to implement the IMs as efficiently and cost-effectively as possible. Figure 8-1 (updated since the publication of the draft for public review) shows the current overall Project Organization Chart and the lines of communication. Table 8-1 identifies the anticipated consultant leads for IM design and construction.

TABLE 8-1
Interim Measure Consultant Leads

Name	Lead Contact	Description of Role
CH2M HILL	Jay Dehner: 509-979-5733	Project management and overall engineering design and construction lead for former Smelter site interim measures
Morrison Maierle Inc.	Mark Brooke: 406-495-3469	Engineering design support and floodplain modeling
Pioneer Technical Services	Joel Gerhart: 406-490-2530	Prickly Pear Creek Realignment design and permitting, including natural resources, stream geomorphology, and engineering design
Hydrometrics	Bob Anderson: 406-443-4150	Hydrogeology and engineering design
Applied Geomorphology	Karin Boyd: 406-587-6352	Stream geomorphology
NewFields	Cam Stringer: 406-549-8270	Groundwater flow and contaminant transport modeling
Confluence	Jim Lovell: 406-585-9500	Stream geomorphology

8.2 Public Participation

Public involvement is a critical part of the overall cleanup process for the former Smelter site. General communication with the public will continue to follow the *Draft Community Relations Plan, Former ASARCO Smelter Facility, East Helena, Montana* prepared by the Custodial Trust (2010), as well as the requirements of the First Modification to the 1998 Consent Decree. In 2013, the Custodial Trust held the following meetings and workshops:

- A meeting of the East Helena Entire Cleanup Team in Coordination (EHECTIC) was held in April 2013 to provide project stakeholders and the community information on the PPC Realignment design.
- A workshop was held in October 2013 to provide the community an update on the PPC Realignment design.
- An informational meeting will be held in December 2013 to provide the community with an overview of the 2014 IM work described herein.

In addition, the Custodial Trust holds meetings with the EHECTIC group to provide information to key local stakeholders and attends the East Helena City Council meetings. The Custodial Trust's website:

http://www.mtenvironmentaltrust.org/east-helena contains links to news on cleanup progress, design documents, meeting materials, and future meeting dates. A video of the PPC Realignment project is available for viewing.

8.3 Documentation and Reporting

The following IM documentation is under development:

- Contract scopes of work and schedules
- Engineering technical reports and memoranda
- Modeling results (including PPC flow, ET Cover System, and groundwater flow)
- Permit application packages
- Detailed engineering designs (plans and specifications)
- Construction contract packages (drawings and specifications)
- Operation and maintenance plans
- Record drawings and contract close-out documents

Core plans that have been developed for the Facility will be incorporated by reference, or amended as appropriate, to ensure that IM activities follow relevant protocols and methods. Core plans include the following:

- Health and Safety Plan for the East Helena former Smelter site
- Quality Assurance/Quality Control Plan
- Sampling and Analyses Plans

IM progress will be summarized in the monthly progress reports.

8.4 Preliminary Interim Measure Implementation Schedule

Table 8-2 summarizes key dates for the proposed 2014 IM implementation and provides schedule updates for the work proposed and approved in the IM Work Plans 2012 and 2013. The schedule is considered a living document and will be revised on a regular basis as needed to reflect planned implementation requirements for each IM. The preliminary schedule was developed in coordination with other ongoing work being conducted by the Custodial Trust pursuant to the First Modification. The schedule for these activities is subject to refinement as input is received from the Custodial Trust, beneficiaries, and other stakeholders.

TABLE 8-2
Summary of Proposed 2014 Implementation Schedule

East Helena Facility Planning and Construction Activities	Start	End
2014 Interim Measures Work Plan		
Public Comment Period	December 2013	January 2014
U.S. Environmental Protection Agency Approval		May 2014
Tito Park Area Removal		
Bidding and Award	February 2014	April 2014
Construction	May 2014	October 2014
Interim Cover System 1 Construction		
Bidding and Award	February 2014	April 2014
Construction	May 2014	October 2014
NorthWestern Energy Substation Removal and 69-kV Line Relocation		
Bidding and Award	March 2014	May 2014
Construction	May 2014	August 2014
Monitoring Well Decommissioning		
Bidding and Award	March 2014	June 2014
Construction	June 2014	September 2014

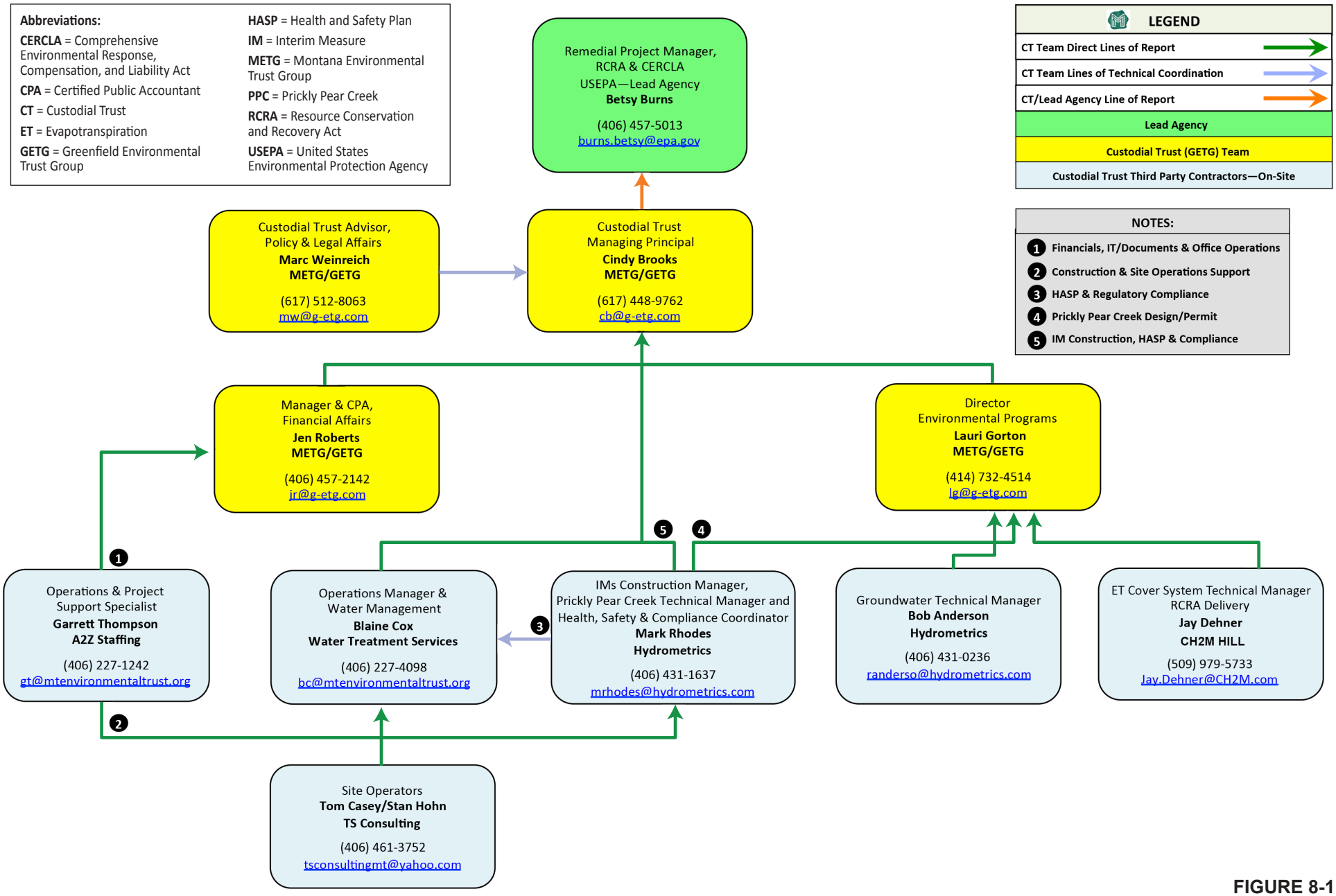


FIGURE 8-1
Project Organization and Lines of Communication
Interim Measures Work Plan–2014
East Helena, Montana

SECTION 9

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Appendix A
Leaching Test Results

Table 6-12. Synthetic Precipitation Leaching Procedure (SPLP) Results

Phase II RFI Report, East Helena Facility

				Total Concentration (mg/kg)		SPLP Concentration (mg/L)	
Sample Location	**Facility Area**	**Depth (ft bgs)**	**Field ID#**	**As**	**Se**	**As**	**Se**
Soil Boring/Monitoring Well Locations							
RFI2SB-3	Tito Park	5-7	AEH-1009-149-SL	2850	8	2.4	0.025
RFI2SB-6	Monier Flue	2.5-5	AEH-1008-567-SL	1460	106	0.002	0.120
RFI2SB-9	Rail Corridor	0-2.5*	AEH-1008-573-SL, -574-SL	1170-1240	151-281	0.026	0.14
RFI2SB-15	Zinc Plant	0-0.5	AEH-1008-659-SL	3350	662	<0.001	0.061
RFI2SB-15	Zinc Plant	0.5-2.5	AEH-1008-660-SL	556	74	0.001	0.01
RFI2SB-15	Zinc Plant	15-17	AEH-1008-664-SL	583	<5	0.017	<0.001
RFI2SB-18	Acid Plant	0.5-2.5	AEH-1008-624-SL	3270	30	2	0.051
RFI2SB-18	Acid Plant	0.5-6.5*	AEH-1008-624-SL, -625-SL, -626-SL	3270-11600	30-126	0.110	0.053
RFI2SB-22	Tito Park	0-5*	AEH-1009-134-SL, -135-SL, -136-SL	78-280	1.4-29.2	0.02	0.03
DH-72	Acid Plant	0-5*	AEH-1008-858-SL, -859-SL, -860-SL	436-816	4.4-19.5	0.042	0.026
DH-74	Slag Pile	0-2	AEH-1008-838-SL	814	97	0.077	0.059
DH-74	Slag Pile	40-42	AEH-1008-842-SL	1210	209	0.130	0.400
DH-76	Slag Pile	5-12*	AEH-1008-767-SL, -768-SL	570-864	267-325	0.009	0.13
DH-76	Slag Pile	55-62*	AEH-1008-778-SL, -780-SL	1715-3060	25-57	0.099	0.036
Surface Soil Locations*							
RC-SS7	Rail Corridor	0-0.5	AEH-1008-131-SL	5100	754	0.009	0.11
RC-SS7	Rail Corridor	2.5-5	AEH-1008-133-SL	588	96	0.021	0.490
RC-SS5	Rail Corridor	0-0.5	AEH-1008-118-SL	6150	569	0.016	0.027
RC-SS5	Rail Corridor	0.5-2.5	AEH-1008-119-SL	1170	75	0.020	0.340
UOS-SS8	Tito Park	2.5-5	AEH-1008-104-SL	799	64	0.007	0.022
UOS-SS14	Tito Park	2.5-5	AEH-1008-111-SL	1680	160	0.017	0.013

Notes:

*Denotes sample composited for SPLP analysis from individual grabs collected over indicated depth; for these samples, total concentration ranges are shown for analysis of total arsenic and selenium conducted on individual samples.

**Samples were added to SPLP testing program after reviewing initial results; therefore, these represent supplemental samples not included in Table 2-3-1.

Table obtained from Hydrometrics, Inc.: Section 2 Tables.xlsx/2-3-2

Table 6-13. Sequential Batch Leach Results

Phase II RFI Report, East Helena Facility

					Sequential Batch Leach Test Number and Leachate Arsenic Concentration (mg/L)							
Sample Location	**Facility Area**	**Depth (ft bgs)**	**Field ID#**	**As Tot (mg/kg)**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Arsenic Results												
RFI2SB-1	Tito Park	2.5-5	AEH-1008-585-SL	235	0.19	0.13	0.096	0.088	0.066	0.069	0.066	0.063
RFI2SB-3	Tito Park	10-12	AEH-1009-150-SL	471	0.57	0.87	1	0.77	0.33	0.33	0.3	0.29
RFI2SB-6	Monier Flue	2.5-5	AEH-1008-567-SL	1460	0.029	0.022	0.021	0.086	0.005	0.007	0.008	0.01
RFI2SB-8	Rail Corridor	40-41	AEH-1008-510-SL	124	0.088	0.083	0.081	0.018	0.11	0.1	0.092	0.095
RFI2SB-16	Parking Lot	25-32*	AEH-1009-108-SL, -109-SL	154-184	0.33	0.22	0.12	0.096	0.14	0.14	0.12	0.11
RFI2SB-16	Parking Lot	40-42	AEH-1009-112-SL	403	2.8	1.3	0.92	0.65	0.76	0.51	0.4	0.33
RFI2SB-18	Acid Plant	10-16.5*	AEH-1008-627-SL, -628-SL	1260-1710	1.1	0.77	0.62	0.5	0.56	0.51	0.46	0.43
RFI2SB-21	Downgradient	30-52*	AEH-1009-123-SL through -127-SL	64-275	0.31	0.25	0.22	0.19	0.24	0.22	0.2	0.19
RFI2SB-22	Tito Park	15-17	AEH-1009-141-SL	121	0.043	0.019	0.012	0.012	0.012	0.093	0.024	0.022

					Sequential Batch Leach Test Number and Leachate Selenium Concentration (mg/L)							
Sample Location	**Facility Area**	**Depth (ft bgs)**	**Field ID#**	**Se Tot (mg/kg)**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Selenium Results												
RFI2SB-3	Tito Park	10-12	AEH-1009-150-SL	13	0.014	0.013	0.012	0.01	0.012	0.008	0.007	0.006
RFI2SB-6	Monier Flue	2.5-5	AEH-1008-567-SL	106	0.28	0.11	0.069	<0.001	0.068	0.042	0.04	0.04
RFI2SB-18	Acid Plant	10-16.5*	AEH-1008-627-SL, -628-SL	76-94	0.21	0.18	0.15	0.13	0.19	0.16	0.15	0.13

Notes:

*Denotes sample composited for sequential batch leach analysis from individual grabs collected over indicated depth; for these samples, total concentration ranges are shown for analysis of total arsenic and selenium conducted on individual samples.

