



Montana Environmental Trust Group, LLC
Trustee of the Montana Environmental Custodial Trust
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By Electronic Mail and Hand Delivery

October 8, 2020

Betsy Burns
RCRA Project Officer
USEPA Region 8, Montana Operations Office
Federal Building
10 West 15th Street, Suite 3200, Mail Code: 8MO
Helena, Montana 59626

Subject: Transmittal of Former ASARCO East Helena Facility, Corrective Measures Study Report Addendum

Dear Ms. Burns:

The Montana Environmental Trust Group, LLC, not individually but solely in its representative capacity as Trustee of the Montana Environmental Custodial Trust (Custodial Trust), respectfully submits this Corrective Measures Study (CMS) Report Addendum to satisfy the requirements of the U.S. Environmental Protection Agency's (USEPA's) conditional approval of the *Public Review Draft Former ASARCO East Helena Facility Corrective Measures Study Report* of March 2018 (Draft CMS Report) in a letter dated July 10, 2020 (see Attachment A). This submittal is also consistent with the Custodial Trust's obligations set forth ¶39. of Consent Decree and Environmental Settlement Agreement Regarding the Montana Sites and the First Modification to the 1998 Consent Decree (Civil Action No. CV 98-3-H-CCL, US Federal District Court, District of Montana).

The conditions outlined in USEPA's conditional approval letter are identified below, followed by the Custodial Trust's response to each condition. Where requested by USEPA, the tables and figures were updated from the Draft CMS Report and are included in Attachment B.

USEPA Condition 1:

USEPA's letter states: To complete the final CMS Report in a streamlined and cost-effective manner, the EPA is proposing an addition of an addendum to the final CMS Report that details modifications to the Draft CMS Report and updates the status of the groundwater monitoring results using the October 2019 groundwater data and plume maps.

Custodial Trust Response to USEPA Condition 1:

This letter presents the Addendum to the Draft CMS Report. The intent of this Addendum is to finalize the Draft CMS Report and satisfy with USEPA's conditional requirements. The 2019 groundwater monitoring data and plume maps are included in this Addendum, with information updates summarized in the Custodial Trust Response to USEPA Condition 5, below. Groundwater observations summarized in section 3.4.3.4 of the Draft CMS Report have been updated to reflect 2019 groundwater monitoring data; the updated section 3.4.3.4 is also included in the Custodial Trust Response to USEPA Condition 5, below.

USEPA Condition 2:

USEPA's letter states: The EPA proposes including information in the final CMS Report Addendum on Trust property disposition of Parcel 2 west of Wylie Drive and Parcels 3, 4 and 6. Additionally, the EPA requests discussion of the Trust remediation of Parcel 4 and the addition of a reference for the Dartman Parcel 4 Soil Remediation Construction Completion Report (Hydrometrics, December 2019).

Custodial Trust Response to USEPA Condition 2:

Several Custodial Trust properties have been remediated and/or sold for redevelopment since 2016, including Parcels 3, 4, 6, 22 and the portion of 2 west of Wylie Drive, identified as Undeveloped Lands in Paragraph 38 of the First Modification to the Consent Decree. During property transactions, these Parcels are being evaluated and addressed consistent with the First Modification to the Consent Decree and table 6-1A of the CMS Report. The following paragraphs summarize the actions taken by the Custodial Trust as part of property disposition.

The property transaction for Parcels 3, 22, and the portion of Parcel 2 west of Wylie Drive, referred to as the Lamping Field Parcels, was completed on October 22, 2018. To date, no remediation has been completed on these Parcels because the future land use has not been determined. The Parcels are currently used for agriculture and zoned commercial. Once the future land use has been determined, the USEPA's East Helena Superfund Site, Operable Unit No. 2, Residential Soils and Undeveloped Lands, Final Record of Decision (OU2 ROD) cleanup standard and final remedy for lead and arsenic in surface soil will be applied.

Parcel 6 was sold to the East Helena Public Schools, School District No. 9 for the construction of a high school on November 8, 2018. The Parcel was evaluated in accordance with the OU2 ROD, and as a condition of the property transaction, Parcel 6 was remediated by the East Helena School District in tandem with the construction of the high school building. Surface soils that exceeded the OU2 ROD cleanup levels for lead and arsenic were scraped and mixed as the land was being prepared for construction. Confirmation sampling will be completed after construction is complete to demonstrate that the remaining surface soil meet the residential RAOs as required by the OU2 ROD.

Parcel 4 was sold to a private party on December 11, 2018, with the intention of redeveloping the residential zoned property for a single-family residential subdivision. Parcel 4 was sampled and areas which exceeded the OU2 ROD residential RAOs for surface soil of 500 mg/kg lead and 100 mg/kg arsenic were remediated by the Custodial Trust in 2019 as a part of the Purchase and Sale Agreement with the new owner. The Custodial Trust completed remediation on Parcel 4 using a scraping technique to remove the top 6-inches of soil into two stockpiles, which were subsequently mixed. Scraped soil was left in the two stockpiles for future use during property development by the new owner of Parcel 4. Once Parcel 4 had been scraped, the property was divided into 100 decision units and sampled according to the *East Helena Superfund Site, Operable Unit No. 2, Residential Soils and Undeveloped Lands, Soil Sampling Program for Undeveloped Lands Quality Assurance Project Plan* (USEPA, 2017). Each soil stockpile was divided into ten decision units and sampled to a depth of 6-inches below the ground surface level. Five decision units from the south stockpile resulted in soil concentrations above the residential RAOs and required further mixing in order for the concentrations to meet the RAOs. The Parcel 4 remediation is described in greater detail within the *Dartman Parcel 4 Soil Remediation Construction Completion Report* (Construction Completion Report; Hydrometrics, 2019). The USEPA approved the Construction Completion Report on January 3, 2020. Subsequently, redevelopment has commenced on Parcel 4 by the new owner.

USEPA Condition 3:

USEPA's letter states: The final CMS Report Addendum will include the EPA Response to Comments received during the public comment period, detailed in Appendix A of this Statement of Basis.

Custodial Trust Response to USEPA Condition 3:

This Addendum includes the EPA Response to Comments received during the public comment period for the Draft CMS Report as Attachment C, herein.

USEPA Condition 4:

USEPA's letter states: The final CMS Report Addendum will provide new figures to update the information shown in figures 1-1, 2-1, 3-22, 3-27, 3-28, 3-29, 3-30, and tables 6-1 and 6-2 of the Draft CMS Report to identify the Parcels formerly owned by the Trust that were evaluated as part of the Draft CMS Report. These properties are included in the Draft CMS Report as Trust-owned, "Undeveloped Lands." The final corrective measures for those Parcels are the measures set forth in the East Helena Superfund Site, Operable Unit No. 2, Residential Soils and Undeveloped Lands, Final Record of Decision (OU2 ROD), 2009. Parcel 4 was remediated by the Trust to meet the OU2 remedial action objectives (RAOs). Parcels 2 (west of Wylie Drive) and 3 will be required to meet the OU2 RAOs once there is a change in use. Parcel 6 will be evaluated by the East Helena Public Schools when the High School construction is complete. Revised figures in the Addendum should be denoted by the original figure number followed by an "A."

Custodial Trust Response to USEPA Condition 4:

This Addendum provides new figures as required by Condition 4 and designated with the original Draft CMS Report figure number, followed by an "A" as requested. Attachment B includes figures 1-1A, 2-1A, 3-22A, 3-27A, 3-28A, 3-29A, 3-30A, and tables 6-1A and 6-2A, which have been updated to reflect the change in ownership described in the Custodial Trust Response to USEPA Condition 2. The specific changes to the original Draft CMS Report figures and tables are described below:

- For figures 1-1A, 2-1A, 3-22A, 3-27A, 3-28A, 3-29A, and 3-30A:
 - 1) the categorization of Parcels 2 and 2a were adjusted to reflect the corrective measures that will be completed as a part of the remediation and restoration to execute the U.S. Department of the Interior (USDOI) and U.S. Fish and Wildlife Service (USFWS) *Final Restoration Plan and Environmental Assessment for the East Helena Smelter Site* (USDOI and USFWS, 2020); and
 - 2) a new designation was added to the legend to highlight those undeveloped land Parcels which have been sold by the Custodial Trust since the Draft CMS Report was distributed for public comment on 2016.
- For table 6-1A, the title was updated from *Summary of Proposed Corrective Measures and Supplemental Institutional Controls* to *Summary of Selected Corrective Measures and Supplemental Institutional Controls*. The notes were updated to reflect the changes in ownership to those Parcels once owned by the Custodial Trust (Parcels 3, 22, 4, 6, and the portion of Parcel 2 west of Wylie Drive).
- For tables 6-2A, the Parcels identified as "Undeveloped Land" and the notes were updated to reflect the changes in ownership to those Parcels sold by the Custodial Trust since 2016 (Parcels 3, 4, 6, 22, and the portion of Parcel 2 west of Wylie Drive).

USEPA Condition 5:

USEPA's letter states: The final CMS Report Addendum will provide new figures to update the information shown in figures 3-31, 3-32, 3-33, 3-34, 3-35, 3-36, 3-37, 3-38 and 5-2 of the Draft CMS Report. The new figures will present the October 2019 groundwater sampling data to show updated results of the implementation of the components of the final corrective measures that were implemented as interim measures. Revised figures in the Addendum should be denoted by the original figure number followed by an "A."

Custodial Trust Response to USEPA Condition 5:

This Addendum provides new figures denoted with the original Draft CMS Report figure number, followed by an "A" as requested. Attachment B includes figures 3-31A, 3-32A, 3-33A, 3-34A, 3-35A, 3-36A, 3-37A, 3-38A and 5-2A, which have been updated to reflect the groundwater monitoring data through October 2019. The specific changes to the original Draft CMS Report figures are described below:

- For figure 3-31A, the potentiometric surface was updated from June 2016 to October 2019.
- For figure 3-32A, the groundwater level decreases observed through monitoring was updated to reflect those changes in water level through October 2019 data.
- For figures 3-33A and 3-34A, the groundwater plumes were updated to reflect October 2019 data collected for arsenic and selenium, respectively.
- For figures 3-35A and 3-36A, the selenium groundwater plumes and trend graphs were updated to reflect data collected through October 2019.
- For figures 3-37A and 3-38A, the arsenic groundwater plumes and trend graphs were updated to reflect data collected through October 2019.
- For figure 5-2A, the groundwater elevation hydrograph for the indicator wells identified in the Draft CMS Report were updated to reflect data collected through October 2019. The figure reflects the groundwater level decreases across monitored wells of the Facility in response to the South Plant Hydraulic Control (SPHC) interim measure (IM) completed since 2015.

To support these updated figures, the groundwater observations described in the Draft CMS Report text should be updated based on the 2019 conditions; the text for Section 3.4.3.4 of the Draft CMS Report should be replaced with the text as follows:

3.4.3.4 Changes in Groundwater Concentration

To evaluate changes in groundwater quality subsequent to implementation of IM's, temporal trends for arsenic and selenium were evaluated as shown on Figures 3-35A through 3-38A. These figures show selenium concentrations near the plant site and in the downgradient area (Figures 3-35A and 3-36A, respectively) and arsenic concentrations in the plant site and in the downgradient area (Figures 3-37A and 3-38A, respectively). The trends plots summarize data collected since 2002, after the Facility ceased operations. To evaluate trends pre- and post-IM implementation, the data are analyzed using a linear regression trend line from 2002 to October 2011 (pre-IM) and November 2011 through October 2019 (post-IM).

Changes in Selenium Concentration in Groundwater

Facility area wells have generally shown an overall decrease in selenium concentration since IM implementation (Figure 3-35A). In West Selenium Source Area wells DH-66 and DH-8, seasonal variability observed in the pre-IM period has gradually decreased. Prior to October 2011, selenium concentrations in both wells DH-66 and DH-8 varied; after October 2011, the semiannual seasonal changes at well DH-66 ceased, and concentrations increased until 2015, and have shown a significant decreasing trend since. At DH-8, seasonal variability was noted through

2015 after which concentrations have been stable. Selenium concentrations at DH-66 and DH-8 are at or near historical minimum values near 1 milligram per liter (mg/L). Well DH-67, located near the West Selenium Source Area, also shows decreasing trends since implementation of the IMs (Figure 3-35A). The temporary increase in selenium concentrations observed at wells DH-66 and DH-67 in 2018 are attributed to exceptionally wet conditions (high precipitation and streamflow) occurring at that time. Similarly, selenium concentrations have decreased at DH-42 in the South Plant Source Area since implementation of IMs. In addition, in the slag pile area (DH-55 and DH-56), selenium concentrations have generally been stable since IM implementation, with a temporary increase at DH-56 in 2018 due to the exceptional wet conditions (Figure 3-35A).