Sequential batch leach tests consisted of consecutive SPLP-type extractions conducted on a single soil sample using Upper Lake water as extractant.

Table obtained from Hydrometrics, Inc.: Section 2 Tables.xlsx/2-3-3

Appendix B
Public Comments Received on the 2014 Interim Measures Work Plan with U.S. Environmental Protection Agency Responses and Conditional Letter of Approval

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8, MONTANA OFFICE
FEDERAL BUILDING, 10 W. 15th STREET, SUITE 3200
HELENA, MONTANA 59626

Ref: 8MO

SENT VIA E-MAIL

April 28, 2014

Ms. Cynthia Brooks
Montana Environmental Trust Group
Trustee of the Montana Environmental Custodial Trust
100 Smelter Road
P. O. Box 1230
East Helena, MT 59635

Re: Conditional Approval of the Draft *Former ASARCO East Helena Facility Interim Measures Work Plan – 2014*, dated December 2013.

Dear Ms. Brooks,

On December 3, 2013, EPA submitted the Draft *Former ASARCO East Helena Facility Interim Measures Work Plan – 2013,* dated December 2013, for public review and comment as required in paragraph 72 of the First Modification to the 1998 USA v. ASARCO Consent Decree. EPA received four comments on the Work Plan and has provided responses to the comments (see attached).

Today, EPA is approving the proposed work for 2014, as detailed in the Draft *Former ASARCO East Helena Facility Interim Measures Work Plan – 2014*, with the following conditions:

- The Montana Environmental Trust Group (METG) will incorporate modifications as requested in the EPA Response to Comments (see attachment);
- The comments submitted, along with the EPA responses, will be incorporated as an appendix into the 2014 Final Work Plan; and
- Annual Interim Measure Work Plans for 2015 and possibly 2016 will be provided to EPA with scheduling for adequate time for public comment and review.

Please provide the Final 2014 Work Plan with the requested changes to EPA within thirty days. If you have any questions on this letter or any related matter, please contact me directly at (406) 457-5013.

Sincerely,

Betsy Burns
Project Manager

Attachment

4/28/2014 – EPA RESPONSE TO EASTGATE VILLAGE WATER & SEWER ASSOCIATION COMMENTS ON THE *DRAFT FORMER ASARCO EAST HELENA FACILITY INTERIM MEASURES WORK PLAN – 2014, DATED DECEMBER 2013*

January 11, 2014

Betsy Burns
U.S. EPA Region 8
10 West 15th Street, Suite 3200
Helena MT 59626

Subject: Former ASARCO East Helena Facility Interim Measures Work Plan- 2014

Dear Ms. Burns,

This letter is being advanced in response to information provided at the Public Meeting (held on 12/18/13) and should be considered as formal comment on the 2014 Interim Measures Work Plan.

First and foremost, the Eastgate Village Water & Sewer Association would like to express support for the remediation efforts in and around the East Helena area. As members of the East Helena community, we appreciate the efforts of those who are working to make our corner of the world a better place to live.

EPA Response - Thank you for providing comments on behalf of the Eastgate Village Water & Sewer Association (EWSA) and for your support of the efforts to remediate the former Asarco smelter in East Helena.

With that said, we cannot help but feel that our concerns have not been heard and that our rights have been violated by recent actions at this remediation site. Specifically:

- The Eastgate Water & Sewer Association was not consulted when the Company Ditch was modified to accommodate the relocation of the East Helena water transmission line. As a holder of water rights associated with the Company Ditch, it is required by state law (MCA 70-17 -112) that written consent be obtained prior to any encroachment (or impairment) on a ditch or canal easement. Since the Association was not consulted, and written consent was not obtained, this was a clear violation of state law.

  EPA Response - In its December 12, 2012 letter to EPA (responding to comments on the draft 2013 Interim Measures Work Plan or IMWP), EWSA asserted that the Company Ditch was not abandoned. In its January 31, 2013 response to EWSA's letter, EPA requested additional information about use of the Company Ditch. Since EWSA did not provide the requested information, the Custodial Trust reviewed all available information about the Company Ditch and found that it had not been used to convey

water from Prickly Pear Creek (PPC) since 1999. Accordingly, EPA and the Custodial Trust each independently concluded that in the absence of any response to our request for additional information, EWSA's approval of the waterline relocation was not required.

The encroachment you refer to, which resulted from relocation of the City of East Helena's waterline, was temporary and occurred over a two- to three-day period, after which the pipe was fully reinstated. EPA notes that EWSA has incurred no actual harm in this matter because the Company Ditch was not in actual use at the time of the temporary encroachment and the pipe was restored well before this EWSA comment letter was submitted to EPA.

- Similarly, the Eastgate Water & Sewer Association was not consulted when Prickly Pear Creek was re-routed around the Smelter Dam - thus effectively severing the Company Ditch from its point of diversion (the Smelter Dam). Again, the Association did not provide written consent and thus we have a second violation of state law.

  EPA Response - As stated above, based on records from the PPC water commissioner the Company Ditch has not been used to convey water from PPC since at least 1999, and then only for a short period of time.

  Nevertheless, in response to your concern, EPA would be willing to authorize the Custodial Trust to expend trust funds to work with the EWSA to review options to reinstate the steel pipe that connects the headgate to the concrete ditch near the point of diversion so that the Company Ditch can be used for its intended purpose. However, based on the presently pending EWSA permit application to the Department of Natural Resources and Conservation (DNRC), the Custodial Trust has learned that EWSA is affirmatively seeking to abandon its rights to PPC water in exchange for certain groundwater rights. Because EPA is committed to ensuring that the Custodial Trust expends scarce trust resources only on valuable clean-up related work, EPA proposes a meeting among EPA, the Trust and EWSA representatives, including a tour of the Temporary Bypass Channel (TBC) area, to determine whether and how application of scarce trust dollars can be used to address your concern.

- Additionally, plans are in the works for the eventual removal of the Smelter Dam. To date, the Eastgate Water & Sewer Association has not been consulted with regard to any modifications to this point of diversion for the Company Ditch. Should removal work begin without Eastgate's consent, it is our belief that this would constitute another violation of state law.

  EPA Response - EPA respectfully disagrees with EWSA's view of Smelter Dam. We are not aware of any documents or other information indicating that EWSA's rights to PPC water include a particular configuration of the stream (such as a requirement to artificially maintain a pool of water behind Smelter Dam). If EWSA has documentation that its rights to PPC water include an obligation to maintain Smelter Dam, EPA would appreciate receiving such information as quickly as possible. Without substantial

information in support of EWSA's position, EPA will not conclude that that EWSA's permission is required to remove Smelter Dam. Nevertheless, EPA and the Custodial Trust would be happy to review proposed work plans relating to removal of Smelter Dam with EWSA (which is scheduled to occur sometime in the next two years) in a manner which allows for effective input into the work plan development process.

- Lastly, the Custodial Trust (and EPA) have given no consideration toward mitigating the long-term effects (of their remediation efforts) on the Eastgate Water & Sewer Association. At present, the Company Ditch is severed and usable. In the future, the point of diversion for the Company Ditch will be removed. It is clear that the remediation effort has created these issues - yet there has been no effort to accommodate the Association in the short-term or the long-term. This omission seems especially glaring when accommodations have already been made for Wilson Ditch users and affected utility operators (such as the City of East Helena and Century Link).

  EPA Response - EPA respectfully disagrees with EWSA's position that water delivery via the Company Ditch warrants the same consideration given to Wilson Ditch. Wilson Ditch has conveyed irrigation water from the west side of PPC across the smelter property to the Burnham Ranch every year for decades. The Burnham's actively used and maintained Wilson Ditch. On the other hand, according to the PPC water commissioner, water has not been delivered to the Company Ditch point of diversion since at least 1999, and, in that year, only for a short period of time. Other than the steel pipe from the headgate, the ditch remains undisturbed on Custodial Trust property and removal of the steel pipe to construct the TBC has had no apparent or immediate adverse impacts to EWSA.

At every turn, the Custodial Trust (and EPA) have been dismissive of the Association's rights relating to the conveyance (the Company Ditch) and point of diversion (the Smelter Dam) associated with its Prickly Pear Creek water rights. In response to comments advanced last December, the Trust and EPA even questioned the legal status of the ditch - despite the fact that ditch users affirmed that the ditch is, in fact, still active. The Trust (and EPA) made no effort to verify this information on their own and threw it back to the ditch users to prove their case. For the record, the DNRC has already conducted a thorough review of the Association's claims and has determined that they are indeed valid.

EPA Response - EPA respectfully disagrees with EWSA's assertion that there have been no efforts to follow-up with EWSA. On May 1, 2012, representatives from EPA and the Custodial Trust met with EWSA representatives to discuss the Company Ditch. At that meeting, EWSA committed to providing EPA with information and a proposal relative to the Company Ditch. However, EWSA did not provide information or a proposal. Seven months later, EWSA submitted its response to comments on the 2013 Draft Interim Measures Work Plan on December 6, 2012. ESWA, however, did not provide any of the information it committed to share with EPA. Because of EPA's concern that it not unintentionally affect valid water rights, EPA again requested information from the Company Ditch users in a letter dated January 30, 2013. Again, ESWA did not live up to its commitment to send relevant information, and did not respond to EPA's written request. Instead, approximately one year later ESWA issued its

January 14, 2014 letter threatening legal action against EPA and the Custodial Trust. Immediately upon receipt, the Custodial Trust responded with a telephone call to Mr. Johnson, and, at the request of both the EPA and the Custodial Trust, a meeting was held with ESWA on February 11, 2014 in East Helena. EPA and the Custodial Trust appreciated the opportunity to learn about ESWA's goals, needs and efforts to secure DNRC approval to transfer PPC surface water rights to groundwater rights. We also thank EWSA for providing documentation about its DNRC application on March 5, 2014.

Based on our recent communications, EPA better understands EWSA's water shortage issues. We also trust EWSA also better understands the circumstances under which the Trust is conducting cleanup activities under EPA oversight. Although our view of the impact, if any, of the Trust's cleanup work on EWSA's responsibilities, differs from EWSA's view, EPA is committed to continuing to discuss potential paths forward with EWSA, and to authorize the Trust to expend a limited amount of funds to also engage in such discussions.

Further, the Custodial Trust (and EPA) seem to apply a different set of standards to Company Ditch users. It was stated that Wilson Ditch users would be accommodated because their point of diversion (Upper Lake) was being eliminated as part of the Interim Measures Work Plan. Isn't that the exact same scenario that Company Ditch users are facing? Yet, Company Ditch users are expected to fend for themselves.

The Eastgate Water & Sewer Association views this course of action as unacceptable. Moving forward, the Association expects that the Custodial Trust (and EPA) will advance a new plan of action that will give consideration to the Eastgate's Water & Sewer Association's established rights at this location. We fully expect that the Custodial Trust (and EPA) will advance a new proposal in one month's time from the close of the official comment period. Thus, we look forward to hearing from the Custodial Trust (and EPA) prior to February 13th 2014. If we do not receive a proposal by this date, we will turn this matter over to our attorneys.

EPA Response - In response to your request, EPA proposes to schedule a meeting among EPA, EWSA and the Trust to further discuss your assertions and potential paths forward. We look forward to hearing back from you about setting up a meeting at your earliest convenience.

Thank you again for your comments on the 2014 draft IMWP.

Sincerely,

Paul Johnson
President- Eastgate Water & Sewer Association

4/28/2014 – EPA RESPONSE TO JAMES SCHELL COMMENTS ON THE *DRAFT FORMER ASARCO EAST HELENA FACILITY INTERIM MEASURES WORK PLAN – 2014, DATED DECEMBER 2013*

Date: January 7, 2014

Subject: Public Comments - Draft EH Interim Measures Work Plan 2014

To: Betsy Burns
EPA Region 8 Montana Office
10 W. 15th St. - Suite 3200
Helena MT 59624
burns.betsy@epa.gov

From: James Schell
Box 1610
East Helena MT 59635-1610
jamie@schell.net

Thank you for the opportunity to comment on the well written and very comprehensive East Helena Draft Interim Measures Work Plan (IMWP) 2014.

These comments were produced using the *Draft for Public Review - Former ASARCO East Helena Facility Interim Measures Work Plan - 2014* document dated December 2013. (source)

The following comments are my own and may not represent the opinions or comments of the City of East Helena or the East Helena City Council.

Comment #1
Three very important related aspects of the METG and USEPA Interim Measures have been highlighted with the release of the Draft IMWP 2014. The first concerns the removal of the previously proposed CAMU 3 as described in detail in previous IMWPs. The second concerns the final disposal of the Tito Park Area (TPA) soil into the evaportranspiration (ET) cover throughout portions of the METG property, and the third concerns the introduction of a time phased ET cover system approach with Interim Cover System (ICS) 1 and ICS 2 implementation.

Section 5.2, Interim Cover System 1 Construction, details certain portions of ICS 1. However, nowhere in this section, or throughout the very thorough Draft IMWP 2014, are any historical references or engineering standards that were used in the design of ICS 1 and/or ICS 2. In the past, METG had proposed an area set aside for a test ET cover system. Although nowhere in writing that I have seen is reference to why exactly the test ET cover area was abandoned, what scientific evidence, engineering standards, or historical ET cover system references are the METG and USEPA using in their design of ICS 1 and/or ICS 2? Additionally, placing TPA soil throughout portions of the site inside the ET cover system brings questions of official engineering standards and historical evidence that provide needed assurances to the public that leaching of TPA contaminants into the groundwater will not occur between implementation of ICS 1 and ICS 2 as well as throughout the ET cover system's lifetime.

EPA Response

- Plans to construct the ET Cover System test plot were cancelled based on the proposed construction cost of more than $500,000. In lieu of test plot data, the Custodial Trust will gather, evaluate, and if appropriate, use data from existing ET Cover Systems in Montana and specifically in the Helena Valley for the ET Cover System basis of design. It is believed this will significantly reduce ET Cover System design costs while ensuring that the design will meet the required performance criteria. The Custodial Trust will clarify this in the 2014 IMWP.
- Language will be added to the 2014 Final IMWP to better differentiate the ICS from the ET Cover:
    - The proposed cover system for the site consists of two components or layers—the ICS and the final ET cover.
    - The ICS will be the foundation layer, which will establish the general grading for the overall cover. The ICS fulfills 2 primary functions in the 1—2 year period that the ICS will be in-place before the final ET layer is installed:
        - To protectively manage TPA soils being consolidated within the AOC; and
        - To eliminate stormwater contact with contaminated surface soils in order to avoid the need to collect and treat stormwater at the HDS plant.
- The ET (Evapo-Transpiration) cover is expected to be the top or final layer for the overall cover system that lays on top of the ICS. The function of the ET Cover is to "store and release" stormwater. Like a sponge, it will hold (store) water until it evaporates or is transpired by vegetation (release). With the ICS underneath, environmentally significant stormwater will not reach the contaminated soil below.
- The ET Cover and ICS are being designed to meet RCRA Corrective Action Remedy Performance Standards established by EPA, which standards include:
    - Preventing human and ecological receptors from coming into contact with contaminated surface soils;
    - Preventing the contamination of clean stormwater (that then requires collection and treatment);
    - Reducing infiltration of precipitation into and through contaminated soils; and
    - Integrating all relevant EPA and industry guidance on such cover systems.
- ICS engineering standards are governed by best management practices in order to:
    - Prevent direct contact by receptors with contaminants by placing clean materials over contaminated soils; and
    - Reduce (but not totally eliminate) infiltration of precipitation by: constructing surface grades that shed precipitation (as opposed to flat areas where water could pond and soak into the ground) and using low permeability soils.
- EPA is committed to ensuring that the Trust implements "sustainable" measures that will stand the test of time and remain protective with minimal long-term O&M costs.

Comment #2

Contained in Section 5.2.2, Design and Construction Features, of Section 5.2, Interim Cover System 1 Construction, is mention of a lining method for ditches near the edges of the ET cover: "The ditches will be lined to prevent infiltration of runoff near the edges of the ET Cover System. The lining method will be determined during design but will be robust enough to resist puncture and other damage."

In my opinion, the METG and USEPA should detail engineering standards and requirements for the "lining method" of these ditches in IMWP 2014 to allow public and other public agency review of their "robustness." See Comment #1 regarding engineering standards.

EPA Response - EPA is requesting that the revised 2014 IMWP clearly state that detailed engineering design and construction standards for ditch lining are being developed based on remedy performance standards.

Comment #3
Contained last in Section 5.2.1, Key Design Objectives, of Section 5.2, Interim Cover System Construction, is the following statement: "9. Potentially provide for future construction of a Montana Rail Link spur near the slag pile. This rail spur will be used for future slag recovery load-out operations."

Perhaps the most talked about portion of the physical ASARCO smelter legacy, and surely the most visible, is the slag pile. Only you who are tasked with the design and cleanup during these important stages can assist in the long term planning and ability to remove the slag pile for future generations. In my opinion, "potentially provide" is a rather weak guarantee for such an important aspect of your project. I believe that the METG and USEPA should provide for, and design in, an area for an existing (extension) or future rail spur to accommodate slag removal. Making removal of the slag difficult or impossible would be a huge detriment to East Helena.

EPA Response - EPA is committed to ensuring that all reasonable steps are being and will continue to be pursued to reduce, recycle and/or reprocess slag from the Site, and EPA is confident that the Trust also is committed to this goal. Current design plans include provisions for vehicle access to the Slag Pile as well as rail access to reprocessed slag near the existing point where slag has been loaded to rail cars and shipped to British Columbia. However, it should be noted that the sheer volume (14 million tons) of slag at the East Helena Site poses a daunting task. Additionally, the ability to remove slag is governed by factors outside of the Custodial Trust's control including: the commodity price of metals (for reprocessing slag); the demand for unfumed slag that can be used for in the manufacture of cement and other materials; and the commercial viability of emerging technologies to successfully recycle slag for manufacturing products such as oil-gas "frac" sand, roof shingles, etc. Nevertheless, the Custodial Trust intends to continue to pursue all viable options for reducing the slag pile—not only because of the overall improvement to East Helena's environment, but also because of the community's long-term goal to eliminate the slag, and also to create jobs and generate revenue that can help fund the cleanup.

Comment #4
Section 2.2.2.2, Description, of Section 2.2.2, Substation Removal and 69-kilovolt Transmission Line Relocation, contains a statement that concludes: ".... the presence of PCBs in soil suggests that additional investigation within the substation will be needed to characterize soil for disposal during substation demolition."

Additionally, Section 4.2, Additional Data Requirements for 2014 Work, dot point 5 explains that subsurface soil samples will be collected by NWE during the planning and engineering design phase for (69kV) substation decommissioning.

Lastly, Section 6.2, Remedial Waste Management in 2014, Table 6-1, and Section 6.2.3, Substation Removal and Transmission Line Relocation, also discuss activities surrounding the possibility of remedial waste management associated with the removal of the 69kV line by NWE from the METG property.

In my opinion, the METG and USEPA should require that any soil testing done by NWE during this phase of the project be documented, archived, and available to the public by some means. The existence of potential PCB contamination has been well researched and documented throughout

your involvement in this project. I could not find any reference in the Draft IMWP 2014 that the METG or USEPA will require NWE to release any soil data that NWE collects during the 69kV substation removal and transmission line relocation, kindly let me know if I missed this important step.

EPA Response - NWE is responsible for funding and implementing all sampling, analysis and removal of the substation in compliance with all health, safety and environmental laws and regulations. Although NWE is not conducting this work pursuant to an order issued by EPA (or State order), EPA will request that NWE: perform confirmatory sampling to demonstrate that there has been no exceedence of PCB standards; compile all sampling and analytical results; and make such results available to the public.

4/28/2014 – EPA RESPONSE TO STATE OF MONTANA COMMENTS ON THE *DRAFT FORMER ASARCO EAST HELENA FACILITY INTERIM MEASURES WORK PLAN – 2014, DATED DECEMBER 2013*

Betsy Burns
Remedial Project Manager
US Environmental Protection Agency
1OW 15th Street, Suite 3200
Helena, MT 59601

RE: Montana's Comments on Draft *Former ASARCO East Helena Facility Interim Measures Work Plan - 2014*

Dear Ms. Burns:

The State of Montana, through the Montana Department of Justice and Department of Environmental Quality, submit the following comments on the Draft *Former ASARCO East Helena Facility Interim Measures Work Plan – 2014* (2014 IMWP), submitted by the Montana Environmental Trust Group (METG) in December, 2013.

General Comments:

EPA Response to all General Comments: EPA acknowledges that many of the general comments reflect the State's previously stated position on the Interim Measures and the Corrective Measures Study processes. (See 7/16/2012 and 11/2/2012 letters from R. Collins.) In this response EPA reiterates our previous responses and our position that the IM approach being proposed for and implemented at the East Helena Facility is protective of human health and the environment, and is making significant, tangible early progress towards reducing exposure to contaminants at and from the former Smelter site while evaluations of potential final corrective measures are being conducted as part of the Corrective Measures Study. Further, this approach is consistent with all applicable regulations, RCRA guidance and the First Modification to the 1998 Consent Decree (1998 CD) (see EPA Response to Comments on Final Draft Former ASARCO East Helena Facility Interim Measures Work Plan – Conceptual Overview of Proposed Interim Measures and Details of 2012 Activities – dated August 27, 2012). In addition, and more specifically:

a. The lower groundwater elevations observed to date result in an estimated 30% decrease in groundwater flux through contaminated soils. This information has been provided in the modeling Technical Memorandum, dated February 3, 2014, and presented to the State at the February 12, 2014 Groundwater Technical Working Group meeting; and

b. The performance of the IMs will continue to be evaluated as part of the CMS process, and the need for and scope of final corrective measures will be identified based on monitoring results and actual environmental quality data. The technical evaluations of the IMs will meet all the requirements for remedy evaluation specified

in the 1998 CD and all other RCRA requirements.

c. The conceptual IMs proposed by the Custodial Trust and approved as such by EPA as part of the Interim Measures Work Plan 2012 process, are intended to function as permanent remedies if determined to be effective for the long-term, and, assuming they function as expected, will comprise at least a significant portion of the final remedy for the East Helena Facility.

Development and refinement of the IM approach has been carefully considered for each IM proposed, including the IMs for 2014. To accomplish this goal, technical staff from EPA and the Custodial Trust has been working as collaboratively as possible, and have made every attempt to include technical representatives of the State of Montana. Even though the State of Montana has failed to allow technical staff to become fully integrated into the collaborative process, notwithstanding repeated requests that the State of Montana do so, during the course of developing the IMs, EPA, along with the Custodial Trust, has worked to ensure that the State has been given extensive opportunities to review and comment on the draft plans prepared for these measures, and during many, if not most, of the regularly held beneficiary meetings and other technical meetings the State legal and technical representatives have been updated on the Custodial Trust's latest information and thinking.

Your comment that "the IM implementation schedule will lead to a CMS analysis that is non-substantive in nature and merely endorses the IMs that are already in place or on the table, as the IMs will already be implemented, at least to a large degree, by that time, and are of a permanent nature" is noted, again. Again, for the record, EPA will ensure that the CMS process maintains the integrity of its intended purpose. EPA further notes that the State has itself implemented interim cleanup measures at a number of State-lead sites that then became the de facto final measures (documented in an MDEQ decision document, such as a record of decision) that was issued after the interim measures were implemented. In fact, it is EPA's understanding that the State of Montana is pursuing this very same strategy at the Upper Blackfoot Mining Complex (i.e., proceeding with cleanup activities not covered by the USFS action memo without a record of decision and contemporaneous with the State's development of the record decision, which represent very significant, permanent interim measures, especially in light of the known funding shortfalls for these activities and relative to the amount of funding available for other remedial activities.

EPA continuously invites the State to participate in every technical activity, including work plan development and review, whether or not the State has elected to participate in the prior relevant work. (EPA does note that, unlike EPA, MDEQ or USFWS, MDOJ has appointed its own representatives on the technical design team for the PPC realignment work, has requested its own third party peer review of the PPC realignment design, and has named at least two individuals to participate on the Groundwater Technical Team, separate from the technical experts and senior management representatives from MDEQ.) EPA will continue to keep the State appraised during our regularly scheduled meetings and at other major points in the process.

Finally, notwithstanding the State of Montana's reluctance to fully participate in the technical work process, EPA remains committed to consulting with the State informally, and during formal consultation periods.

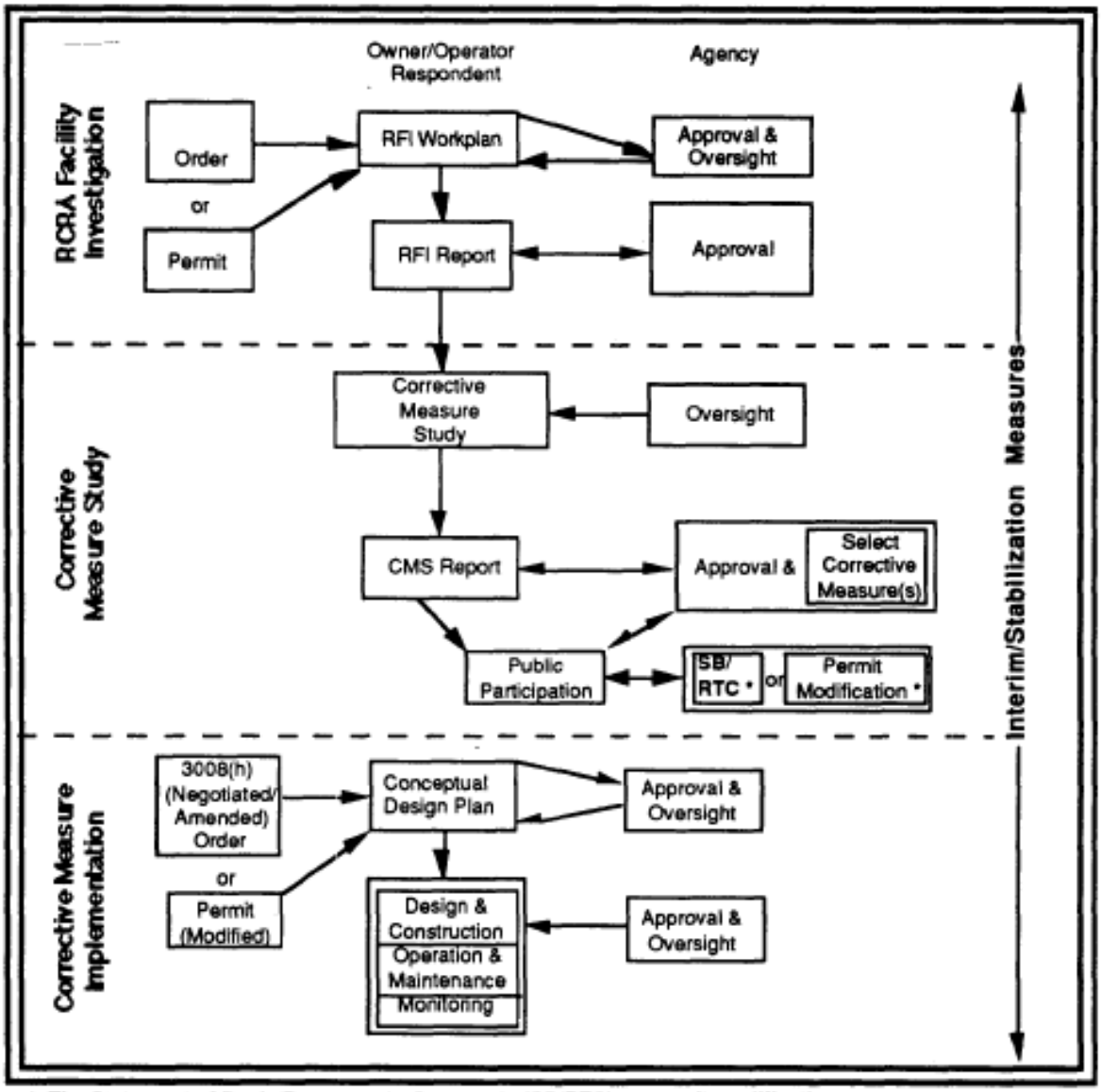
1) Inadequacy of Interim Measures Process. The State maintains that the breadth of the proposed interim measures, which include plans through 2016, requires

that those measures be developed through a conventional RCRA Corrective Measures Study (CMS). The State maintains that the present IM implementation schedule will likely lead to a CMS analysis that is non-substantive in nature and merely endorses the IMs that are already in place or on the table, as the IMs will already be implemented to a large degree by that time, and are of a permanent nature. This is reflected in the 2014 text, which states that "[t]he IMs have been designed to be part of the final remedies for the Facility" even though no final remedies have been developed. Clearly, if the CMS analysis had been performed several years ago, as requested by the State, actions at the site could be proceeding in a comprehensive, more deliberate fashion, and some significant cost savings could have been achieved. Taking the IM path for the East Helena site remains problematic, including for the reason that many final remedies are being put in place without final remedy components such as cleanup values available.