Downgradient of the Facility, in the City of East Helena and further downgradient in Lamping Field where the two lobes of the selenium plume merge, selenium trends vary (Figures 3-35A and 3-36A). The selenium plume (both east and west lobes, and merged plume) have shown a westward shift since implementation of the IMs and as a result of reduced infiltration from Wilson Ditch (since eliminating the use of the ditch as an irrigation supply source in 2013), resulting in increasing trends at some wells (on the west) and decreasing trends at others (to the east). For example, on the west selenium plume lobe, selenium concentrations at paired wells EH-50 and EH-100 have decreased to near the reporting limit of 0.001 mg/L since IM implementation, while concentrations at EH-104 to the west increased through 2016 before decreasing again as a result of the westward plume shift (Figure 3-35A). On the east side of the east selenium plume lobe at well pairs EH-51/101 and EH-52/102, the shift can be seen in the eastern boundary of the 0.05 mg/L selenium plume, representative of the groundwater human health standard (HHS), now located west of Prickly Pear Creek; previously the HHS was exceeded at EH-102 and occasionally EH-52 when the east selenium plume lobe was east of Prickly Pear Creek (Figure 3-35A).

Downgradient of the City of East Helena, the selenium plume westward shift is also noted by decreasing trends at EH-62, EH-130 and EH-138 and initially increasing trends at EH-118, EH-124 and EH-126 post-IM. It should be noted, however, that the concentrations at these wells have since decreased (Figure 3-36A). Although the wells most downgradient, EH-141 and EH-143 (Figure 3-36A), have not shown significant decreasing trends to date, the effects of generally decreasing concentrations observed in the Facility area are expected to propagate downgradient over the coming years as forecasted by the groundwater modeling results discussed in Section 5. In addition, the limited extent of source material found in the Source Area Investigations, as well as the decrease in groundwater flux through the area resulting from the SPHC IM, is expected to limit the future downgradient and westward migration of the selenium plume.

None of the public or private water supply wells have been affected by the westward shift of the plumes. The westward shift has caused the selenium plume to move from the East Helena residential area where a number of private water supply wells still exist, and into Lamping Field where water wells are absent. The Custodial Trust will continue the residential well monitoring program into the future to document and track groundwater conditions outside the plume areas.

Changes in Arsenic Concentrations in Groundwater

With the possible exception of well DH-79, groundwater arsenic concentrations in the Facility area (Figure 3-37A) show decreasing trends post-IM (pre- and post-IM trends at DH-79 are unknown since the well was not installed until 2014). Although concentrations may have been decreasing at some wells pre-IM implementation (i.e., DH-17, DH-52), the rate of decrease has accelerated post-IM. Arsenic concentrations at DH-17 and DH-52 are currently at their lowest levels since monitoring began, with 2019 concentrations representing a greater than fifty percent decrease at both sites since 2011. In addition, well DH-80 downgradient of the former Acid Plant (Figure 3-37A) has shown a fifty percent decrease in arsenic concentration since 2016 due to the Acid Plant source removal IM.

Similar to selenium, variable arsenic concentration trends are observed downgradient of the Facility in the City of East Helena (Figure 3-38A). Wells in the eastern part of the arsenic plume have shown steady or slightly decreasing concentration trends post-IM, except at EH-51, where the average arsenic concentration has decreased from 0.19 to 0.08 mg/L (average 0.05 mg/L in 2019). Just downgradient of the Facility, decreasing trends are noted both pre- and post-IM at EH-60 with a slightly accelerated rate of decrease post-IM. Immediately west of EH-60, arsenic concentrations at well pair EH-50/EH-100 exhibited an increasing trend immediately following IM implementation through 2015/2016, before steadily decreasing through 2019. Further downgradient, average arsenic concentrations at EH-106 have decreased from 6.5 mg/L pre-IM to 0.81 mg/L post-IM (0.52 mg/L in 2019), while EH-115 immediately west of EH-106 has shown an increasing trend through 2018 before stabilizing in 2019. These downgradient arsenic concentration trends are influenced in part by the westward shift in the main arsenic plume, as well as decreasing concentrations in the upgradient source areas.

The groundwater monitoring data indicates a high degree of attenuation at the leading edge of the arsenic plume, with arsenic concentrations decreasing by several orders of magnitude over distances of a few hundred feet. As shown on Figure 3-38A, concentrations at wells EH-111, EH-114 and EH-115, located near the northwest leading edge of the plume, range between 1 to 2 mg/L, while wells a few hundred feet to the northwest (Figure 3-38A), are consistently near or below the 0.002 mg/L arsenic analytical detection limit. In addition to the attenuation occurring at the plume front, the effects of the decreasing arsenic trends observed in the Facility area are expected to propagate downgradient. From this information, the arsenic plume boundary is anticipated to remain stable and equilibrium conditions continue to adjust, decreasing plume mass primarily, based on decreasing arsenic loading from the Site as a result of IM implementation.

USEPA Condition 6:

USEPA's letter states: The final CMS Report Addendum will provide new figures to update the information presented in figures 3-24 and 3-26 of the Draft CMS Report. The figures should be updated for Upper Lake and Lower Lake to show similar connections of a saturated zone to the groundwater table and associated flow arrow as shown for Upper Lake. Additionally, figures 3-6 and 3-24 should be revised to reflect the same depth for the slurry wall. See the EPA response to Lewis & Clark County Water Quality Protection District (LCWQPD) comment referencing Figure 3-24.

Custodial Trust Response to USEPA Condition 6:

This Addendum provides new figures denoted with the original Draft CMS Report figure number, followed by an "A" as requested. Attachment B includes figures 3-6A, 3-24A, and 3-26A, which have been updated as described below:

- For figure 3-6A, the Acid Plant Sediment Drying Bed Slurry Wall has been extended to the tie into the ash/clay layer, as shown in Figure 3-24A.
- For figures 3-6A, 3-24A, and 3-26A, an additional flow arrow has been added to show the generalization that Lower Lake contributed to groundwater recharge in the same manner as Upper Lake, indicative of a connection in the saturated zone to the groundwater table.

USEPA Condition 7:

USEPA's letter states: The final CMS Report Addendum will present a revised definition of "Undeveloped Lands" to clarify the Parcels that were formerly owned by the Trust and that were evaluated as part of the Draft CMS Report. The final corrective measures for a portion of Parcel 2, west of Wylie, and Parcels 3, 4 and 6 will be

assumed by the new owners and will be the measures set forth in the East Helena Superfund Site, Operable Unit No. 2, Residential Soils and Undeveloped Lands, Final Record of Decision (OU-2 ROD), 2009.

Custodial Trust Response to USEPA Condition 7:

As described in the Custodial Trust Response to USEPA Condition 2 above, several Parcels identified as “Undeveloped Lands” in the Draft CMS Report have been sold since 2016, including Parcels 3, 4, 6, 22, and the portion of 2 west of Wylie Drive. The final corrective measures for these Parcels (Undeveloped Lands) have been/will be determined by the property’s future use, as directed by the OU2 ROD whenever there is a change in land use. Therefore, the Parcels have been/will be required to be cleaned up to meet the applicable RAOs for the identified future use.

Properties identified as Undeveloped Lands and still owned by the Custodial Trust, including Parcels 7, 9, 13, 14, 21, the portion of 2 east of Wylie Drive, and the portion of 8 east of State Highway 518, will be evaluated whenever a change in land use is proposed and, if necessary, cleaned up to meet the applicable RAOs for the proposed use.

USEPA Condition 8:

USEPA’s letter states: The final CMS Report Addendum will update the information presented on page 3-28, Section 3.4.4, of the Draft CMS Report to state that streamflow rates remain relatively constant, along the eastern margin of the facility, with flows decreasing due to leakage to groundwater north of the slag pile and upstream of Highway 12. See the EPA response to LCWQPD comment referencing p. 3-28, Section 3.4.4.

Custodial Trust Response to USEPA Condition 8:

The text for Section 3.4.4 of the Draft CMS Report is replaced with the text as follows:

3.4.4 Groundwater/Surface Water Interaction

The current conceptual site model for groundwater/surface water interaction is consistent with the previous understanding, even though the Prickly Pear Creek (PPC) channel was relocated as part of the SPHC IM. Instantaneous flow measurements collected through 2019 along PPC upstream, adjacent to, and downstream of the Facility have consistently shown that streamflows remain relatively constant within PPC adjacent to the Facility under both high flow and low flow conditions. This suggests there continues to be minimal interaction between PPC and the local groundwater system east of the Facility; however, downstream of the Facility PPC flow rates consistently decrease indicating leakage from PPC to groundwater. Accounting for irrigation diversions, streamflow has generally decreased on the order of 10 to 20 cubic feet per second between monitoring locations near Highway 12 (PPC-7) and Canyon Ferry Road (SG-16) (Hydrometrics, 2020). Monitoring locations are shown on Figure 3-23. Based on an approximate distance of 16,000 feet, this equates to an average leakage rate of 28 to 56 gallons per minute per 100 feet of channel, seasonally.

Investigations to date have not identified changes in contaminant concentrations in PPC surface water adjacent to, and downstream of the Facility that would indicate significant recharge of contaminated groundwater to the PPC. These investigations noted that PPC upstream of the Facility is contaminated to some degree by upstream sources (historical mining), with low to moderate concentrations of mining related constituents such as arsenic, cadmium, and zinc present in samples from upstream site PPC-3A (Figure 3-23). The PPC is identified as impaired on the State 303D list due to historical mining activities in the headwaters (USEPA, 2004b).

Although PPC water quality and flow data from 2011-2019 do not suggest a groundwater/surface water interaction along the east side of the Facility (and upstream of the slag pile), the data do show small instream load increases adjacent to the slag pile which are attributed to creek interaction with the slag pile. To evaluate potential ongoing impacts from the slag pile, PPC water quality changes for selected metals (arsenic, copper, lead, and zinc) from PPC-3A (upstream) to PPC-7 (Figure 3-23) were evaluated (Hydrometrics, 2016b). Calculated instream loads of arsenic, copper, lead, and zinc showed downstream increases in arsenic, copper, and lead loads from sites PPC-3A to PPC-5, respectively, and again from sites PPC-5 to PPC-7, from 0.04 to 0.18 pound per day (lb/day). Zinc loads showed a net decrease on average from PPC-3A to PPC-5, but an increase of 3.1 lb/day from PPC-5 to PPC-7. These average load increases are about 10 percent of the average measured instream loads of 1.7 lb/day arsenic, 1.4 lb/day copper, 1.8 lb/day lead, and 20.7 lb/day zinc; thus, while the observed load increases appear relatively consistent, they are based on calculated loads that are within the error of field flow measurements and laboratory analytical measurements. Furthermore, the groundwater potentiometric surface along the north side of the slag pile (Figure 3-31A) indicates a northward groundwater flow direction in this area suggesting a component of groundwater flow from south to north through or beneath the creek.

USEPA Condition 9:

USEPA's letter states: Table 2-1 in the final CMS Report Addendum will be revised to Table 2-1A, as depicted in Table 2-1A in the Statement of Basis, to change the screening value for arsenic to 22.5 mg/kg.

Custodial Trust Response to USEPA Condition 9:

The Custodial Trust has updated table 2-1 to table 2-1A to revise the arsenic screening value/cleanup standard for soil at depth to 22.5 mg/kg, as indicated by comments provided by the State of Montana.

USEPA Condition 10:

USEPA's letter states: Add the 2016 CAMP report to the METG website. See the EPA response to LCWQPD comment referencing p. 3-21, Section 3.3.6.

Custodial Trust Response to USEPA Condition 10:

The 2015/2016 Corrective Action Monitoring Program ("CAMP") report referenced in the Draft CMS Report, and subsequent CAMP reports for 2017, 2018, and 2019, have been added to the Custodial Trust website for the Facility in response to the Lewis and Clark Water Quality Protection District comment. The website can be accessed at: <https://www.mtenvironmentaltrust.org/east-helena/documents/>.

References:

Hydrometrics, Inc., 2019. Dartman Parcel 4 Soil Remediation, Construction Completion Report. Prepared for Montana Environmental Trust Group, LLC. December.