EPA Response –

a. The RCRA Corrective Action program is designed to tailor each program phase (e.g. RFI, CMS, IMs, etc.) to site-specific conditions, such that actions are focused on environmental results rather than "process". This is illustrated in Figure 1 of EPA's 1994 RCRA Corrective Action Plan (CAP), which has been reproduced below for your information.
b. From the beginning, the Custodial Trust's clearly and unambiguously stated intent has been that the proposed IMs become part of the final corrective measures if they work as intended. After extensive review and consideration of the conceptual framework, including consideration of comments from the State of Montana and other stakeholders, EPA approved this conceptual approach. EPA continuously monitors all site information and conditions and is continuously assessing whether adjustment to the conceptual approach, or modifications to existing work plans need to be made to ensure that the short and long term cleanup objectives expressed in the 1998 CD are met.
c. The State's assertion that "some significant cost(s)" could have been avoided by pursuing a CMS (in contrast to implementation of interim measures at East Helena) is unsupported by evidence in EPA's possession and thus will not be addressed other than to state that EPA will conclude that this will not be found (at least by EPA) to be the case when all final corrective measures have been implemented. That said, the State provides no explanation for what constitutes "significant cost(s)."

Figure 1.RCRA Corrective Action Process



* The Statement of Basis/Response to Comments (SB/RTC) or permit modification documents the selected corrective measure(s).

2) Inadequacy of Interim Measures Process. For example, the State reiterates its November 2, 2012 comments on the 2013 IMWP, that further details and analysis are necessary for the nearly site-wide ET Cover System IM. The State maintains that an independent CMS should be developed now that fully analyzes all potential RCRA alternatives. Given the enormous cost estimates, the uncertainty about what contaminated soil will be removed, and the asserted need to replace the wastewater treatment plant, the State believes that implementing the corrective actions without further consideration may be imprudent. The State encourages a thoughtful and deliberative approach to the RCRA corrective action process. The State continues to advocate that a CMS should be developed now to perform a holistic remedy evaluation and analyze reasonable alternatives.

EPA Response – EPA requires that a CMS develop the technical information to show that the proposed final remedy(ies) will be protective and meet site-specific remedy

performance standards. A CMS analyzing "all potential RCRA alternatives" is not a requirement of RCRA, does not ensure a greater environmental benefit, and can waste time and resources by comparing theoretical alternatives that likely have no practical application at a given site. The Custodial Trust's approach to focus CMS and IM evaluations on remedies that have been demonstrated to be effective, have the ability to meet remedial action objectives and remedy performance standards, and can be implemented with finite Trust funds is compliant and consistent with RCRA regulation, guidance and practice.

3) Engineering designs. METG's failure to initially prepare the Corrective Measures Study, which would provide a comprehensive cleanup plan, has resulted in significant expenditures on engineering designs that have not nor will likely to be implemented as originally designed, resulting in significant monetary losses for the Trust. Instead, the site is proceeding with a view towards the short-term, rather than employing a strategy that seeks to expend Trust money over a longer time span in a thoughtful, cost-effective manner.

EPA Response –

a) The Custodial Trust's Interim Measures schedule details activities related to the PPC Realignment (represents the completion of the SPHC IM) slated to occur between 2020 and 2022, which is eight years from now and up to twelve years after the Custodial Trust was established. EPA believes that a twelve-year life span does not seem rushed or lacking in a thoughtful planned approach.
b) The Custodial Trust is preparing a CMS and has been conducting technical evaluations outlined in the draft CMS Work Plan first presented to and reviewed by EPA and the Beneficiaries in 2011.

4) Off-site Groundwater Plumes. As another example of what needs to be considered in CMS, the State again advocates a clear discussion and analysis of the measurable impacts to the current off-site plumes from the proposed IMs. The State believes the impacts must be clearly stated. Both the State and EPA based a significant part of their claims against ASARCO in the bankruptcy proceeding on the perceived need to remediate and restore the off-site groundwater plumes, yet there has been no consideration of such an action by METG up to this point in time. Implementation of the IMs presently considered, with their staggering projected costs, will, in effect, eliminate the possibility of remediating and restoring the groundwater under the City of East Helena.

EPA Response – As discussed in the various public documents the State of Montana has reviewed and commented on, and as discussed in many meetings with many representatives of the State of Montana, the proposed IMs implemented to date have had and will continue to have significant beneficial effects on the current off-site groundwater plumes, primarily by containing and isolating a very significant percentage of contaminated soils (which represent one of most significant sources of contamination to groundwater). Reducing contaminant loading to groundwater results in a long-term improvement in groundwater quality. Groundwater monitoring and modeling have been and continue to be performed to evaluate these impacts and guide the development of subsequent IM design and construction actions (as well as further inform the CMS). Additional evaluations are being planned to look at the overall combined effectiveness of IMs and evaluate the need for supplementary remedial options, if any, to develop the final

remedy. The Custodial Trust is also in the process of revising the objectives and scope of the groundwater monitoring efforts for 2014, and determining the scope of additional groundwater monitoring and long-term stewardship needs, to provide estimates of potential impacts to the off-site plumes.

The Custodial Trust also continues to evaluate the need for and scope of additional groundwater remedies in the event that the projected or actual performance of the IMs does not adequately meet remedy performance standards. Your assertion that the project IM costs are staggering is noted, but since it is purely an opinion it does not merit a response other than to state the obvious: that EPA, by reviewing, commenting on, taking comment on, and then approving the modified work plans, is of the opinion that significant value is being obtained in exchange for the IM costs.

5) Sufficiency of previous IMs. The 2014 IMWP states its goal to build on previous years' IMs, but does not provide information on the sufficiency of previous IMs. For instance, for the SPHC, previous IMWPs theorized an expected 10 feet decrease in the water level, which was to greatly reduce the migration of inorganic contaminants in groundwater. Yet the actual decrease in water level has yet to be quantified. As EPA and METG continue the IM approach, the State believes the sufficiency and effectiveness of previous IMs should be evaluated before further actions are taken which build on these previous IMs.

EPA Response – The actual decrease in groundwater elevations has been, and continues to be quantified through monitoring activities. Groundwater levels in the south portion of the site were observed to drop between 4 and 5 feet during the Upper Lake Drawdown Test, and have dropped approximately 2 to 3 feet since the Temporary Bypass was completed in October of 2013. Information on current groundwater data and updates on the groundwater modeling was presented to the State in a technical Groundwater team meeting on February 12, 2014. The beneficial results-to-date of lowering the groundwater table (via the Upper Lake Drawdown test; diversion of the creek into the bypass; and the lowering of Lower Lake) confirm the projected benefit to groundwater associated with implementation of the IMs. Further, as we have said all along, and again during the February 12th, discussion, information on the sufficiency of installed IMs is being, and will continue to be, collected and evaluated as part of the CMS. The Custodial Trust has been monitoring groundwater elevations at the plant site on a regular basis to observe and document the effects on groundwater of the Upper Lake Drawdown test done as part of the CMS, and first phase of the SPHC IM implementation (the PPC Temporary Bypass).

The effectiveness of the SPHC IM will continue to be evaluated by monitoring the water levels across the South Plant and the East Bench areas. The monitoring program for 2014 includes increased monitoring frequency of water levels at both monitoring wells and surface water locations, including Upper Lake, Lower Lake, and along the PPC.

6) Technical memoranda. It seems that many important technical components of the decision and design are or will be found in technical memoranda and internal documents that other entities have limited access for review. These include decisions regarding what materials will be placed as part of the ET Cover System rather than placed in a CAMU, decisions on the groundwater well network, and decisions on

water management options. Such information should be presented in the IMWP, at least laying out matrices. In the case where this is not done, this information should be provided.

EPA Response – The IMWP has summarized the technical information upon which the measures are based to the degree necessary for EPA to approve the proposed IMs. Technical information that becomes the basis for the CMS final remedy proposal will either be summarized within the CMS Report or included as a technical memorandum in an appendix.

7) 2014 IMWP's Interrelationship with Soil Characterization Study and Proposal to Close CAMU #2. It is the State's understanding that METG intends to spend about $3 million in 2014 to close CAMU #2, including the design and construction of a CAMU leachate treatment system. In closing the CAMU, it is understood that METG proposes to fill the CAMU with contaminated soil and debris best managed in a CAMU. However, the IMWP also notes that other less contaminated media, that could be placed elsewhere onsite, may also be placed in the CAMU in order to bring the CAMU's elevation to the approved design height. See 2014 IMWP Sections 6.1 and 6.2. EPA and METG have told Montana that they believe that CAMU #2 will not be needed for additional onsite removal beyond that planned for 2014, basing this decision upon a soil characterization and removal study, which has not been provided to the State. This seems yet another situation where EPA and METG are performing the actions in the wrong order. Obviously, it would not be efficient and or cost-effective to close CAMU #2, or to otherwise fill it with materials that need not go into a CAMU, if there may be other highly contaminated media and debris onsite that would be best managed in the CAMU. The wisest and most cost-effective course of action would be to finalize the soil characterization and removal study and the CMS, provide them to the State for comment, and then put them out for public comment, before reaching a decision to close the CAMU.

EPA Response – EPA apologizes for any confusion or miscommunication regarding CAMU #2. The decision to close CAMU #2 in 2014 was made because: a) a CAMU is not required to manage the remediation waste that will be generated during interim and potential final corrective measures implementation and b) to immediately start to capture the cost savings associated with reducing the operation and maintenance costs (primarily leachate treatment) associated with keeping the CAMU open. EPA has considered leaving CAMU cell 2 open for an extended period. Other factors, however, in addition to the ones noted above mitigated in favor of beginning to save on CAMU operations and maintenance costs at this time. Currently there is approximately 15,000 cubic yards of capacity remaining in CAMU 2, which is not sufficient to accommodate even a localized removal of one of the primary source areas at the former Smelter site. Further, even if a localized removal action were identified on the former Smelter site, the soils could be managed protectively by being consolidated beneath the ET Cover. In consideration of these factors, EPA believes that leaving CAMU #2 open indefinitely will result in unnecessary operation and maintenance costs, without providing commensurate environmental benefit. Information relating to this issue was clarified at the CMS Work Plan review meeting with the Beneficiaries on February 26, 2014.

8) RCRA Consent Decree Paragraph 15. The term, "Corrective Measures Study," occurs

only two times in the IMWP. The word "remedy" occurs once. Paragraph 15 of the RCRA consent decree requires that, "Each IM Work Plan shall ensure that the interim measure is designed to mitigate immediate or potential threat(s) to human health and/or the environment, prevent or minimize the spread of hazardous waste or hazardous substances, and is consistent with the objectives of and contribute to the performance of any long-term remedies which may be required at the ASARCO Properties." In the absence of the development of a Corrective Measures Study, the IMWP needs to document the connection to the CMS and the final remedy in each section. Please provide this information in the IMWP.

EPA Response – The purpose of the IMWP is to describe proposed IMs in sufficient detail to support EPA review and approval and to provide the public with an opportunity for review and comment on the scope and work plans on an annual basis. EPA would note that nothing is being done in "absence of the development of a Corrective Measures Study", as the CMS has been underway since 2011, and its relationship to the IMs has been documented in the draft CMS Work Plans (which have been submitted and reviewed by both EPA and the Beneficiaries) and will be further documented in the CMS Report. For the record, the term "remediation" occurs twenty-nine times in the draft IMWP.

9) Cost Information for the Public. The State strongly maintains that the public must be informed of the costs of each proposed interim measure and other elements of the budget for the 2014 IMWP, and that such cost estimates should be included in the IM work plan. These estimated costs are essential for full and meaningful public input on the 2014 IMWP, and the IMs planned for 2014.

EPA Response – As previously stated in the response to comments for both the 2012 and 2013 Interim Measures Work Plans, EPA disagrees. Cost information is not properly or appropriately included in a RCRA corrective action IMWP. Including such cost information would inaccurately suggest that EPA is seeking public comment on the estimated costs for the IMs.

The purpose of an IMWP is to describe the objectives, scope and components of a proposed IM such that can be approved by the EPA, as Lead Agency, prior to implementation. The purpose of providing the IMWPs to the public for review and comment is to inform the public of proposed cleanup activities being done under RCRA and provide the opportunity for public participation and comment.

10) IM regulatory requirements. Similar to previous IMWPs, much of the discussion regarding IM regulatory requirements is general. The State expects to provide detailed comment on subsequent plans when the actions are more definitively outlined.

EPA Response – All work being conducted at the East Helena Facility is being performed in accordance with applicable regulations, and the appropriate agencies will be given the necessary information and documentation to support their required review and approval processes. In fact, unlike a CERCLA site, because the work is being performed under the RCRA Corrective Action program, the Custodial Trust is obligated to obtain permits when required by law. Information on permitting requirements is provided in great detail throughout the IMWP and specifically in Section 7 of the draft 2014 IMWP.

11) Overview. Given the level of IM complexity, an overview of the site and contamination history is needed at the beginning of the IMWP so the reader can relate the IMs within the site itself.

EPA Response – In an effort to ensure work is delivered efficiently and cost-effectively, EPA has requested that the Custodial Trust's work plans and reports provide summaries of relevant information that has been presented in other documents, and reference those documents and discussions extensively, rather than repeat the details again and again. For example, a historical overview of smelter operations and site conditions has been presented in multiple documents, including the Phase II RFI Work Plan (Hydrometrics, 2010) and the Phase II RFI (GSI Water Solutions, Inc., 2011). These documents have been provided to the Beneficiaries, and are available in the document repository at the East Helena Public Library and on the Custodial Trust's website. Additionally, EPA has ensured that representatives with Lewis and Clark County and the City of Helena have received copies of the above documents.

12) Relationship to CERCLA. The IMWP should set forth how the 2014 IMWP actions relate to the CERCLA work, particularly the Process Ponds (OU I) ROD.

EPA Response – The relationship of the IMs proposed for 2014 to previous CERCLA actions is not information needed to evaluate and approve these measures.

Specific Comments:

13) Figure 1-1: Section 2.1.3 states that a materials balance analysis will be completed to estimate the volumes of soil to be excavated during the TPA excavation and the PPC Realignment construction and estimate the volume of material needed to construct the ET Cover System. It does not seem appropriate to decide the size of the ET Cover System based on removal volume estimates. Also, according to the IMWP, the ICS 1 consists of both excavated contaminated soil, plus a layer of clean fill over the contaminated soil. In the IMWP, please explain how the ET cover area is to be determined, and how can projected cost be estimated.

EPA Response – Again, EPA apologizes for any confusion or miscommunication regarding the ET Cover System. Points of clarification are detailed below -

a. The size of the ET Cover is being determined to protect human health and the environment and not by the volumes of soil being generated by other IM activities. The aerial extent of the ET Cover has been established to cover soils with contaminant concentrations exceeding risk-based standards, such that the cover will prevent humans, ecological receptors and storm water from direct contact with soils that exceed relevant risk-based cleanup standards, and will control infiltration of precipitation to minimize contaminant loading to groundwater via leaching. The materials balance (which identifies the volumes of soil needed to construct proper cover grades, as well as the volumes of soil generated by other IMs) has been developed to protectively manage remediation waste and reduce the material handling and sourcing costs of the IMs. Projected costs can be estimated in the same way all other construction costs can be estimated, based on the activities necessary to implement the design and current cost data.

b. The ET Cover is not an IM proposed for 2014 and therefore is not addressed in detail in the IMWP for 2014. The ICS 1 will form the subgrade to the final ET Cover, and so when constructed, an approximate 4-foot thick cover system will be placed over the ICS 1 grades. The ICS 1 will be temporarily covered with a lower-permeability native soil to protect it from erosion until the final ET Cover is placed over the top.

14) Page 2-1, Section 2: The introduction to Section 2 states that the section provides a general description of how each phase aligns with the overall IM concept. In the IMWP, please provide a description of how each phase is expected to align with the final remedy.

EPA Response – A brief description of how the IMs align with potential final remedies will be added to the IMWP.

15) Page 2-1, Section 2.1.L #1: DEQ guidance dated 2007 for background inorganic concentrations is referenced in this section. METG should evaluate existing soil data and determine whether or not it believes it is necessary to collect further data for site-specific background concentrations for performance/clean-up standards. The State compiled a site-specific background concentration which is set forth in its filings made during the bankruptcy proceeding. In addition, DEQ has published *Background Concentrations of Inorganic Constituents in Montana Surface Soils,* dated September 2013.

EPA Response – The Custodial Trust has consistently proposed the use of appropriate existing data and criteria to establish remedy performance and media cleanup standards for use in East Helena. EPA agrees with the Custodial Trust's conclusion that developing site-specific background values and cleanup concentrations will not change the scope or scale of remedial actions and will consume resources that could be used for more direct environmental benefit. EPA, however, is willing to work collaboratively with the State of Montana and the Custodial Trust to identify background contaminant concentration values that could be considered appropriately representative of regional conditions based on existing information.

16) Page 2-2, Section 2.1.2: Please provide a copy of EPA's July 29, 2013 email approval of the grading option selected under the 2013 IMWP.

EPA Response –Attached per the State's request is the EPA's July 29, 2013 approval of the TPA grading option. The Custodial Trust also provided the requested email to the State on March 28, 2014.

17) Page 2-3, Section 2.2: In the IMWP, please provide the studies or information relied upon by METG in the conclusion that the ICS will effectively shed stormwater so that it will not need to be treated in the HDS plant.

EPA Response – As noted in Section 5.2, the ability to effectively shed noncontact stormwater (i.e., stormwater that has not contacted contaminated soils and therefore does not require treatment) is a design *objectiv*e of the ICS. As such, materials will be selected to meet the appropriate quality standards and specified within the construction contract

documents. Materials will be tested as part of construction quality control and quality assurance plans to confirm the specifications are met. Note also that final design of the ICS is currently underway, including the completion of studies and modeling to finalize material selection. This information will be summarized in the technical memoranda, which will document the basis of designs.

18) Page 2-3, Section 2.2.1: Please explain how climate change is being considered with the ET cover system design. There is enough information today to make the appropriate design considerations. For instance, the ET cover is a vegetation system and the vegetation that is used should be capable of maintaining its protectiveness as the climate changes over the coming years and decades.

EPA Response – Long-term performance is one of the criteria that will be evaluated to determine whether the currently proposed IMs become part of the final remedy. It is EPA's understanding that one of the primary reasons for the Custodial Trust's recommendation to use an ET cover is that properly constructed and maintained ET covers offer a more sustainable cover system solution (compared to alternative engineered and/or simple vegetated covers), even when considering potential future changes to the climate in East Helena.

19) Page 2-3, Section 2.2.1.3, #5: The water management concept plan addresses issues significantly beyond the IMs (approaches for stormwater, remediation water, and leachate management), and should not be relegated to an additional evaluation due to IM activities. Please address this issue separately, appropriately in the CMS, or as seems more likely given present site processes, as an IM.

EPA Response – A comprehensive understanding of water management at the site is one of the key, critical technical evaluations being performed and documented in the CMS. The relevant aspects of water management (e.g., shedding noncontact stormwater from the ICS) are being incorporated as design objectives in the IMWP because, in the interest of efficiency and cost-effectiveness, they must be addressed in the basis of design for the IMs. EPA and the Custodial Trust met with the MDEQ NPDES Program on March 20, 2014 to begin regulatory discussions on stormwater management, Storm Water Pollution Prevention Plan revision, termination of the Montana Stormwater General Permit, process modifications to the HDS treatment plan and alternatives for management of CAMU leachate. The Custodial Trust also submitted a request, on April 21, 2014, for MDEQ approval to extend the schedule for compliance with final effluent limits set forth in the MPDES permit.

20) Page 2-5, Section 2.2.3: The IMWP improperly treats substantive site-wide monitoring decisions as an offshoot of an IM, established through technical evaluations. For those wells that: (1) are within the ET cover area, and (2) are clearly not of any present or potential use in monitoring, it makes sense to evaluate the decommissioning of those discrete wells. However, in all other cases, "long-term monitoring of final remedies," as stated in the IMWP, should be determined as part of the Corrective Measures Study.
Please modify the IMWP to make clear that decisions on monitoring well decommissioning will be limited to the criterion above.

EPA Response – Clarification on this point will be added to the IMWP.

21) Page 2-5, Section 2.2.3.3: This section states that IM and final remedy performance monitoring goals and objectives will be identified, to establish criteria for monitoring the corrective measure implemented. For those discrete cases where decommissioning is appropriate, it is not clear in what document, if any, the State of Montana and the public will have the ability to review and comment on. This point should be clarified in the IMWP.

EPA Response – In the event that wells are determined not to be necessary for potential future remedy performance monitoring, the Custodial Trust will follow all applicable regulations on well abandonment and provide the proper notifications. The Custodial Trust does document all aspects of the well monitoring program in the annual Field Sampling and Analysis Plan, which is provided to MDEQ, the County's WQPD and other stakeholders on an annual basis. This point will be clarified in the IMWP.

22) Page 3-2, Section 3.1.1: This section references risk-based screening levels when referring to illustrated figures. Please explain how the reader is to determine the significance of contamination without a risk or cleanup value.

EPA Response – The figure will be annotated with the relevant risk-based screening level values (SLVs) and soil screening levels (SSLs) for ease of reference by the reader.

23) Page 3-2, Section 3.1.1: The IMWP states, 'The highest leachable concentrations of selenium were found in soil samples collected from the main plant site, along the rail corridors and the former Acid Plant." In the IMWP, please explain whether the rail corridors issue will be addressed as an IM or in the Corrective Measures Study.

EPA Response – The rail corridors are located within the footprint of the first phase of the ICS, as shown in Figures 1-1 and 2-2 of the 2014 IMWP. The ICS and the final ET Cover will effectively control the infiltration of precipitation through these soils.

24) Figure 3-2: This figure makes it difficult to judge the actual extent and variation of soil contamination for arsenic. Actual soil data should be provided in tables as an appendix so the reader has some understanding of the concentrations of arsenic in various areas and at depth. Also, in the IMWP, please explain why no removal of soils in the Speiss Dross area are being considered, even though these soils have the highest concentrations of arsenic in soils on the site. Please provide the supporting data and analyses supporting the decision.
If one of the reasons is the presence of the slurry wall, then provide an explanation and discussion of this, and explain why the slurry wall is expected to remain effective in the long-term.

EPA Response – As noted in EPA's response to previous comments, information that has been presented in other documents has been summarized and/or incorporated by reference in the IMWPs. The draft Phase II RFI presents the detailed information on soil data requested in this comment. Additionally, this data was presented in table format in Appendix B of the 2012 IMWP.

25) Figure 3-2 and Figure 3-3: Please explain why these figures only display the depth of contamination to 8 feet. The text or figures need to explain why this depth was chosen.

EPA Response – Figures 3-2 and 3-3 were generated as part of the soil removal evaluation done to determine whether there were areas of the site where near-surface soils could be "scraped" into a smaller area in order to reduce the size and cost of an ET Cover. Therefore the MVS model generated graphical depictions of the upper 8 feet of soil to identify whether there were areas of where contaminants were present in only shallower soils. This explanation will be added to the IMWP to explain the basis for the figures.

26) Page 4-1, Section 4.1, #3: The MVS model is referenced for ongoing soil removal evaluation. Please indicate whether a report will be generated and incorporated into a document for public review.

EPA Response – The MVS modeling is a support activity to CMS and IM technical evaluations. As such, relevant information and results generated from the MVS work will be presented in either IM work plans or CMS documentation. Please note that a Technical Memorandum on source removal evaluations has been included as an appendix to the draft CMS Work Plan, which was submitted to the Beneficiaries for review on December 27, 2013. The CMS Work Plan will be available for the public's information after it is approved by EPA.

27) Page 5-1, Section 5.1.2: A maximum depth of 2 feet of sediment is listed as the excavation limit in Lower Lake. The Work Plan should explain the basis for this limitation. Please also explain whether additional removal will occur if unacceptable contamination is still present.

EPA Response – The 2-foot maximum removal depth was based in part on previous sampling information, and the practical aspects associated with removing and safely managing saturated materials. Because this removal action is not being done to achieve a specific contaminant concentration limit, sampling will be done for the purpose of documenting post-removal conditions only. Additional excavation would only occur in the event that visual observations identified unexpected materials of a different nature than the target sediments or native materials.

28) Page 6-2, Section 6.2.1: This section states that limited sampling and analysis will be performed. The State of Montana encourages EPA to require all appropriate representative sampling to determine the remaining hazardous constituents in the area. In addition, the section states the area will be regraded in the future to meet cleanup standards. Please provide the steps METG will take to protect human health and the environment in the interim. These exposure issues should be discussed in the IMWP.

EPA Response –The post-removal, interim conditions at the TPA can be expected to be more protective of human health and the environment than current conditions because the IM is addressing the most contaminated soils and sediments. Potential exposures to this area during the cleanup period (the timeframe within which the IMs and final remedies are being designed and constructed) will be managed as they have been to date – by

restricting public access to these areas and implementing institutional controls for construction workers.

29) Schedule: It would appear, due to the dates, that the designs are complete for these IMs. Please provide those available for review.

EPA Response – Because detailed design documents are not a required part of the IMWPs EPA does not have them and thus cannot make them available for review.

EPA Approval of the Tito Park Grading Options – July 29, 2013

From: Burns, Betsy <Burns.Betsy@epa.gov>
Sent: Monday, July 29, 2013 10:18 AM
To: cb.g-etg.com
Cc: Jim Ford; Lauri Gorton; Breeden, Randy; Randy Breeden; Jay Dehner
Subject: RE: Tito Park Grading Plan

Cindy – Last week I verbally approved the Custodial Trust's recommendation to proceed with option 3 of the Tito Park Grading Plan. I wanted to follow up in writing to document our discussions. I look forward to moving into the design phase for Tito Park. If you need anything additionally from me, please feel free to give me a call.