Hydrometrics, Inc., 2020. 2019 Water Resources Monitoring Report, East Helena Facility. Prepared for Montana Environmental Trust Group, LLC. August.

Montana Department of Environmental Quality (MDEQ). 2013. Project Report Background Concentrations of Inorganic Constituents in Montana Surface Soils. September.

U.S. Department of Interior (USDOI) and U.S. Fish and Wildlife Survey (USFWS), 2020. Final Restoration Plan and Environmental Assessment for the East Helena Smelter Site, Lewis and Clark County, East Helena, Montana. January.

U.S. Environmental Protection Agency (USEPA), 2017. East Helena Superfund Site, Operable Unit No. 2, Residential Soils and Undeveloped Lands, Soil Sampling Program for Undeveloped Lands Quality Assurance Project Plan. June.

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The Conditional Approval letter from USEPA requested a Groundwater Technical Working Group update in 2020. The Custodial Trust will schedule an update to the Groundwater Technical Working Group this fall.

With the USEPA's Statement of Basis, defined as "EPA Decision Document" in the Consent Decree, the USEPA selected the corrective measures to be implemented by the Custodial Trust, which have been incorporated into the Corrective Action Implementation Work Plan ("CMI WP") for the Facility.

This Addendum, including all attachments, finalizes the Draft CMS Report to comply with the conditions set forth in the First Modification to the RCRA Consent Decree.

Sincerely,

**Cynthia
Brooks**

Digitally signed by
Cynthia Brooks
Date: 2020.10.08
21:05:35 -04'00'

Cynthia Brooks, President

Montana Environmental Trust Group, LLC

By: Greenfield Environmental Trust Group, Inc., Member

By Cynthia Brooks, President

Cc: Jenny Chambers—MDEQ
Lauri Gorton—Custodial Trust
Max Greenblum—USEPA
Harley Harris—MDOJ-NRD
Katherine Hausrath—MDOJ-NRD
Amy Hensley—USEPA
Jacob Martin—USFWS
Greg Muller—MDOJ-NRD
Molly Roby—Custodial Trust
Alan Tenenbaum—USDOJ
Joe Vranka—USEPA
Jessica Wilkerson—MDEQ

Attachments:

Attachment A - USEPA Conditional Letter of Approval

Attachment B - Updated Figures and Tables, per conditions herein

Attachment C - USEPA Response to Comments from CMS Public Comment Period
(Appendix A of Statement of Basis)

CERTIFICATION

PURSUANT TO FIRST MODIFICATION TO CONSENT DECREE

Civil Action No. CV 98-3-H-CCL, (US Federal District Court, District of Montana)

"I certify under penalty of law that this document and all attachments, were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations."

**Cynthia
Brooks** Digitally signed
by Cynthia Brooks
Date: 2020.10.08
21:06:11 -04'00'

Montana Environmental Trust Group, LLC

Not individually but solely in its representative capacity as

Trustee of the Montana Environmental Custodial Trust

By: Greenfield Environmental Trust Group, Inc., Member

By: Cynthia Brooks, President

ATTACHMENT A

USEPA CONDITIONAL LETTER OF APPROVAL



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8, MONTANA OFFICE**

FEDERAL BUILDING, 10 West 15TH Street, Suite 3200
Helena, MT 59626-0096
Phone 866-457-2690
www.epa.gov/region8

July 10, 2020

Ref: 8SEM-RBC

Via Electronic Mail

Cynthia Brooks
Montana Environmental Trust Group, LLC
Trustee of the Montana Environmental Custodial Trust
P. O. Box 1390
Helena, Montana 59624

Re: Transmittal of EPA Statement of Basis and Conditional Approval of the *Public Review Draft Former ASARCO East Helena Facility Corrective Measures Study Report*, March 2018

Dear Cindy:

The EPA has reviewed the *Public Review Draft Former ASARCO East Helena Facility Corrective Measures Study Report* (Draft CMS Report) prepared for the Montana Environmental Trust Group (Trust) by CH2M in March 2018, conducted a public meeting on April 11, 2018, with a public comment period that extended through May 31, 2018, and prepared the attached Statement of Basis with response to comments. Based on the review and public comments, the EPA is conditionally approving the Draft CMS Report as submitted, with the changes detailed below:

1. To complete the final CMS Report in a streamlined and cost-effective manner, the EPA is proposing an addition of an addendum to the final CMS Report that details modifications to the Draft CMS Report and updates the status of the groundwater monitoring results using the October 2019 groundwater data and plume maps.
2. The EPA proposes including information in the final CMS Report Addendum on Trust property disposition of parcel 2 west of Wylie Drive and parcels 3, 4 and 6. Additionally, the EPA requests discussion of the Trust remediation of Parcel 4 and the addition of a reference for the *Dartman Parcel 4 Soil Remediation Construction Completion Report* (Hydrometrics, December 2019).
3. The final CMS Report Addendum will include the EPA Response to Comments received during the public comment period, detailed in Appendix A of the Statement of Basis.
4. The final CMS Report Addendum will provide new figures to update the information shown in figures 1-1, 2-1, 3-22, 3-27, 3-28, 3-29, 3-30, and tables 6-1 and 6-2 of the Draft CMS Report to identify the parcels formerly owned by the Trust that were evaluated as part of the Draft CMS Report. These properties are included in the Draft CMS Report as Trust-owned, "Undeveloped Lands." The final corrective measures for those parcels are the measures set forth in the *East Helena Superfund Site, Operable Unit No. 2, Residential Soils and Undeveloped Lands, Final*

Record of Decision (OU2 ROD), 2009. Parcel 4 was remediated by the Trust to meet the OU2 remedial action objectives (RAOs). Parcels 2 (west of Wylie Drive) and 3 will be required to meet the OU2 RAOs once there is a change in use. Parcel 6 will be evaluated by the East Helena Public Schools when the High School construction is complete. Revised figures in the Addendum should be denoted by the original figure number followed by an “A.”

5. The final CMS Report Addendum will provide new figures to update the information shown in figures 3-31, 3-32, 3-33, 3-34, 3-35, 3-36, 3-37, 3-38 and 5-2 of the Draft CMS Report. The new figures will present the October 2019 groundwater sampling data to show updated results of the implementation of the components of the final corrective measures that were implemented as interim measures. Revised figures in the Addendum should be denoted by the original figure number followed by an “A.”
6. The final CMS Report Addendum will provide new figures to update the information presented in figures 3-24 and 3-26 of the Draft CMS Report. The figures should be updated for Upper Lake and Lower Lake to show similar connections of a saturated zone to the groundwater table and associated flow arrow as shown for Upper Lake. Additionally, figures 3-6 and 3-24 should be revised to reflect the same depth for the slurry wall. See the EPA response to Lewis & Clark County Water Quality Protection District (LCWQPD) comment referencing Figure 3-24.
7. The final CMS Report Addendum will present a revised definition of “Undeveloped Lands” to clarify the parcels that were formerly owned by the Trust and that were evaluated as part of the Draft CMS Report. The final corrective measures for a portion of parcel 2, west of Wylie, and parcels 3, 4 and 6 will be assumed by the new owners and will be the measures set forth in the *East Helena Superfund Site, Operable Unit No. 2, Residential Soils and Undeveloped Lands, Final Record of Decision* (OU-2 ROD), 2009.
8. The final CMS Report Addendum will update the information presented on page 3-28, Section 3.4.4, of the Draft CMS Report to state that streamflow rates remain relatively constant, along the eastern margin of the facility, with flows decreasing due to leakage to groundwater north of the slag pile and upstream of Highway 12. See the EPA response to LCWQPD comment referencing p. 3-28, Section 3.4.4.
9. Table 2-1 in the final CMS Report Addendum will be revised to Table 2-1A, as depicted in Table 2-1A in the Statement of Basis, to change the screening value for arsenic to 22.5 mg/kg.
10. Add the 2016 CAMP report to the METG website. See the EPA response to LCWQPD comment referencing p. 3-21, Section 3.3.6.

In addition to the information to be presented in the final CMS Report Addendum, the EPA is requesting a Groundwater Technical Working Group update in late summer or early fall.

Pursuant to paragraph 40 of the Consent Decree (First Modification to Consent Decree, Civil Action No. CV 98-3-H-CCL), the EPA is submitting the attached Statement of Basis (defined as “EPA Decision Document” in the Consent Decree) selecting the appropriate corrective measures to be implemented by the Custodial Trust and the response to comments from the public comment period on the Draft CMS Report. According to paragraph 41 of the Consent Decree, the Custodial Trust shall submit to the EPA a Corrective Measures Implementation (CMI) Work Plan within 90 days of receipt of the Statement of Basis. The CMI Work Plan shall be developed to implement the decisions set forth and supported in the

Statement of Basis and shall detail all work and related requirements and schedules for the timely implementation and completion of such corrective measures.

The EPA is requesting finalization of the CMS Report within ninety days (90) days of receipt of this conditional approval.

Sincerely,

**Burns,
Betsy**

Digitally signed by
Burns, Betsy
Date: 2020.07.10
10:53:41 -06'00'

Betsy Burns
Remedial Project Manager

Cc: Lauri Gorton – Custodial Trust
Molly Roby – Custodial Trust
Max Greenblum – US EPA Region 8
Joe Vranka – US EPA Region 8
Amy Hensley, US EPA Region 8
Harley Harris – MDOJ-NRD
Katherine Hausrath – MDOJ-NRD
Greg Mullen – MDOJ-NRD
Jenny Chambers – MDEQ
Jessica Wilkerson - MDEQ

ATTACHMENT B

UPDATED FIGURES AND TABLES

Table 2-1A CMS Parcels - Media Cleanup Standards for Primary Inorganic Constituents in Soil

Corrective Measures Study Report, Former ASARCO East Helena Facility

Media	Constituent of Potential Concern	Land Use	Cleanup Standard (µg/L groundwater, mg/kg soil) ^d	Basis of Standard	Applications for Standard
Groundwater	Arsenic	All	0.010	MCL	Exceedance of MCS indicates need for remedial action and will be considered in identification of areal extent of institutional controls (Controlled Groundwater Area)
	Cadmium		0.005		
	Selenium		0.05		
Surface Soil	Lead	Ecological	650	Concentration established to be protective of ecological receptors (passerines) at other MT remediation sites ^a	Will be applied as a design criterion for IM and final remedy construction (final surface site work associated with Prickly Pear Creek and Tito Park excavation, surface layer of ET Cover System, etc.)
		Residential	400	USEPA RSL ^b	
		Industrial - Commercial	800		
		Recreational	3,245	OU-2 ROD	
	Arsenic	Residential	35	Hegeler Zinc ROD ^c	Establishes concentration threshold for remedy implementation on undeveloped properties when land use changes
		Industrial - Commercial	572	OU-2 ROD	
		Recreational	794	OU-2 ROD	
Soil at Depth	Arsenic		22.5	MDEQ	Establishes extent of remedial action required to prevent groundwater contact with contaminated soil and to control infiltration
	Cadmium		0.38	USEPA MCL-based SSL ^b (concentration needed to achieve MCLs in groundwater)	
	Selenium		0.26	USEPA MCL-based SSL ^b (concentration needed to achieve MCLs in groundwater)	

^a Recommended based on its consistency with action levels developed at other similar smelter/mining sites: OU2 Record of Decision (ROD) East Helena, MT; Anaconda Smelter Superfund Site, Anaconda, MT; Bunker Hill Superfund Site, Coeur d'Alene, ID; and Tri-State Mining District (Oklahoma, Kansas, and Missouri) Superfund Site.

^b USEPA June 2015 RSL or MCL-based soil screening level (SSL) where indicated

^c The arsenic cleanup level is recommended based on risk-based concentrations currently being approved by USEPA at former smelter sites and similar facilities across the country. The Hegeler Zinc ROD is cited as an example of current practice (USEPA, 2014).

^d Media cleanup standards for CMS Parcels as presented in the CMS Workplan (EPA Approval, October 22, 2015); OU-2 ROD standards will be applied to the Undeveloped Lands.

Abbreviations:

µg/L = micrograms per liter
ET = evapotranspiration
IM = interim measure
MCL = maximum contaminant level
MDEQ = Montana Department of Environmental Quality
mg/kg = milligrams per kilogram
OU2 ROD = Record of Decision for Operable Unit 2
RSL = regional screening level

Table 6-1A. Summary of Selected Corrective Measures and Supplemental Institutional Controls*Corrective Measures Study Report, Former ASARCO East Helena Facility*

Selected Remedy Elements	Engineering/Activity Components	Applicable Parcels	Applicable Media or Pathway
ENGINEERING CONTROLS			
ET Cover System - Building Demolition, Utility Abandonment, Subgrade Fill, Final ET Cover	ET Cover to mitigate infiltration of precipitation, control wind erosion	Facility (Parcels 16,19)	Groundwater
	Surface water/stormwater collection		Soil Sediment Surface water
South Plant Hydraulic Controls: Upper Lake and Lower Lake Removal; PPC Bypass; PPC Realignment; wetland construction	Reduce surface water loading to groundwater by removing Upper Lake and Lower Lake	Facility (Parcels 16,19)	Groundwater
	Establish natural stream channel flow and geomorphic conditions within Smelter reach		Surface water
	Establish natural wetland/riparian conditions		Sediment
Speiss Dross Slurry Wall	Isolate impacted soil and prevent impacts to groundwater		Groundwater
Source removals - Excavation and Removal of Impacted Media at Tito Park Area, former Acid Plant, and Upper Lake Marsh	Remove through excavation impacted soil/sediment that could potentially leach to groundwater or surface water	Facility (Parcels 16,19)	Groundwater
	Protectively manage removed soil under ET cover system		Soil Surface water Sediment
CAMU 1 and CAMU 2	Isolate impacted soil, sediment and remediation waste and prevent impacts to groundwater	Facility (Parcels 16,19)	Groundwater
	Surface water/stormwater collection		Surface water
Slag Pile - Grade and Cover	ET Cover over unfumed slag to reduce infiltration	Facility (Parcels 16,19)	Groundwater
	Slag pile regrading		Soil/Slag Sediment
	Surface water/stormwater collection		Surface water
INSTITUTIONAL CONTROLS IMPLEMENTED BY CUSTODIAL TRUST			
Custodial Trust Well Abandonment Program	Contact all residents with existing supply wells; Abandon existing residential wells and/or provide alternative water supply	Non Trust-Owned Properties	Groundwater
Custodial Trust Deed Restrictions	Implement deed restriction on Trust-owned property to restrict use to commercial/industrial only and prohibit groundwater use	Trust-Owned Properties including Facility (Parcels 16, 19)	Soil and Groundwater

Table 6-1A. Summary of Selected Corrective Measures and Supplemental Institutional Controls*Corrective Measures Study Report, Former ASARCO East Helena Facility*

Selected Remedy Elements	Engineering/Activity Components	Applicable Parcels	Applicable Media or Pathway
SUPPLEMENTAL INSTITUTIONAL CONTROLS IMPLEMENTED BY OTHERS			
East Valley Controlled Groundwater Area (CGWA)	Implement and maintain program through CGWA process	CMS Parcels (including Facility), Undeveloped Lands, Non Trust-Owned Properties	Groundwater
	Apply groundwater use restriction areas		
City of East Helena Well Restrictions	Implement and maintain program through COEH process	CMS Parcels (including Facility), Undeveloped Lands, Non Trust-Owned Properties	Groundwater
	Apply groundwater use restriction areas		
Lewis and Clark County and City of East Helena Soil Ordinance	Implement and maintain lead education and abatement program through COEH process	Non Trust-Owned Properties	Soil
	Apply property use restrictions		

Notes:

ET = evapotranspiration

PPC = Prickly Pear Creek

COEH = City of East Helena

Facility - Parcels 16, 19

CMS Parcels - Parcels 10, 11, 12, 15, 16, 17, 18, 19, 23, the portion of 8 located west of State Highway 518 (8W), and portions of Parcel 2 near Prickly Pear Creek (PPC; Parcel 2a)

Undeveloped Lands - Parcels 7, 9, 13, 14, 21, the portion of 8 located east of State Highway 518 (8E), and the portion of 2 located east of Wylie Drive

Non Trust-Owned Properties include those Undeveloped Lands sold by Custodial Trust since 2016 for redevelopment, corrective measures are set forth in the OU2 ROD - Parcels 3, 4, 6, 22, the portion of 2 located west of Wylie Drive

Table 6-2A. Summary of Remedy Performance Standards by Parcel
Corrective Measures Study Report, Former ASARCO East Helena Facility

Remedy Performance Standards						
CMS Parcel	Selected Remedy	Media with Potential Unacceptable Risk	Protect HH and Environment	Achieve MCSs	Control Sources	Meets Current and Future Exposure/Use
2a	Operable Unit 2 Record of Decision, Undeveloped Lands	Soil	No unacceptable risk (Table 4-1)	To be evaluated upon transfer of property ownership	Windborne deposition mitigated by ET Cover	Currently land is undeveloped similar to Operable Unit 2 Record of Decision parcels
	South Plant Hydraulic Control and ET Cover	Groundwater		Yes	Interrelated IMs to reduce downgradient concentrations	
8W, 10, 11, 12, 17, 18	South Plant Hydraulic Control: Upper Lake and Lower Lake Removal, Prickly Pear Creek Bypass and Realignment, wetland construction	Soil	No unacceptable risk (Table 4-1); IMs are reducing contaminant mass loadings and remedy is protective in combination with CGWA and COEH restrictions	Yes - contaminated soil and sediments were removed and replaced with clean materials	N/A - sources removed	Constructed riparian corridor appropriate for industrial (future) or recreational use (current)
		Sediment				
		Surface water				
15	Operable Unit 2 Record of Decision	Soil	No unacceptable risk (Table 4-1)	To be evaluated upon transfer of property ownership	Windborne deposition mitigated by ET Cover	Meets industrial MCSs (future use); no risk to ecological receptors (current use)
	CGWA (supplemental institutional control implemented by others)	Groundwater	Reduce potential for contact with and ingestion of impacted groundwater	Contaminant concentrations are expected to decrease over time due to reductions in mass loading from remedy implementation	No source: plume in this area is attributed to naturally occurring arsenic	Protected by the CGWA
16, 19	ET Cover, Source Removal, Speiss Dross Slurry Wall, CGWA (supplemental institutional control implemented by others)	Soil	- Prevent contact with impacted media through removal or under protective ET Cover - Locally improve water quality through removal	Yes	Removed or under protective ET Cover	Meets industrial MCSs
		Groundwater		Contaminant concentrations are expected to decrease over time due to reductions in mass loading from remedy implementation	Excavated where possible, reduce infiltration, prevent migration from slurry wall, lower water levels (South Plant Hydraulic Control IM)	Use prohibited by CGWA
	Grade and Cover	Unfumed Slag	- Improve downgradient water quality over	Yes	Reduce potential for slag and stormwater runoff to discharge in Prickly Pear Creek	Fumed slag available for recovery and industrial use
23	Operable Unit 2 Record of Decision	Soil	No unacceptable risk (Table 4-1)	Yes	Windborne deposition mitigated by ET Cover	Currently land is undeveloped similar to Operable Unit 2 Record of Decision parcels
Undeveloped Land	Proposed Remedy	Exposure Media	Protect HH and Environment	Achieve MCSs	Control Sources	Meets Current and Future Exposure/Use
2E, 7, 9, 13, 14, 8E, and 21	Operable Unit 2 Record of Decision, COEH Soil Ordinance, COEH Well Restrictions	Groundwater	Reduce potential for human contact with and ingestion of impacted groundwater	Contaminant concentrations are expected to decrease over time due to reductions in mass loading from remedy implementation	Reduced concentrations at Facility will eventually propagate downgradient	Ensures protection until groundwater meets MCSs
	Operable Unit 2 Record of Decision, COEH Soil Ordinance	Soil	Reduce potential for human contact with impacted soil	MCS will be achieved by adherence to COEH soil ordinance or a Trust institutional control if not within COEH	Windborne deposition mitigated by ET Cover	Ensures property use is appropriate to existing conditions
Non-Custodial-Trust-Owned Properties	Proposed Remedy	Exposure Media	Protect HH and Environment	Achieve MCSs	Control Sources	Meets Current and Future Exposure/Use
(including 2W, 3, 4, 6, 22) ¹	Custodial Trust Well Abandonment Program; COEH Well Restrictions; CGWA (supplemental institutional control implemented by others)	Groundwater	Reduce potential for human contact with and ingestion of impacted groundwater	Contaminant concentrations are expected to decrease over time due to reductions in mass loading from remedy implementation	Reduced concentrations at Facility will eventually propagate downgradient	Ensures protection until groundwater meets MCSs
	Operable Unit 2 Record of Decision, COEH Soil Ordinance	Soil	Reduce potential for human contact with impacted soil	MCS will be achieved by adherence to COEH soil ordinance or a Trust institutional control if not within COEH	Windborne deposition mitigated by ET Cover	Ensures property use is appropriate to existing conditions

Notes:

2E = the portion of parcel 2 located east of Wylie Drive

2W = the portion of parcel 2 located west of Wylie Drive

8E = the portion of parcel 8 located east of Highway 518

8W = the portion of parcel 8 located west of Highway 518

CGWA = Controlled Groundwater Area (supplemental institutional control implemented by others)

COEH = City of East Helena

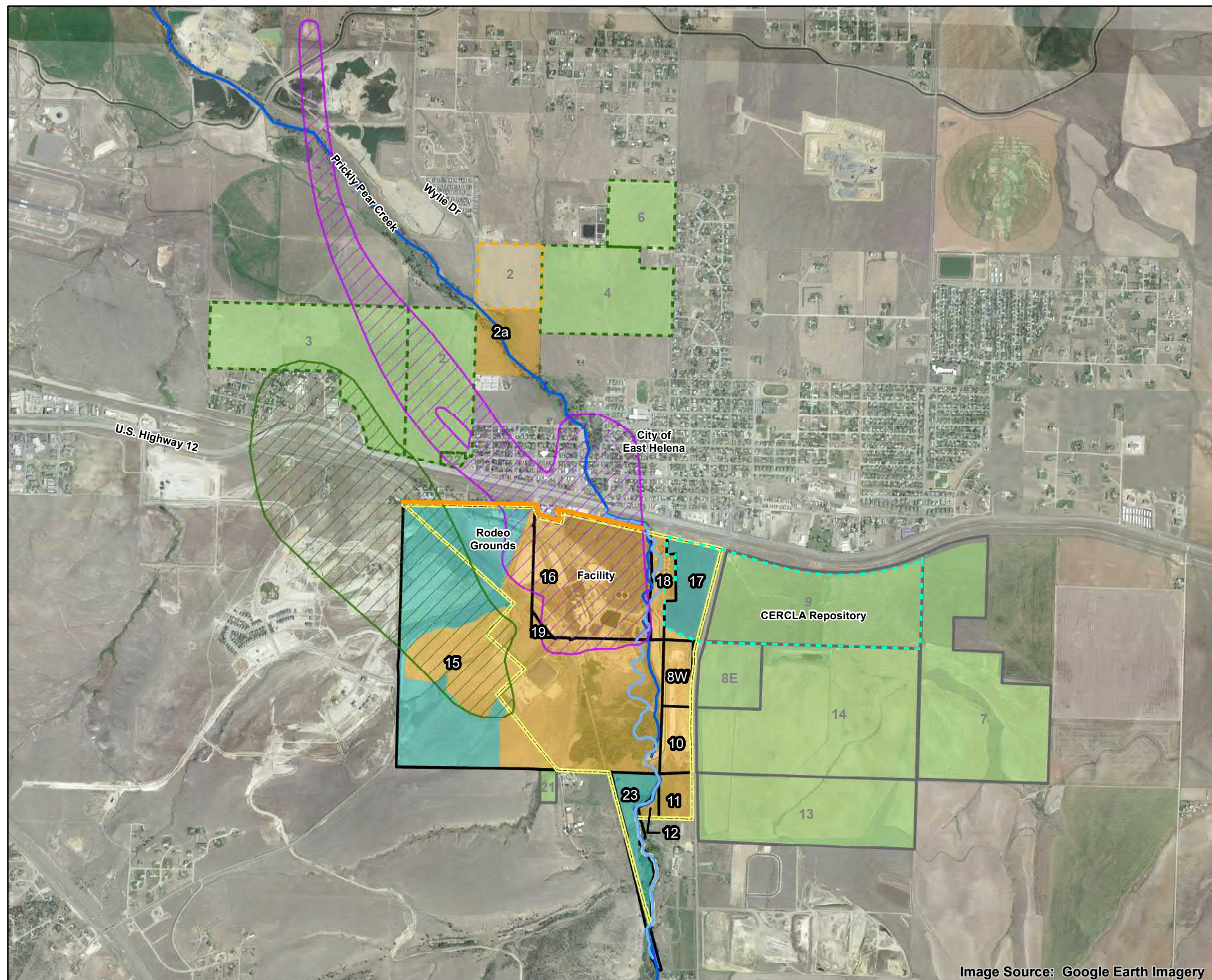
ET = evapotranspiration

IM = interim measure










MCS = media cleanup standard

NA = not applicable

¹Undeveloped land parcels sold by the Custodial Trust since 2016. Remedy is determined based on future use of parcel.