Betsy Burns, RCRA/CERCLA Project Manager
EPA Region 8, Montana Office
10 West 15th St., Suite 3200
Helena, MT 59626
(406) 457-5013, Toll Free w/in Region 8 states 1-866-457-2690

From: Cynthia Brooks [mailto:cb@g-etg.com]
Sent: Friday, July 19, 2013 2:21 PM
To: Burns, Betsy
Cc: Jim Ford; Lauri Gorton; Breeden, Randy; Randy Breeden; Jay Dehner
Subject: Re: Tito Park Grading Plan

Hi Betsy:
I am just checking in to see if EPA had an opportunity to review and (conditionally) approve the Custodial Trust's recommendation relative to the Tito Park Grading Plan.

Many thanks
Cindy

Cynthia Brooks
President
Greenfield Environmental Trust Group, Inc.
Resources for Responsible Site Management, Inc., Trustee for the Industri-plex Custodial Trust
Montana Environmental Trust Group LLC, Trustee of the Montana Environmental Custodial Trust
Greenfield Environmental Multistate Trust LLC, Trustee of the Multistate Environmental Response Trust
Greenfield Environmental Savannah Trust LLC, Trustee of the Savannah Environmental Response Trust
617-448-9762
cb@g-etg.com

From: Cynthia Brooks <cb@g-etg.com>
Date: Tuesday, June 18, 2013 5:10 PM
To: Betsy Burns <burns.betsy@epa.gov>
Cc: Jim Ford <jf@mtenvironmentaltrust.org>, 'Lauri Gorton' <lg@g-etg.com>, Randy Breeden <Breeden.Randy@epamail.epa.gov>, Randy Breeden <rbreeden54@yahoo.com>,

Jay Dehner <Jay.Dehner@CH2M.com>
Subject: Tito Park Grading Plan

Dear Betsy:
Attached for EPA review and approval is the Custodial Trust's recommended approach to grading plans for Tito Park. The referenced link to the Tito Park Grading Plan analysis is also provided below.

Please do not hesitate to contact me if you have any questions.
Cindy

Subject:	Tito Park Grading Plan Options
File:	TitoPark_GradingOptions_TM_complete-1.pdf - 8.32 MB
Expires:	File will be available for download until September 16, 2013
Link:	http://www.yousendit.com/download/WFJWVWR0Q1JKV05sQXNUQw

Cynthia Brooks
President
Greenfield Environmental Trust Group, Inc.
Resources for Responsible Site Management, Inc., Trustee for the Industri-plex Custodial Trust
Montana Environmental Trust Group LLC, Trustee of the Montana Environmental Custodial Trust
Greenfield Environmental Multistate Trust LLC, Trustee of the Multistate Environmental Response Trust
Greenfield Environmental Savannah Trust LLC, Trustee of the Savannah Environmental Response Trust
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4/28/2014 – EPA RESPONSE TO LEWIS AND CLARK COUNTY WATER QUALITY PROTECTION DISTRICT (WQPD) COMMENTS ON THE *DRAFT FORMER ASARCO EAST HELENA FACILITY INTERIM MEASURES WORK PLAN – 2014, DATED DECEMBER 2013*

Date: January 13, 2014

To: Betsy Burns, EPA

From: James Swierc, P.G.
Lewis & Clark Water Quality Protection District Staff

Re: 2014 Interim Measures Work Plan (IM Work Plan 2014) Comments

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The following comments represent concerns identified by Lewis and Clark Water Quality Protection District (LCWQPD) staff after reviewing the IM Work Plan 2014. The comments include general comments which relate to conceptual issues, and specific comments corresponding to individual components of the document.

General Comments

1. The rationale for the change in design criteria for the soil repository for the excavated source area is not clear. Previous work plans indicated that soils and debris would be placed into a Corrective Action Management Unit (CAMU), consistent with industry protocols for managing excavated hazardous materials. Placement of the excavated soils into an unlined repository overlying high permeability areas of the Prickly Pear Creek valley alluvial aquifer represents a management method for these materials inconsistent with industry standards. These materials represent a significant potential contaminant source for ground water, without any basal barrier that can reduce the susceptibility of local ground water to contamination from these materials. Information such as the stratigraphy and the anticipated thickness of the unsaturated zone beneath the repository would be useful in understanding and providing meaningful comment on the design change away from a CAMU.

EPA Response – EPA appreciates the thorough review and would like to provide clarification on several points:

1. There has been no change in the design criteria for consolidation of remediation waste within the EPA-approved Area of Contamination (AOC). If the commenter's use of the term "soil repository" is a reference to a third CAMU, the Custodial Trust has proposed and EPA has agreed that a CAMU is not necessary to protectively manage the remediation waste (primarily soils) that will be generated by the implementation of interim and final corrective measures. Key points regarding the chronology and rationale for the current remediation waste management approach are:

    a. The *Former ASARCO East Helena Facility Interim Measures Work Plan – Conceptual Overview of Proposed Interim Measures and Details of 2012 Activities*, proposed establishing an Area of Contamination (AOC) at the Facility to protectively and cost-effectively manage all remediation waste generated

during both Interim Measures and final corrective measures (including excavated soil) by consolidating materials with similar contaminants into a smaller area on the former Smelter site. The AOC was approved by EPA on August 28, 2012 (IM Work Plan 2012).

b. The application of the AOC policy is a common practice under EPA's RCRA Corrective Action program. The level of protectiveness associated with an AOC is achieved in part by aggregating materials with similar contaminants into a smaller area where they can be controlled more effectively and efficiently managed by combinations of engineered controls as appropriate for the individual site.

2. Existing information and data regarding site conditions, as summarized in the draft Phase II RFI indicate that consolidation of materials from the TPA onto the areas shown in IM Work Plan 2014 (Figure 1-1) will be protective without a liner. Consolidated materials will be isolated above the existing and post-South Plant Hydraulic Control IM (SPHC) groundwater table and below the ET Cover, such that the potential for exposure and for contaminant mass loading to groundwater will be effectively controlled without the need for a bottom liner system.

    a. The current depth to groundwater in the consolidation areas is 30-40 feet, and is expected to increase further as a result of SPHC IM implementation.
    b. The final ET Cover will minimize the potential for precipitation to infiltrate these areas. Existing research has demonstrated that ET covers effectively control infiltration and perform well over time. The Custodial Trust will develop a long-term operation and maintenance plan that will include inspections and any repairs necessary to protect the integrity of the cover.
    c. The proposed Interim Cover System will prevent human and ecological receptors and stormwater runoff from coming in contact with the consolidated materials until the final ET Cover is in place.

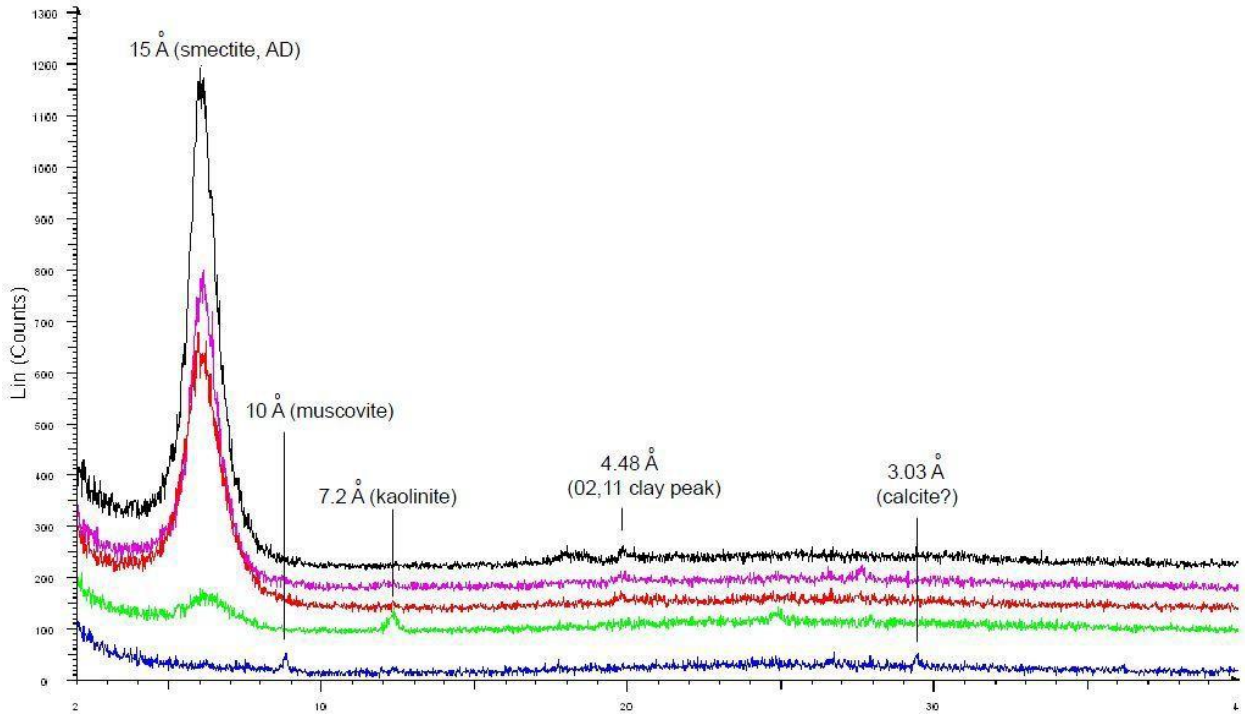
In general, information on site conditions that has been presented in other documents is being incorporated by reference into the IM work plans. Please note that the information on site stratigraphy and a detailed description of the site geology is presented in Section 5 of the draft *Phase II RCRA Facility Investigation—East Helena Facility* (draft Phase II RFI; GSI Water Solutions, Inc., 2011). In addition, results of soil contamination investigations are presented in Section 6 of the draft Phase II RFI. Nevertheless, in response to this important comment, EPA is providing the attached three cross-sections generated by the Custodial Trust's contractors to provide additional details of the underlying site stratigraphy, list the arsenic and selenium concentrations in soil collected from borings, and show the approximate groundwater elevations for three areas of the former Smelter site (note that these cross-sections were prepared for different documents, so the numbering is not in a sequential order):

1) Representative of TPA (Figure 3A [West-East Cross-section A-A'] - Tito Park Area, Upper Ore Storage Area & Lower Lake).
2) Representative of the northern portion of the main plant site or the location of the "soil repository" (Figure 4 [South North Cross-section] – LOSA and Adjacent Features).
3) Representative of the southern portion of the main plant site or the location of the "soil repository" (Figure 4A [South-North Cross-section B-B' - Former Acid Plant Area).

As shown in the cross-sections, with variations expected of fill and naturally-deposited alluvial materials, the soil that would be excavated from the TPA generally is similar to those underlying the rest of the former Smelter site, including the consolidation area under the ICS 1. The cross-sections also show the thickness of the unsaturated zone varies across the former Smelter site and also seasonally, with the typical depths to groundwater ranging from 30 to 40 feet.

2. The long term plans for the soil repository cover are unclear, and much of the information presented for the interim cover indicate that component design has not been completed. Without any soil geotechnical or engineering properties, it is difficult to assess the potential effectiveness of the interim cover to prevent direct infiltration from precipitation into underlying materials. The meaning of the term biobarrier for the future final cap is unclear. Further, the placement of very coarse materials as the surface layer to prevent erosion to the interim cover appears to present a conduit for direct infiltration of precipitation.

Since the soils to be placed beneath the coarse cap will be derived from the ash/clay layer, the disposition of these soils as expanding clays (bentonite) should be confirmed. Figure 1 depicts bulk powder X-ray diffraction analyses to determine minerals for several samples from the area. While three of the samples indicate smectite (bentonite) and expansive clays, one sample with a similar appearance shows conversion to Kaolinite resulting in non-expansive clays. If Kaolinitic clays are present, they should be mixed with other bentonitic clays prior to installation. This will help ensure that the soil cover is dominated by expansive clays and can potentially provides a greater seal to mitigate surface water infiltration.



East Helena Ash – Outcrop by Railroad Track

EH – 205 – 32'; Ash Layer in Soil Boring

West Helena Surface Soil (background)

EH – 2-1 – 43'; Ash Layer in Soil Boring

EH – 139 – 62'; Downgradient Lacustrine-Ash Layer in Soil Boring

Figure 1 – Bulk soil x-ray diffraction patterns from Tertiary ash-rich layers.

EPA Response –

1. The primary component of the long-term plan for protectively managing contaminated soil and remediation waste on the former Smelter site is to contain contaminated materials in a manner that effectively minimizes the potential for contact with and transport to groundwater. Containment will be achieved by significantly and permanently lowering the groundwater table and constructing an engineered control—the ET Cover system above the consolidated materials. This ET Cover will be placed over all consolidation areas, as well as areas on the former Smelter site having concentrations of contaminants in surface soil that exceed standards protective of human and ecological receptors and surface water runoff. Design of the ET Cover currently is underway, which is why details of the ET Cover were not included in the IMWP – information on the ET Cover design will be included in the 2015 IMWP. The ET Cover design will meet EPA's Remedy Performance Standards and will incorporate features and material specifications that have proven to be effective in preventing infiltration in the Helena Valley and other locations in the western United States. The ET cover design will incorporate saturated-unsaturated flow modeling (using the

HYDRUS code) and laboratory-determined hydraulic properties, including soil-water characteristic curves and saturated-unsaturated hydraulic conductivities for actual cap source materials.

2. The term "bio-barrier" refers to a layer designed to prevent a biological disturbance from animals burrowing through the cover and creating pathways for stormwater infiltration. In this case, the bio-barrier will be a well-graded layer of coarser rock/cobble, in-filled with gravel, sand and silt/clay. The bio-barrier is part of the final ET Cover, but is being placed along with the ICS to stabilize the surface and minimize erosion until the surface layers of the ET Cover are in place.