LEGEND

-  Prickly Pear Creek
-  Prickly Pear Creek Realignment
-  Point of Compliance
-  CMS Parcel
-  CMS Parcel Undergoing Corrective Action
-  Parcel Boundary
-  Residential Soil Disposal Area Boundary
-  Area of Contamination Boundary
-  Extent of Facility-related Groundwater Contamination (combined As and Se plumes)

Notes:

2. CMS = Corrective Measures Study
2. OU2 = Operable Unit 2
3. ROD = Record of Decision
4. CERCLA = Comprehensive Environmental Response, Compensation and Liability Act

LEGEND

-  Undeveloped Land¹
-  Undeveloped Land Sold by Custodial Trust²
-  Undeveloped Land Undergoing Corrective Action³

Notes:

1. Parcel owned by the Custodial Trust that is not part of the CMS, but has a corrective measure set forth in the OU2 ROD.
2. Parcel sold by the Custodial Trust since 2016 for redevelopment; corrective measure set forth in the OU2 ROD.
3. Corrective measure implemented in tandem with 2a.

LEGEND

- 
- West Arsenic Area

Notes:

1. The west arsenic area occurs primarily from groundwater interaction with naturally-occurring arsenic-bearing soil and is not facility-related.

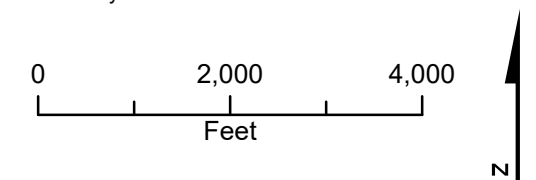
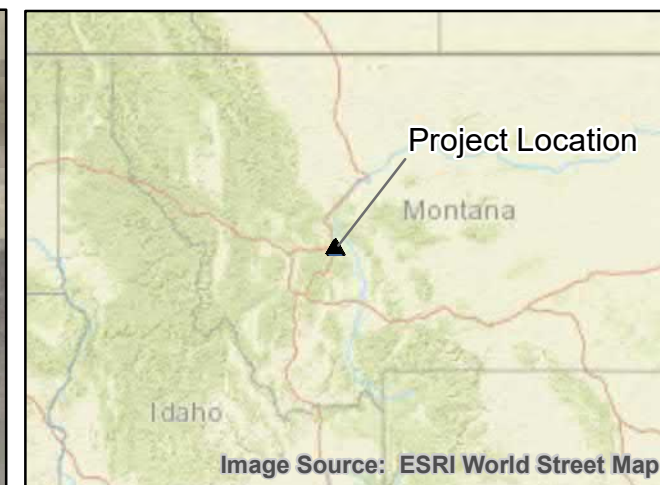
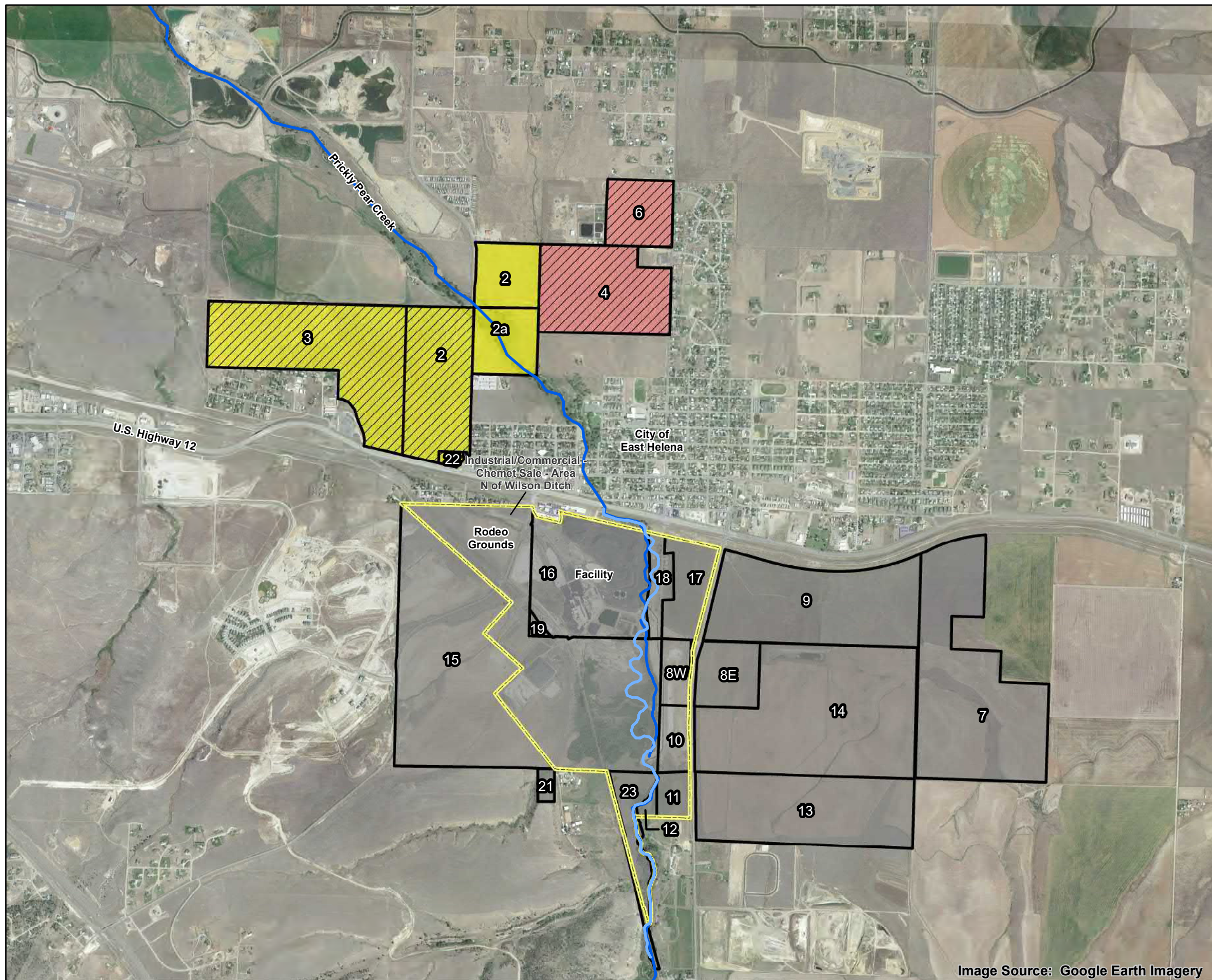


Figure 1-1A
Geographic Boundaries of the CMS
Former ASARCO East Helena Facility
Corrective Measures Study Report
East Helena, Montana



LEGEND

- Prickly Pear Creek
- Prickly Pear Creek Realignment
- Parcel Boundary
- Area of Contamination Boundary
- Parcel Sold by Custodial Trust¹

Land Use Areas

- Commercial
- Industrial
- Residential

Notes:

¹ Parcel sold by the Custodial Trust since 2016 for redevelopment; corrective measure set forth in the OU2 ROD based on future determined land use.

Land uses shown are consistent with COEH zoning as approved by the Zoning Commission in November 2016. Effective December 15, 2016.

Current use of Custodial Trust parcels is legal nonconforming until the properties change hands.

COEH = City of East Helena

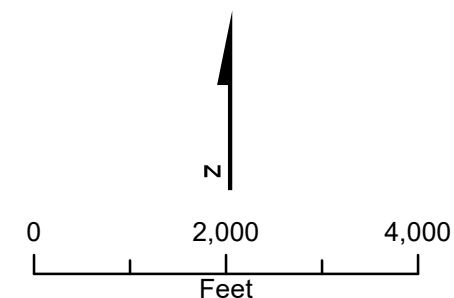
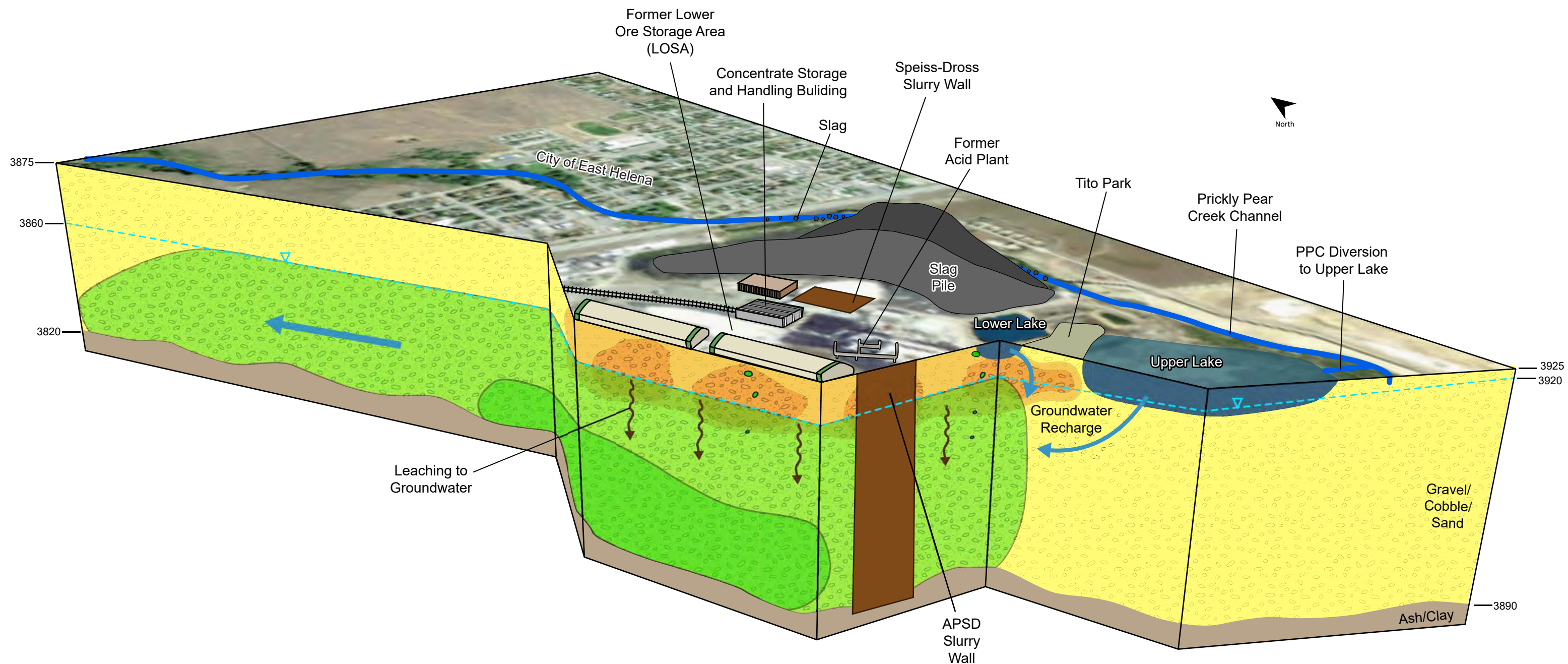










Figure 2-1A
Reasonably Anticipated Land Use
 Former ASARCO East Helena Facility
 Corrective Measures Study Report
 East Helena, Montana

Image Source: Google Earth Imagery



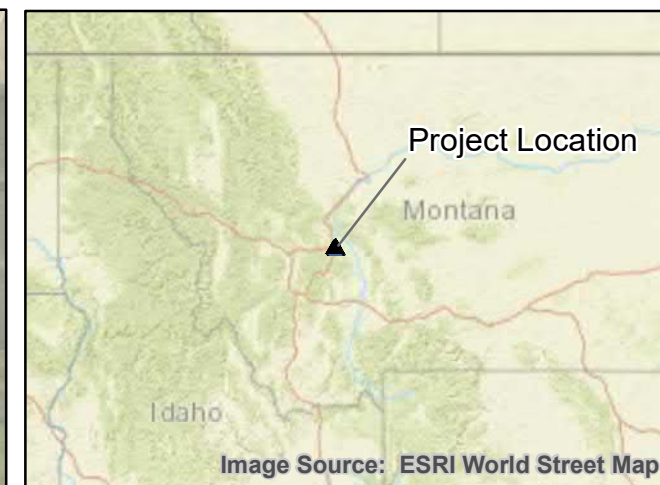
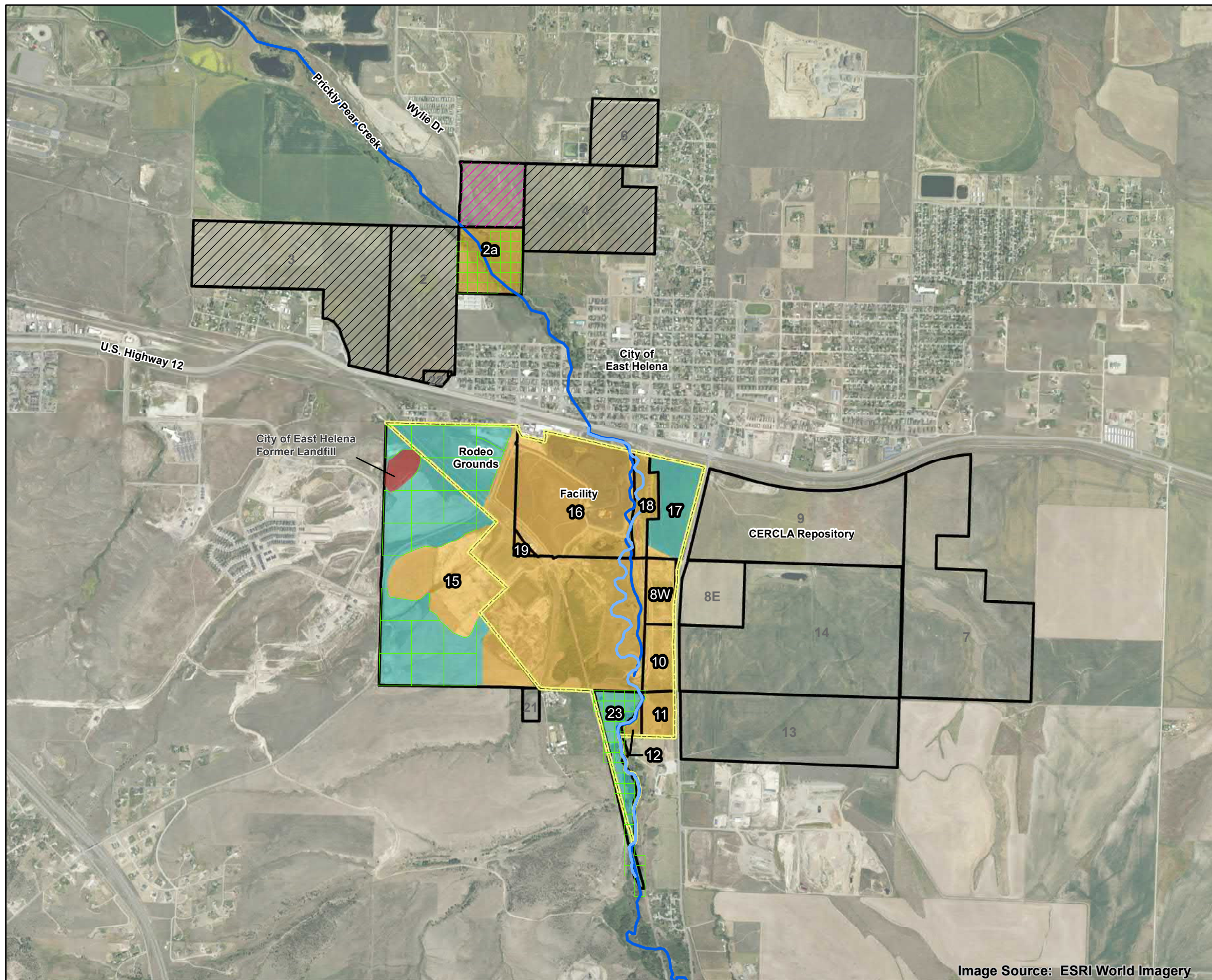
LEGEND

-  Approximate Water Level
-  Groundwater Flow Direction
-  Plume
-  Impacted Soil
-  Fumed Slag
-  Unfumed Slag

-  Infiltration/Leaching
-  Unfumed Slag Leachate

NOTE:
Darker colors represent higher contaminant concentrations.
APSD - Acid plant sediment drying bed

Figure 3-6A
Conceptual Model of Post-Operational Smelter (2011)
Former ASARCO East Helena Facility
Corrective Measures Study Report
East Helena, Montana



LEGEND

- Parcel Sold by Custodial Trust¹
- Undeveloped Land Undergoing Corrective Action²
- Parcel Boundary
- Supplemental RFI Sampled DU
- Sampled CMS Parcel
- CMS Parcel Undergoing Corrective Action
- City of East Helena Former Landfill
- Area of Contamination Boundary
- Prickly Pear Creek
- Prickly Pear Creek Realignment

Notes:
¹ Parcel sold by the Custodial Trust since 2016 for redevelopment; corrective measure set forth in the OU2 ROD based on future determined land use.
² Corrective measure implemented in tandem with 2a.
 CMS = Corrective Measures Study
 SAP = Sampling outlined in the East Helena Facility Supplemental RFI Sampling and Analysis Plan, CH2M HILL, October 2015

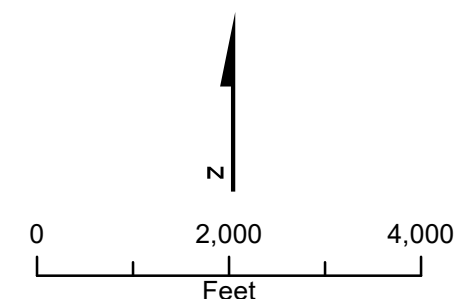
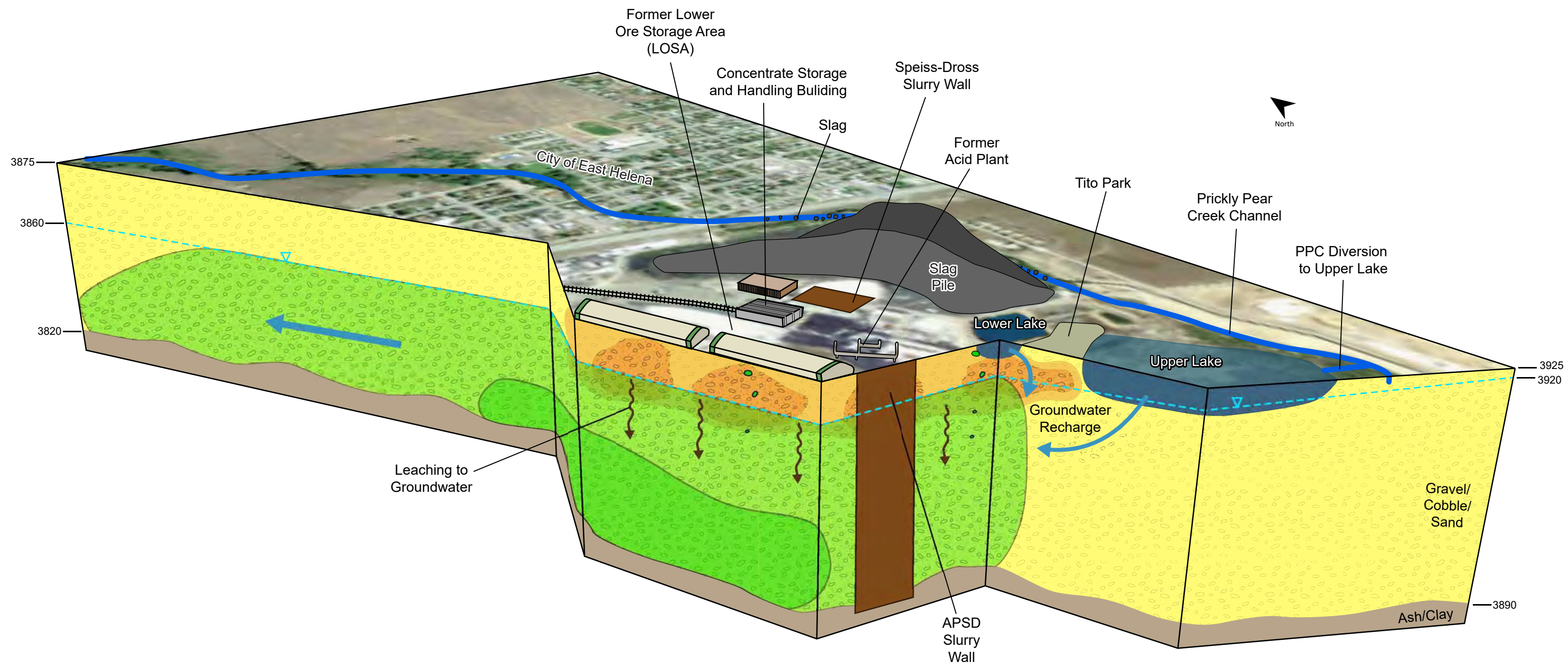










Figure 3-22A
Overview of Supplemental RFI Sampling
 Former ASARCO East Helena Facility
 Corrective Measures Study Report
 East Helena, Montana



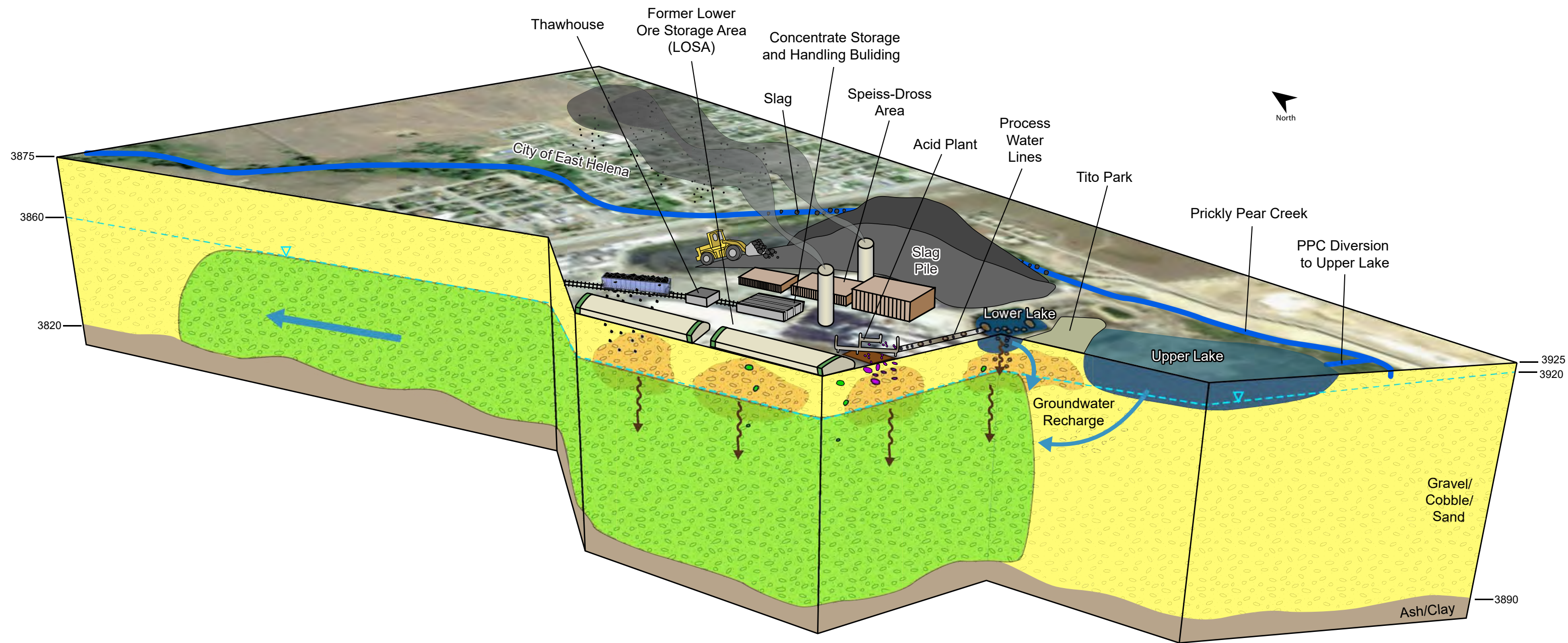
LEGEND

-  Approximate Water Level
-  Groundwater Flow Direction
-  Plume
-  Impacted Soil
-  Fumed Slag
-  Unfumed Slag