3. The ICS is being designed to a) prevent direct contact by humans, ecological receptors and storm water with contaminated soils; b) avoid contaminant transport by wind and erosion for the short-term (1 to 2 years) until the final ET Cover System is constructed; c) reduce surface water infiltration into consolidated materials; and, d) provide the appropriate foundation for the final ET Cover. ICS cover grades will promote runoff, which will be appropriately managed, and a low-permeability interim cover layer will reduce infiltration. As part of the final selection of cover materials, technical evaluations and modeling (using the Hydrologic Evaluation of Leakage Performance [HELP] model and other infiltration, drainage, and erosion modeling) are being performed to evaluate the potential for infiltration and/or drainage and erosion protection for any collected precipitation during this interim period after the ICS is constructed and before the ET Cover is installed. Current plans call for placement of the same low-permeability borrow source material that was used to construct the bottom and cover soil liners for CAMU 1 and 2 as the interim cover of the ICS. The borrow source for the ICS material is located on the West Bench south of the existing CAMUs and consists of alluvial sandy silts and clays that have been tested extensively as part of CAMU design and construction efforts, that will control infiltration below the interim cover layer.

Finally, EPA notes that contaminated soils and sediment in the TPA are currently at risk of uncontrolled groundwater flow-through and surface water flooding. Once TPA material has been removed and consolidated within the ICS 1 footprint the potential for contaminant mass loading to groundwater will be significantly less than under existing conditions.

3. A closure sampling plan to characterize residual soil conditions remaining in the soils after completion of the excavation is not included with the IM Work Plan 2014. The presence and disposition of residual contamination along the excavation boundaries, especially at the base of the excavation where fluctuating water table conditions may re-wet soils, needs characterization to understand potential long-term ground water quality issues at the site.

EPA Response – Post-excavation sampling will be performed as part of the TPA removal to document remaining interim soil concentrations, however a sampling plan will not be included in the IM Work Plan 2014. We expect the sampling information to be used in final design and construction of the Prickly Pear Creek (PPC) Realignment Project to inform the development of final grading necessary to achieve suitable wetlands conditions

4. The physical nature and characteristics of the contaminated soils to be excavated is unclear. The type of geologic deposit – disturbed soils or fill, coarse alluvium, finer-grained floodplain soils – will help characterize the properties as potential contaminant sources both in the repository, and for residual soils remaining after the excavation. A stratigraphic section of the soils through the excavation area(s) would be useful in understanding the system.

EPA Response – Please see the response to Comment #1.

5. LCWQPD staff request contingency planning for the excavation as site conditions encountered during the excavation may differ from expected. For example, as the excavation reaches design depth, highly contaminated soils at the base of the excavation may warrant additional soil removal. Contingency planning would aid the process by providing potential responses to unanticipated conditions.

EPA Response – Contingency planning is a critical component of all IM design and construction activities. In the event that unexpected materials are encountered during excavation there will be procedures in place to ensure that such materials are appropriately characterized and managed through final disposition. Note however that the depth of the TPA Removal is based in large part on the projected elevation of the post-SPHC groundwater table, as described in Sections 2 and 5 of the work plan (versus contaminant concentrations in soil).

6. The effectiveness of the South Plant Hydraulic Control (SPHC) to lower ground water elevations still represents a concern. The start of the original SPHC dewatering of Upper Lake occurred coincident with the highest water levels observed in many regional wells. The high water levels were linked to recharge from the previous winter and wet summer conditions during 2011. The need to pump water from Upper Lake for drawdown, as noted in the SPHC Upper Lake Drawdown Test Technical Memorandum prepared by Hydrometrics (2012), are contrary to the presented conditions where the water naturally drains. Further, the presence of springs from the Tertiary deposits to the west indicate that ground water flows within this unit, and likely discharges into the high permeability deposits of the Prickly Pear Creek valley in the subsurface. The flow and discharge from the Tertiary strata is further demonstrated by the water quality type mapping presented for the Seaver Park area.

EPA Response – The Custodial Trust, and thus EPA, are aware of the conditions noted in the comment above regarding groundwater level observations. The effectiveness of the SPHC IM is being evaluated by monitoring the water levels across the South Plant and the East Bench areas. The 2014 monitoring plan calls for increased frequency of water level measurements at wells and surface water locations, including Upper Lake, Lower Lake, and along the PPC.

Since October 29, 2013, when the creek was diverted into the PPC Temporary Bypass, groundwater elevations dropped further (from approximately 1.5 ft to more than 5 ft) with the most significant reductions in water levels observed in monitoring wells closest to PPC. Based on these observations, the following additional actions were taken in late December 2013 to further promote the natural drainage of groundwater:

- Removal of sand accumulated behind Smelter Dam;
- Scarifying the eastern end of Lower Lake where fine-grained sediments appear to have accumulated; and
- Digging several trenches east of Lower Lake.

Ongoing water level monitoring indicates that groundwater levels are dropping across TPA, but at a slow rate. The rate of decline may be affected by the presence of fine-grained sediments, or the frozen conditions in Upper Lake. The change in groundwater elevations will continue to be

monitored; as appropriate, and other actions such as installation of drainage galleries to facilitate drainage from Lower Lake are being considered for implementation if the reasonably anticipated elevation drops do not occur.

7. The conveyance of flood waters around and through the site represents a concern. In particular, the potential for winter floods over frozen grounds, similar to the Silver Creek flooding in February 2011, could result in overland flooding problems for the site. The potential surface flowpaths for this scenario are difficult to evaluate with the given information, as elevations across the site are not consistently presented.

EPA Response – The potential for flood waters to move through or across the former Smelter site will be significantly reduced as the SPHC and ET Cover System IMs are implemented. As part of SPHC IM (including PPC Realignment), extensive flood and floodplain studies have been and are currently being performed to allow the Trust to effectively assess steps that could be taken to protect against or mitigate potential problems that are likely to be associated with flooding in excess of a 500 year storm event. Please note that construction of the ICS and ET Cover will raise elevations on the former Smelter Site, further decreasing the likelihood of the kind of flooding seen in 2011.

8. LCWQPD staff requests that efficacy studies of interim measures be designed concurrent with implementation of the Interim Measures so that their function in meeting design objectives may be properly reviewed as part of Corrective Measure Study (CMS) for the site. These studies may require additional or replacement wells for abandoned wells, but should also recognize that data requirements and monitoring locations for these studies may differ from long term monitoring locations. An example of an efficacy study would be to confirm water table elevations and water quality conditions beneath the onsite soil repository. Another example would be to confirm that water quality concentrations are decreasing after completion of the Tito Park Area excavation.

EPA Response – As noted in the response to Comment #6, efficacy studies have been designed and are underway to evaluate the performance of these initial SPHC phases. The objectives of the Field Sampling and Analysis Plan (FSAP), are not only continuing to provide information on the nature and extent of contamination but are now assisting the Trust in evaluating the effects on groundwater flow and quality resulting from IM implementation.

The Custodial Trust's IM performance evaluations include a review of the existing monitoring well network and an assessment of its adequacy for monitoring both short- and long-term performance effectiveness. As appropriate, additional and/or replacement wells may be installed. Consistent with the project protocols since 2011, a proposed work plan will be prepared and submitted to EPA and the project stakeholders for review. The work plan will detail the comprehensive monitoring program and address monitoring objectives, well network to be monitored, monitoring frequency, water quality parameters to be tested and data presentation.

Specific Comments

Section 2.1.2; p. 2-2, 4th paragraph. The discussion of lower lake should indicate, for clarity, whether the lake levels are at ground water levels, or if it represents a perched pond above the water table. Since soils in the base of the lake represent source area soils to be removed under the interim measure, it appears that the lake is a flow-through system, with ground water recharge from the south, and discharge to the north. A brief statement of the connection of the

lake with the local ground water system would be useful.

EPA Response - Lower Lake is connected to the local groundwater system as shown in Figure 3 of Upper Lake Drawdown Test Technical Memorandum [Hydrometrics, 2012], which was included as an appendix to the 2013 IM Work Plan), with primary leakage/flow directions to the west (towards the main plant site) and to the east (towards PPC). Lower Lake does not represent a perched pond. Groundwater elevations immediately north of Lower Lake are approximately 9 feet lower because of the presence of low-permeability materials (i.e. massive slag) along the northern edge of Lower Lake. The groundwater elevations at TPA and Lower Lake are similar.

EPA is requesting that the work plan text be modified to provide additional clarification of these concepts.

Section 2.1.2; p. 2-2, 6th paragraph. The rationale for either installing or not installing the low permeability berm on the south side of the Tito Park Area excavation should be explained.

EPA Response – Design evaluations have led to the determination that construction of a low-permeability berm will not result in significant environmental benefit. Evaluation of the need for a low-permeability berm for control of floodwater access to the site were based in part on the design of the PPC Realignment and its impacts on the floodplain. Hydrologic modeling performed for the draft 90% design indicates that the 100-year floodplain is controlled by the final grades of the wetlands re-established in the TPA area and mostly contained within the proposed final creek channel meander boundary, which runs along the eastern edge of the TPA, well away from the excavation boundary adjacent to the site. In addition, a flood of this magnitude is anticipated to be of very short duration (i.e, on the order of days) and as a result, of very limited impact to site groundwater levels. The results indicate that a low-permeability berm would not significantly enhance groundwater controls beyond that which will result from the SPHC IM. Therefore, the berm is currently not included in the TPA excavation or subsequent PPC Realignment construction. This determination will be finalized as part of ongoing design completion activities for the TPA based on the updated PPC Realignment modeling.

Section 2.2.3, p. 2-5, 1st paragraph. The discussion of monitoring well decommissioning should consider the need for monitoring wells for efficacy studies in addition to long term monitoring as the two represent different objectives. For example, the water level and ground water quality should be monitored in the Tito Park Area after the excavation is complete to observe how ground water quality changes over time, and to see if these changes meet the objectives for the specific Interim Measure action. See General Comment #8 above for further discussion.

EPA Response – As noted in the responses to Comments #6 and #8, the design of efficacy studies has been, and will continue to be, part of the CMS work being done concurrently with and factored into IM design and implementation.

Section 3.1.1, p. 3-2, 4th paragraph. The presentation of soil concentration data in Figures 3-2 and 3-3 only reflect concentrations in the upper eight feet of the soil profile, while the data in Appendix A show high concentrations at greater depths. A more comprehensive statement indicating the thickness of the unsaturated zone (water table depth), and soil concentrations both above and below the water table would be useful to understand conditions.

EPA Response – Figures 3-2 and 3-3 illustrate soil data from the ground surface to a depth of eight feet to provide details on arsenic and selenium concentration data in surface and near-surface soil. The thickness of the unsaturated zone (or typical depths to groundwater) ranges from 30 to 40 feet. Soil data across both the unsaturated and saturated zones, from the ground surface to the top of the Tertiary ash/clay layer, are provided in Figures 3-4 and 3-5, along select cross-sectional lines through the former Smelter site. In areas of the main plant where contaminants were associated with materials handling and storage activities, contaminant concentrations tend to be higher near the ground surface and decrease with depth. Higher concentrations of contamination are found in deeper soil in areas associated with the former process water system.

The majority of the contaminant mass is present in the vadose zone, above the groundwater table. MVS model evaluations estimate that implementation of the SPHC and lowering of the groundwater table to elevation 3910 will increase the vadose zone and take an estimated 1 million cubic yards of contaminated soil out of direct contact with groundwater. This will result in approximately 90% of the contaminant mass being isolated within the vadose zone. Note however, that approximately 1 million cubic yards of soil having contaminants at concentrations that exceed levels protective of groundwater (SSL's) will still remain below the groundwater table. These large volumes, however, are present at depths ranging from 30 to 40 feet beneath the main plant site, and so make removal impracticable in any event.

The work plan text will be modified to provide additional clarification of these concepts.

Figures 3.2 and 3.3, p. 3-8 and 3-9. The legend for these figures should differentiate between what concentrations represent contamination which must be removed, contaminant levels which are elevated but not at sufficient concentrations to represent a health threat and will likely remain in place, and background soil concentration levels.

EPA Response – Although final media cleanup standards and site-specific background concentrations have not yet been approved by EPA, CMS and IM work to date have used EPA's risk-based screening level values (SLVs) and soil screening levels (SSLs) to identify areas requiring remediation. The legends will be annotated to identify the SLVs and SSLs for arsenic and selenium. Note that exceedances of the SLVs/SSLs indicate that some remedial action is necessary to protect human health and the environment, but do not necessarily dictate a removal action.

Figures 3.4 and 3.5, p. 3-10 and 3-11. The cross section figures depicting contamination should also include criteria outlined in the previous comment for Figures 3.2 and 3.3. In addition, the location of the water table across the site should be added to the cross sections for clarity to help understand the distribution of the source area soils in the subsurface.

EPA Response – The comment is noted and these items will be added to the cross section and figure legends.

Figure 3.6, p. 3-12. The area west of the site with elevated ground water arsenic levels should be identified as reflecting background conditions, and not linked to site activities. While Wilson Ditch brought arsenic laden waters to the area east of Seaver Park and Lamping Field, the Seaver Park Residential area and other areas within the Tertiary bench are upgradient from the site. This is an important distinction, especially for the non-technical public.

EPA Response – EPA agrees with this comment and a note to this effect will be added to Figure 3.6.

Section 5.2.4, p. 5-5, Table 5-1 and Table 5-2. These tables present design drawings and specifications to be prepared; however, there is no indication of how these might be made available for public inspection. In general, it is difficult to make any meaningful comment on a proposed action which has not yet been designed, and will be implemented from the design before any of the design documents are released to the public.

EPA Response – Interim measures detailed design and construction plans and specifications will not be made available for public review or comment. EPA itself has not to date requested or received copies of detailed construction contract documents. EPA does not believe that this information is required in order to approve interim measures activities. EPA also does not support release of financial information from bid packages or submittals. If, however, the WQPD wishes to see the detailed plans (excluding financial information), it is EPA's understanding that the Custodial Trust would be willing to allow the County to review the plans at the Custodial Trust's offices in East Helena (with the understanding that EPA will not be responding to comments on these documents and that copies of the plans cannot be removed from the Custodial Trust's office).