-  Infiltration/Leaching
-  Unfumed Slag Leachate

NOTE:
Darker colors represent higher contaminant concentrations.
APSD - Acid plant sediment drying bed

Figure 3-24A
Conceptual Model of Post-Operational Smelter
Former ASARCO East Helena Facility Corrective
Measures Study Report



LEGEND

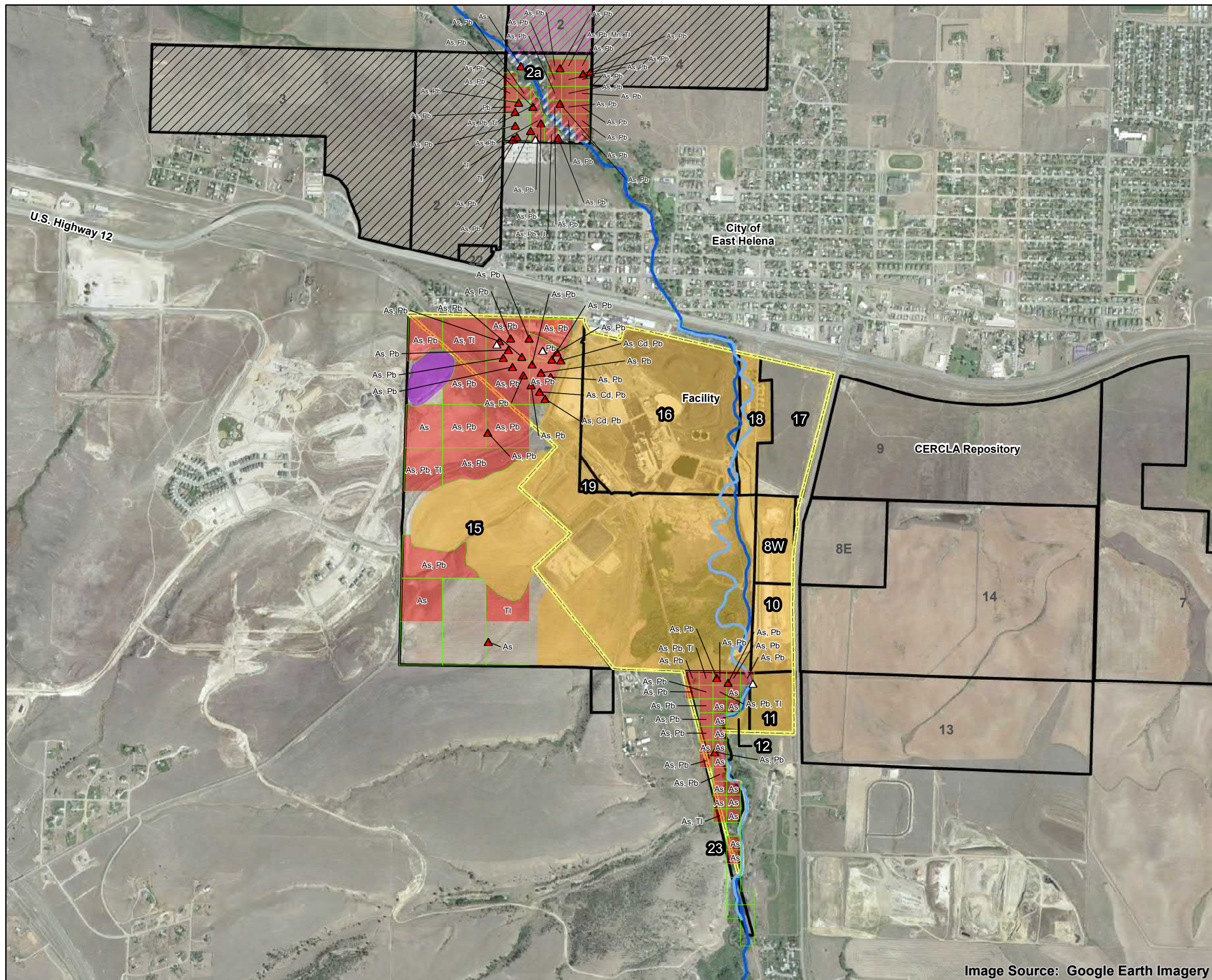
- Approximate Water Level
- Groundwater Flow Direction
- Plume
- Impacted Soil
- Process Water Leaks

- Infiltration/Leaching
- Fumed Slag
- Unfumed Slag
- Airborne Deposition

- Unfumed Slag Leachate
- Acid Plant Sediment Drying Bed
- Impacted Sediment

NOTE:
Darker colors represent higher contaminant concentrations.

Figure 3-26A
Conceptual Model of Operational Smelter
(Through 2001)
Former ASARCO East Helena Facility
Corrective Measures Study Report
East Helena, Montana



LEGEND

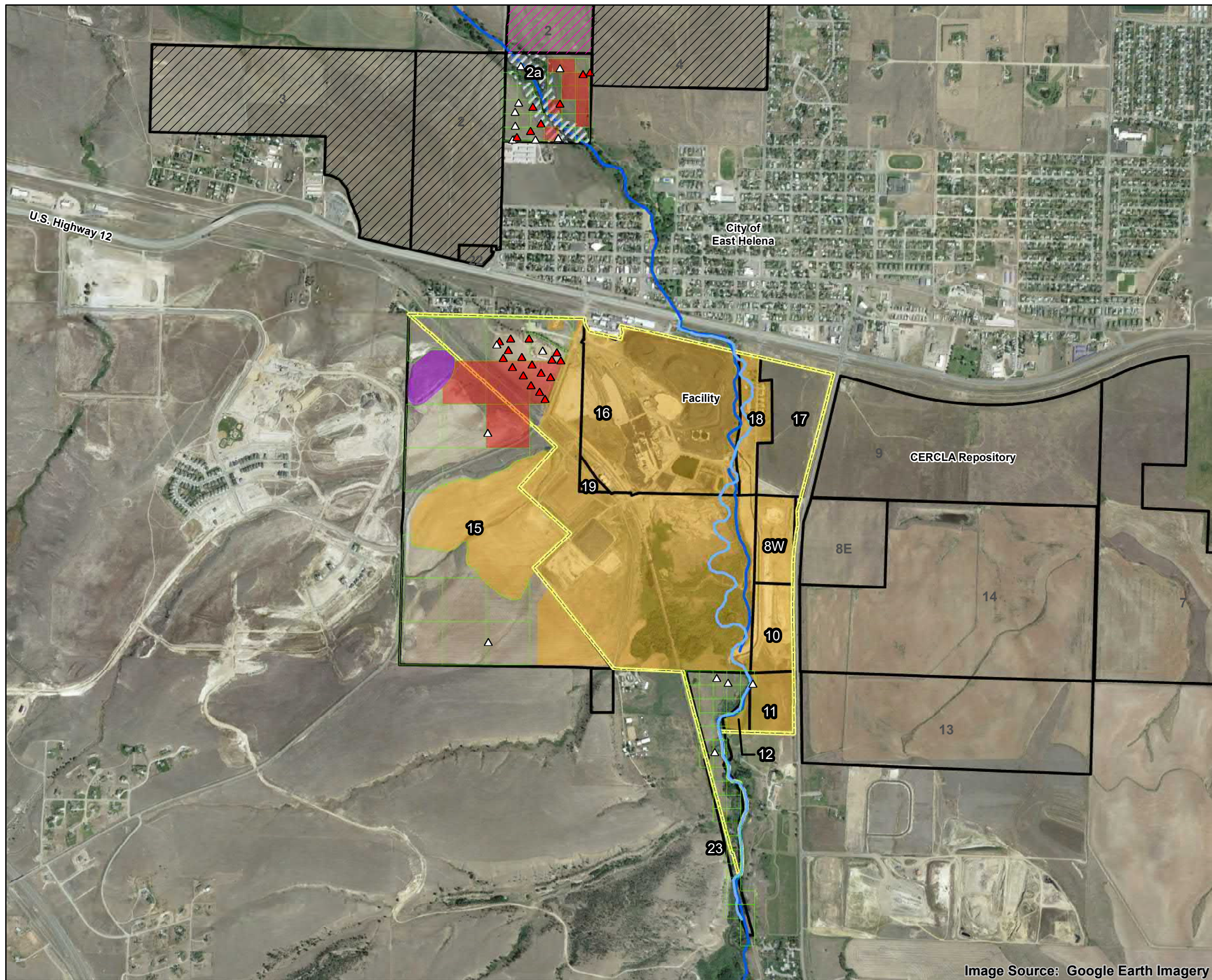
- △ Historical Surface Soil Sample Location
- Supplemental RFI Sampled DU
- Exceeds Criteria
- CMS Parcel Undergoing Corrective Action
- Parcel Sold by Custodial Trust¹
- Undeveloped Land Undergoing Corrective Action²
- Parcel Boundary
- Area of Contamination Boundary
- 100-year Floodplain (approx.)
- City of East Helena Former Landfill
- Prickly Pear Creek
- Prickly Pear Creek Realignment

Notes:
¹ Parcel sold by the Custodial Trust since 2016 for redevelopment; corrective measure set forth in the OU2 ROD based on future determined land use.
² Corrective measure implemented in tandem with 2a.
Red sample location exceeds residential use criteria for the metals shown.
As - arsenic
Cd - cadmium
Cr6 - hexavalent chromium
Pb - lead
Mn - manganese
Tl - thallium
DU = decision unit
Results compared to residential media cleanup standards (As and Pb) or Regional Screening Levels (Cd, Cr6, Mn, and Tl) as follows:
As - 35 milligrams per kilogram (mg/kg)
Cd - 71 mg/kg
Cr6 - 0.3 mg/kg
Pb - 400 mg/kg
Mn - 1,800 mg/kg
Tl - 0.78 mg/kg
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980
IM = Interim Measure
CMS = corrective measures study

0 1,500 3,000
Feet



Figure 3-27A
Comparison of Surface Soil Results to Residential Cleanup Standard
Former ASARCO East Helena Facility
Corrective Measures Study Report
East Helena, Montana



LEGEND

- △ Historical Surface Soil Sample Location
- Supplemental RFI Sampled DU
- Exceeds Criteria
- CMS Parcel Undergoing Corrective Action
- Parcel Sold by Custodial Trust¹
- Undeveloped Land Undergoing Corrective Action²
- Parcel Boundary
- Area of Contamination Boundary
- 100-year Floodplain (approx.)
- City of East Helena Former Landfill
- Prickly Pear Creek
- Prickly Pear Creek Realignment