Section 5.4, p. 5-7. While it is certainly necessary to abandon monitoring wells within contaminated areas concurrent with implementation of remedial actions, wells in uncontaminated areas which are not deemed useful to the project may be useful for other purposes. When wells are selected for abandonment, LCWQPD requests that the ownership of wells in uncontaminated areas be considered to transfer to the county for use as long-term monitoring points related to other projects in area.

EPA Response – LCWQPD's request is noted.

Recommendations

The site conceptual hydrogeologic system and ground water flow model represents an area where there is still some difference of opinion regarding how the system work. Since mitigation of risk from ground water as an exposure pathway represents a primary goal of all the ongoing work at the site, LCWQPD recommends that tracer studies be completed to confirm the particle tracking results from the ground water flow modeling. In addition, water oxygen and deuterium isotope data can complement any tracer tests, and further demonstrate the validity of the current conceptual model. If discrepancies exist, then the site conceptual model can be refined to reflect conditions defined by the more comprehensive database.

As stated within the comments, design of efficacy studies for the interim measures concurrent with the implementation of the actions will allow for sufficient data to be collected to properly evaluate whether the interim measures are meeting project goals. In addition, the data will provide further information for completion of the CMS, and whether additional actions beyond the Interim Measures will be necessary.

EPA Response – The LCWQPD's recommendation is noted. As cited in the responses to Comments #6 and #8 above, the design of efficacy studies has been, and will continue to be part of the CMS work being done concurrently with and factored in to IM design and implementation.

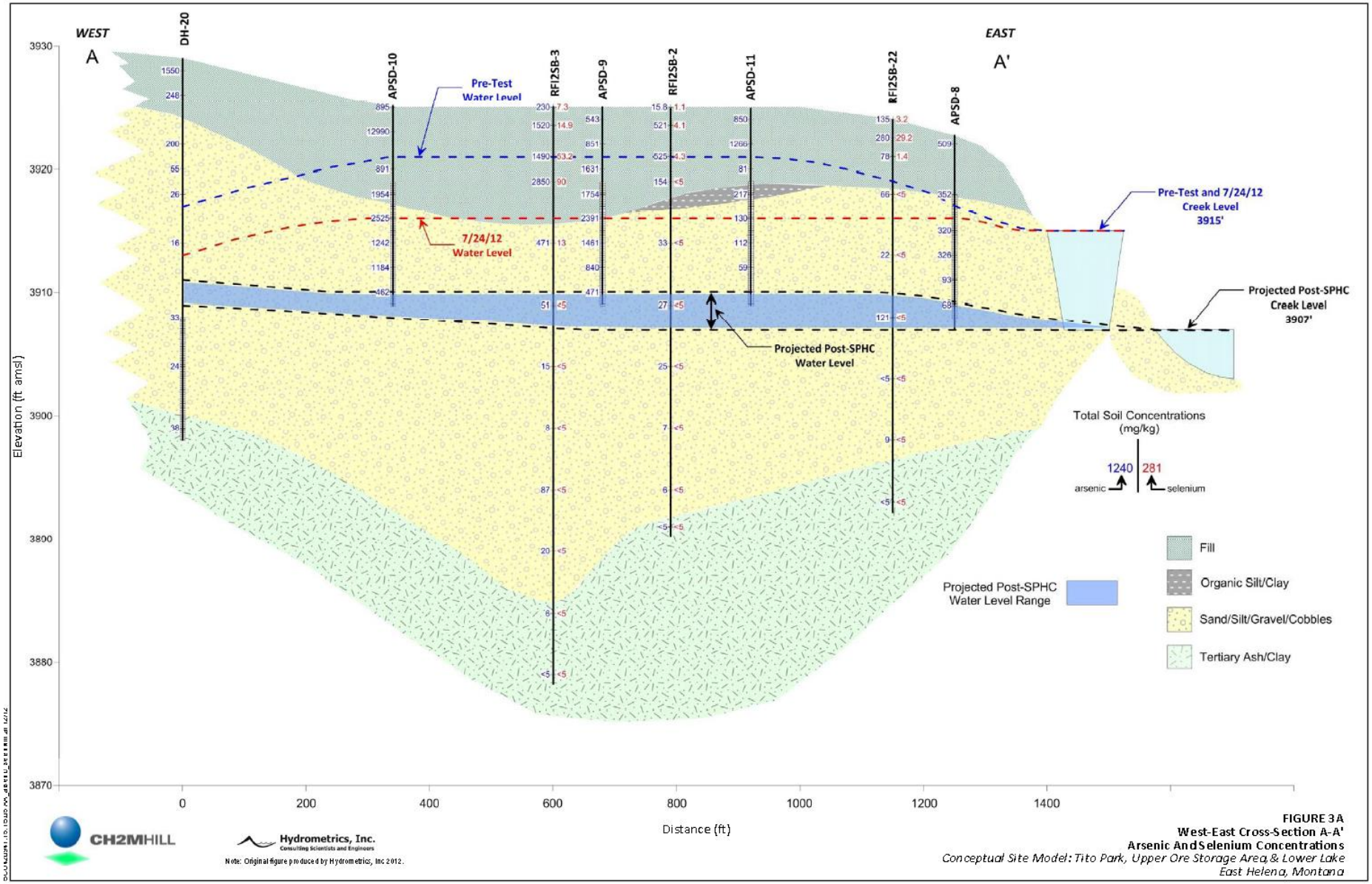


FIGURE 3A
West-East Cross-Section A-A'
Arsenic And Selenium Concentrations
Conceptual Site Model: Tito Park, Upper Ore Storage Area & Lower Lake
East Helena, Montana

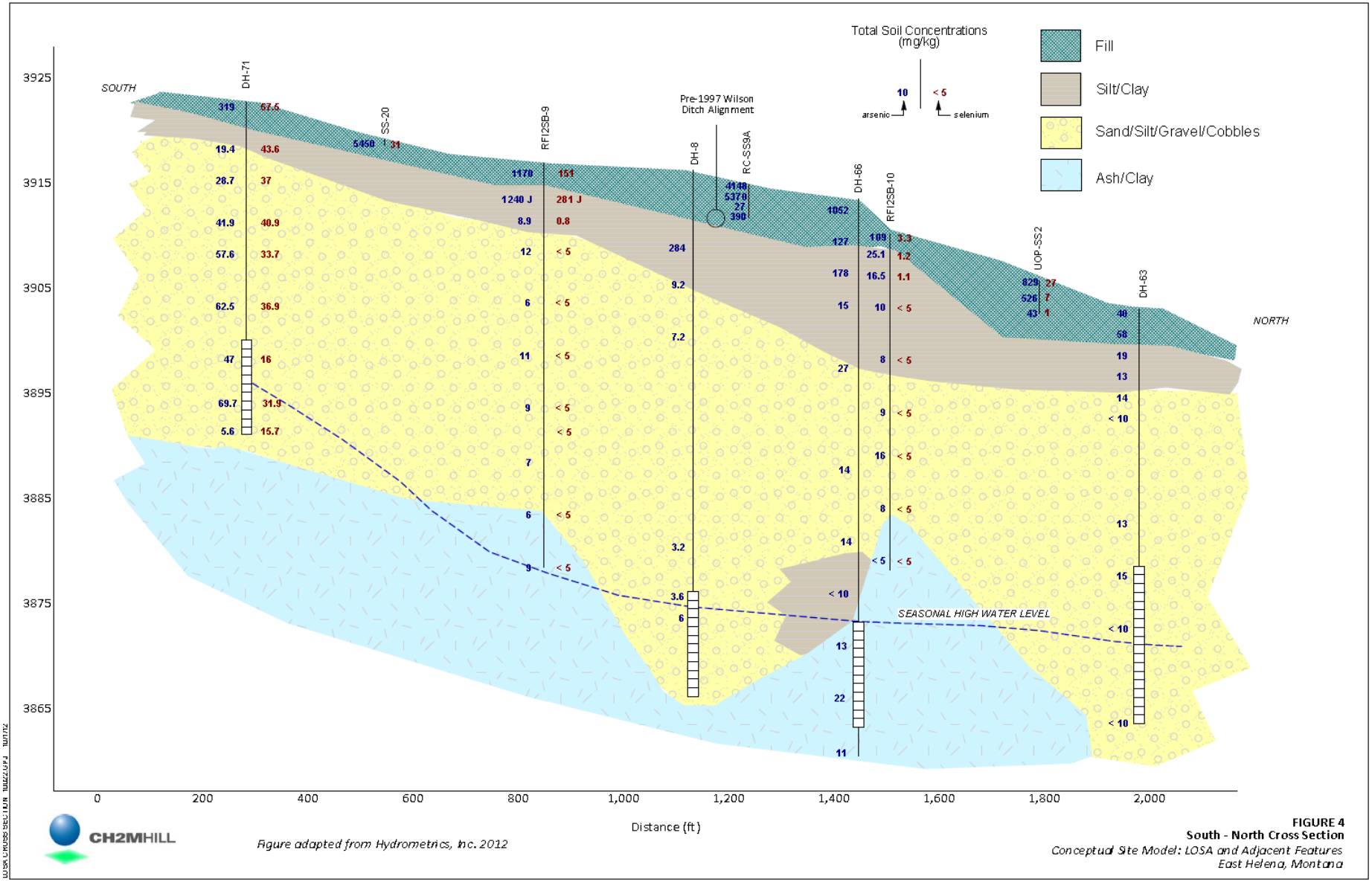


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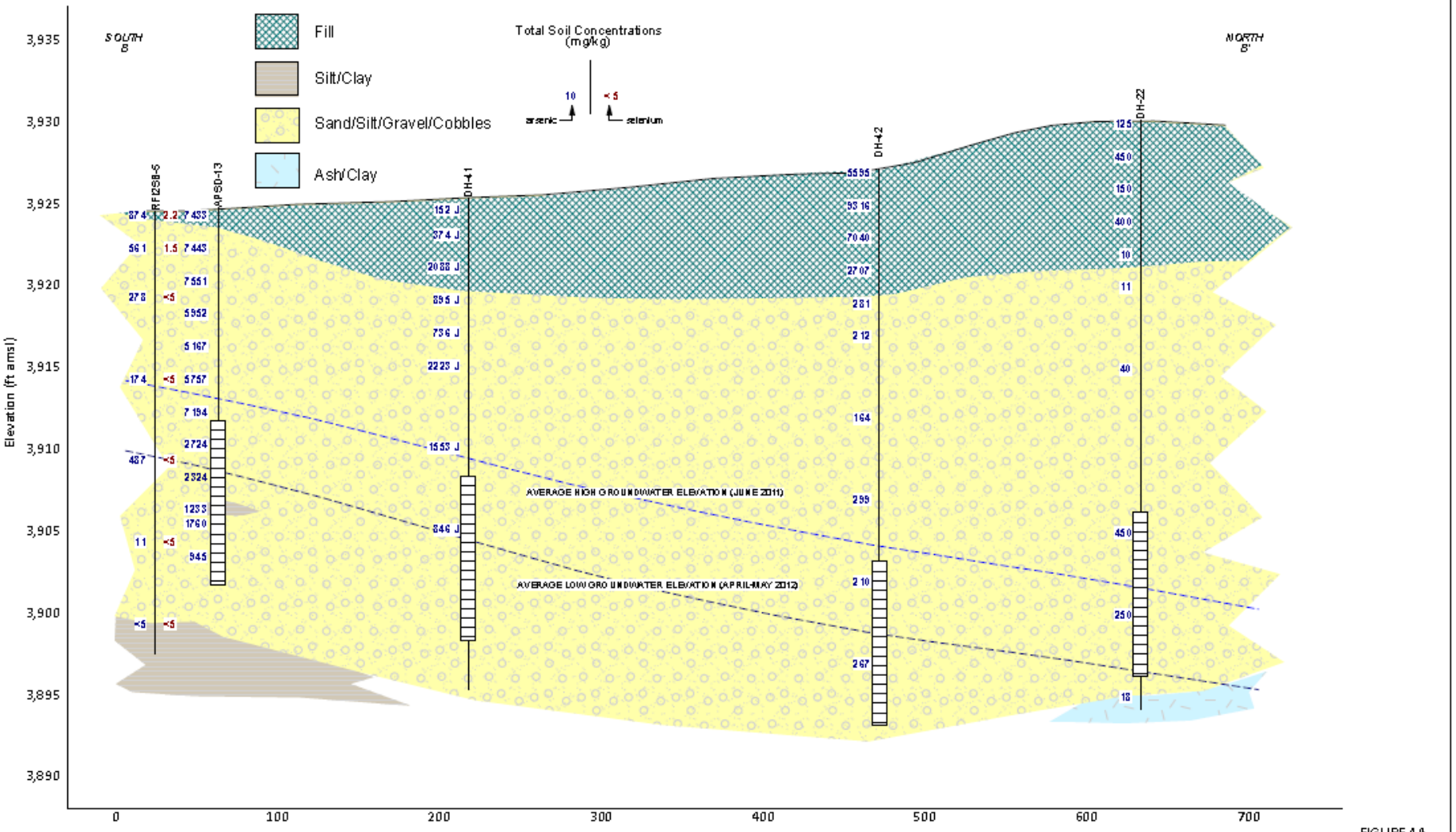
Figure adapted from Hydrometrics, Inc. 2012

FIGURE 4
South - North Cross Section
Conceptual Site Model: LOSA and Adjacent Features
East Helena, Montana



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Note:
APSD-13, DH-41, DH-42, and DH-22 soil samples were not analyzed for selenium.
Average low groundwater elevations were recorded during the Upper Lake drawdown test.

FIGURE 4A
South - North Cross Section B-B'
Arsenic and Selenium Concentrations
Conceptual Site Model: Former Acid Plant Area
East Helena, Montana