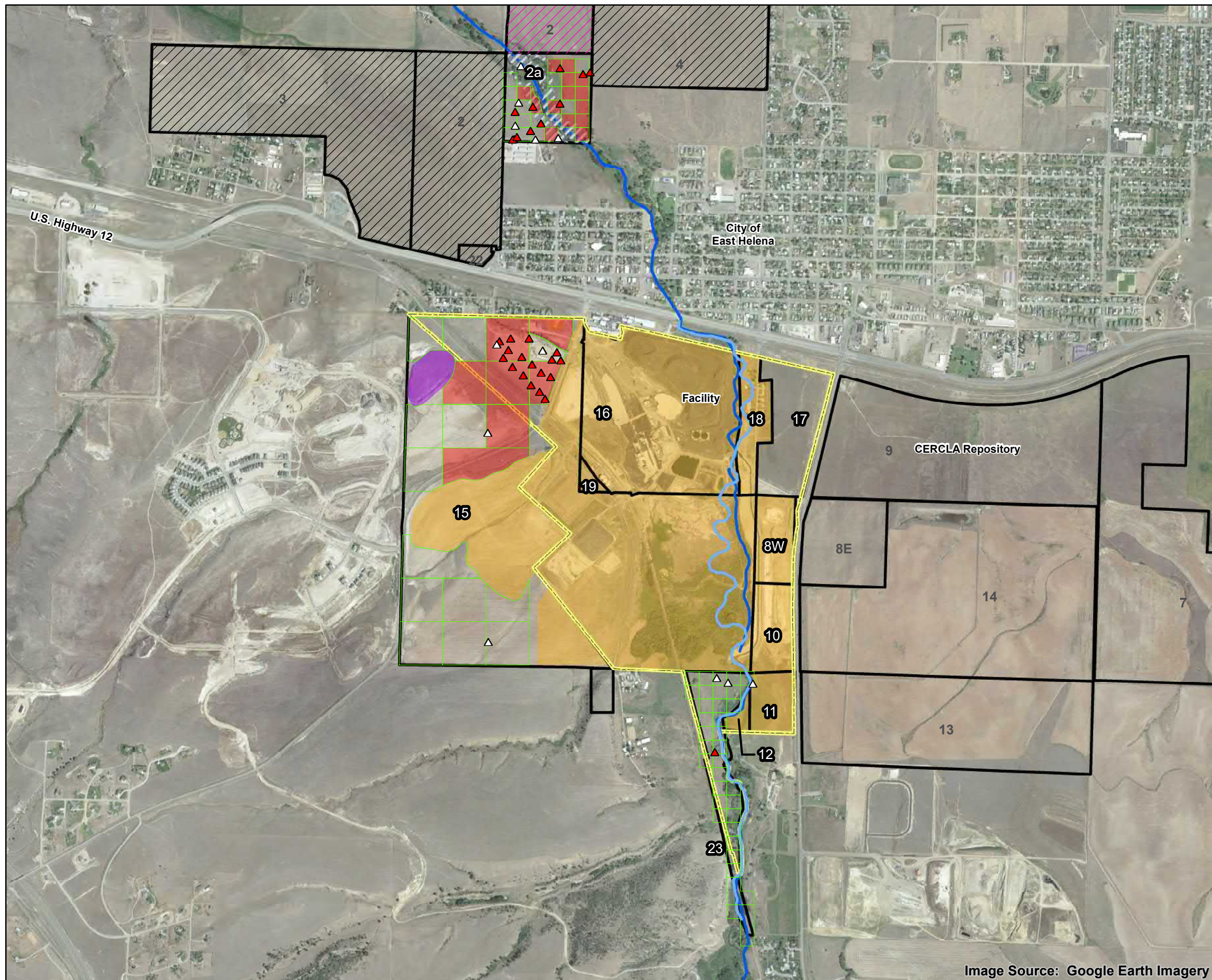
Notes:
¹ Parcel sold by the Custodial Trust since 2016 for redevelopment; corrective measure set forth in the OU2 ROD based on future determined land use.
² Corrective measure implemented in tandem with 2a. Red sample location exceeds industrial/commercial use criteria for lead (800 mg/kg).
 DU = decision unit
 RFI = Resource Conservation and Recovery Act Facility Investigation
 CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980
 IM = Interim Measure
 mg/kg = milligrams per kilogram
 CMS = corrective measures study

0 1,500 3,000
 Feet



Figure 3-28A
Comparison of Surface Soil Results to Industrial Media Cleanup Standard
Former ASARCO East Helena Facility
Corrective Measures Study Report
East Helena, Montana

Image Source: Google Earth Imagery



LEGEND

- △ Historical Surface Soil Sample Location
- Supplemental RFI Sampled DU
- Exceeds Criteria
- CMS Parcel Undergoing Corrective Action
- Parcel Sold by Custodial Trust¹
- Undeveloped Land Undergoing Corrective Action²
- Parcel Boundary
- Area of Contamination Boundary
- 100-year Floodplain (approx.)
- City of East Helena Former Landfill
- Prickly Pear Creek
- Prickly Pear Creek Realignment

Notes:

¹ Parcel sold by the Custodial Trust since 2016 for redevelopment; corrective measure set forth in the OU2 ROD based on future determined land use.

² Corrective measure implemented in tandem with 2a.

Red sample location exceeds ecological media cleanup standard for lead of 650 mg/kg.

DU = decision unit

RFI = Resource Conservation and Recovery Act Facility Investigation

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980

IM = Interim Measure

mg/kg = milligrams per kilogram

CMS = corrective measures study

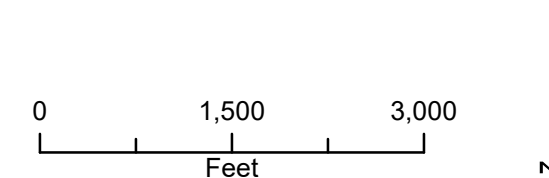
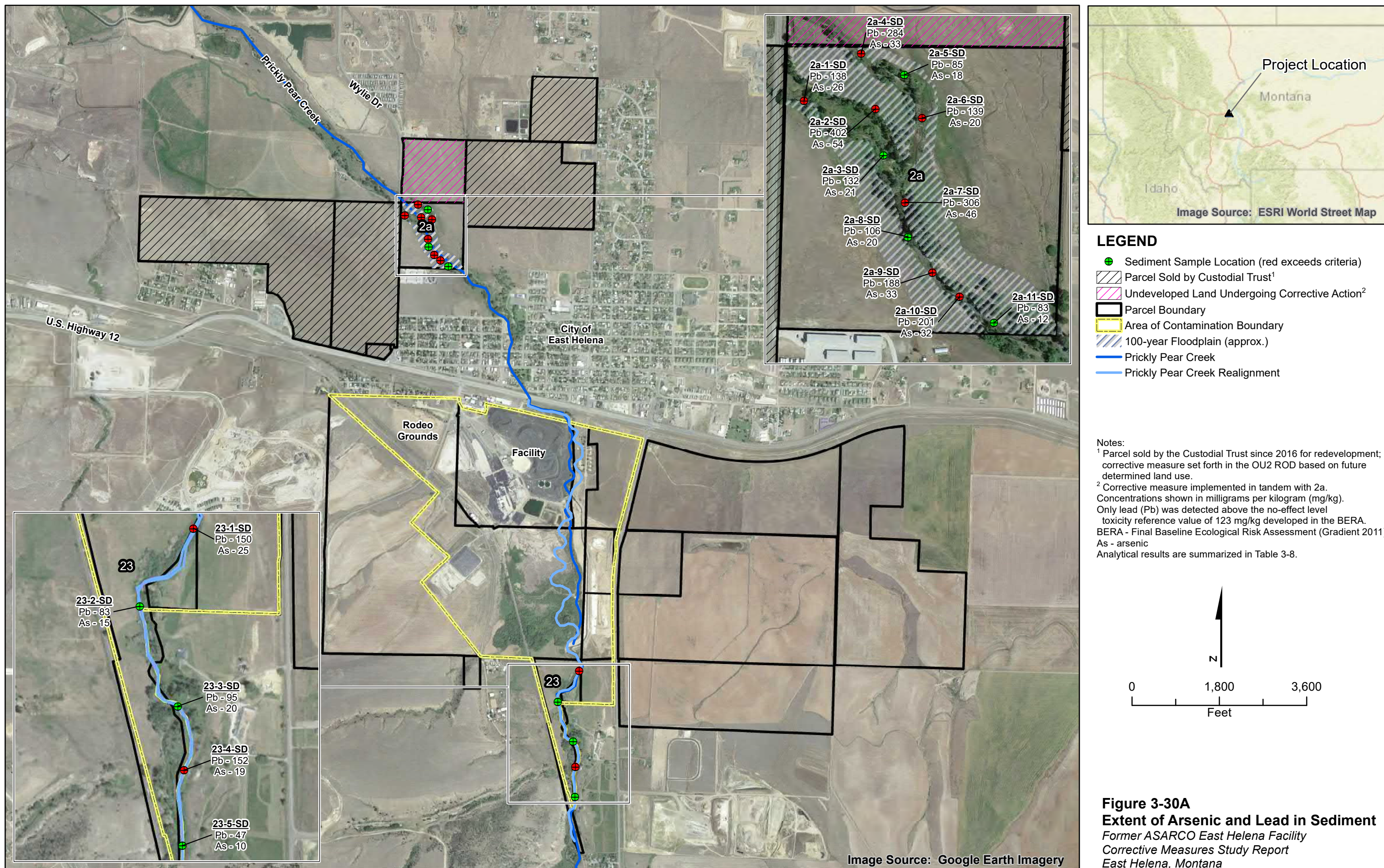


Figure 3-29A
Comparison of Surface Soil Results to
Ecological Media Cleanup Standard
 Former ASARCO East Helena Facility
 Corrective Measures Study Report
 East Helena, Montana

Image Source: Google Earth Imagery



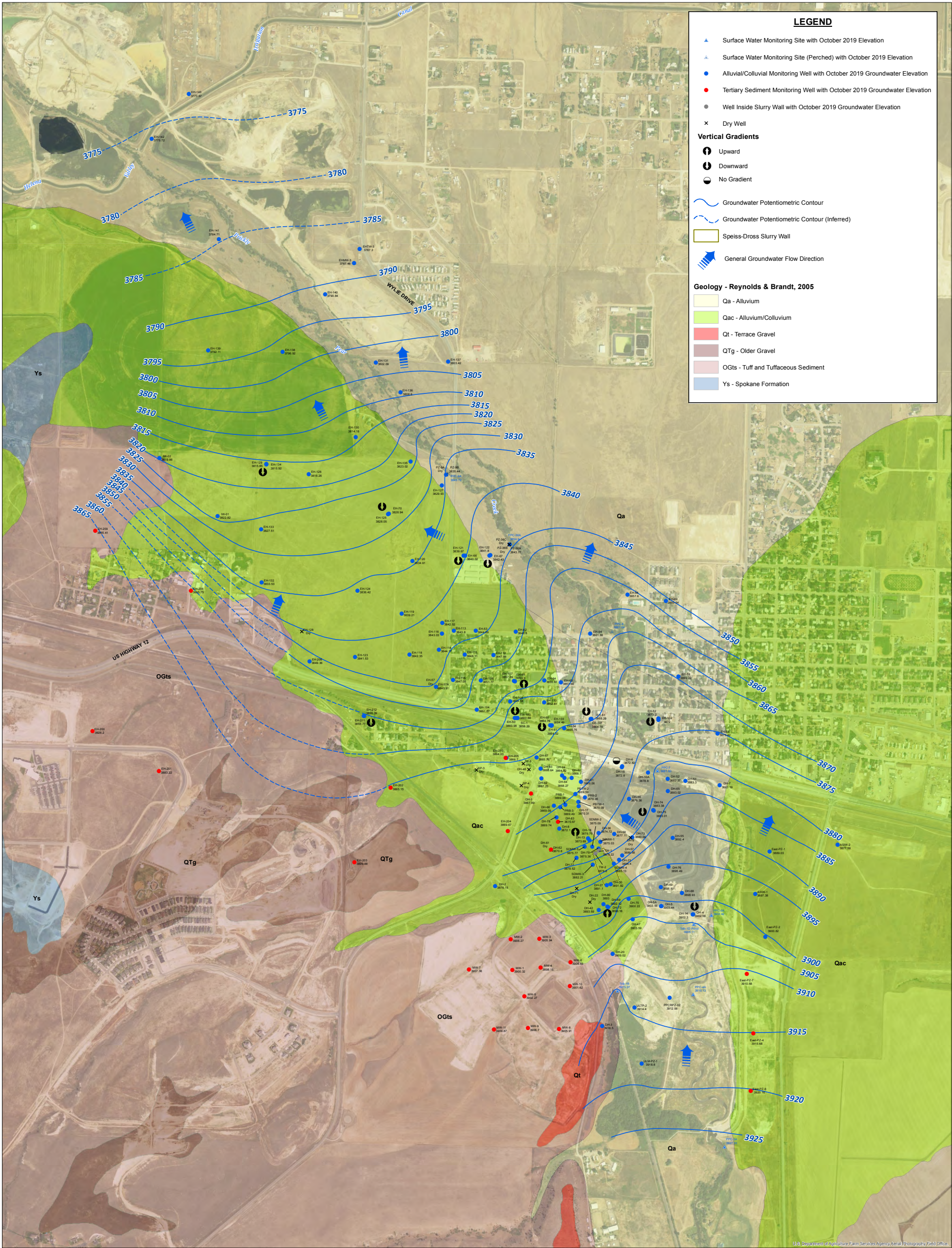
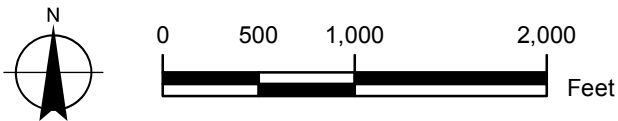
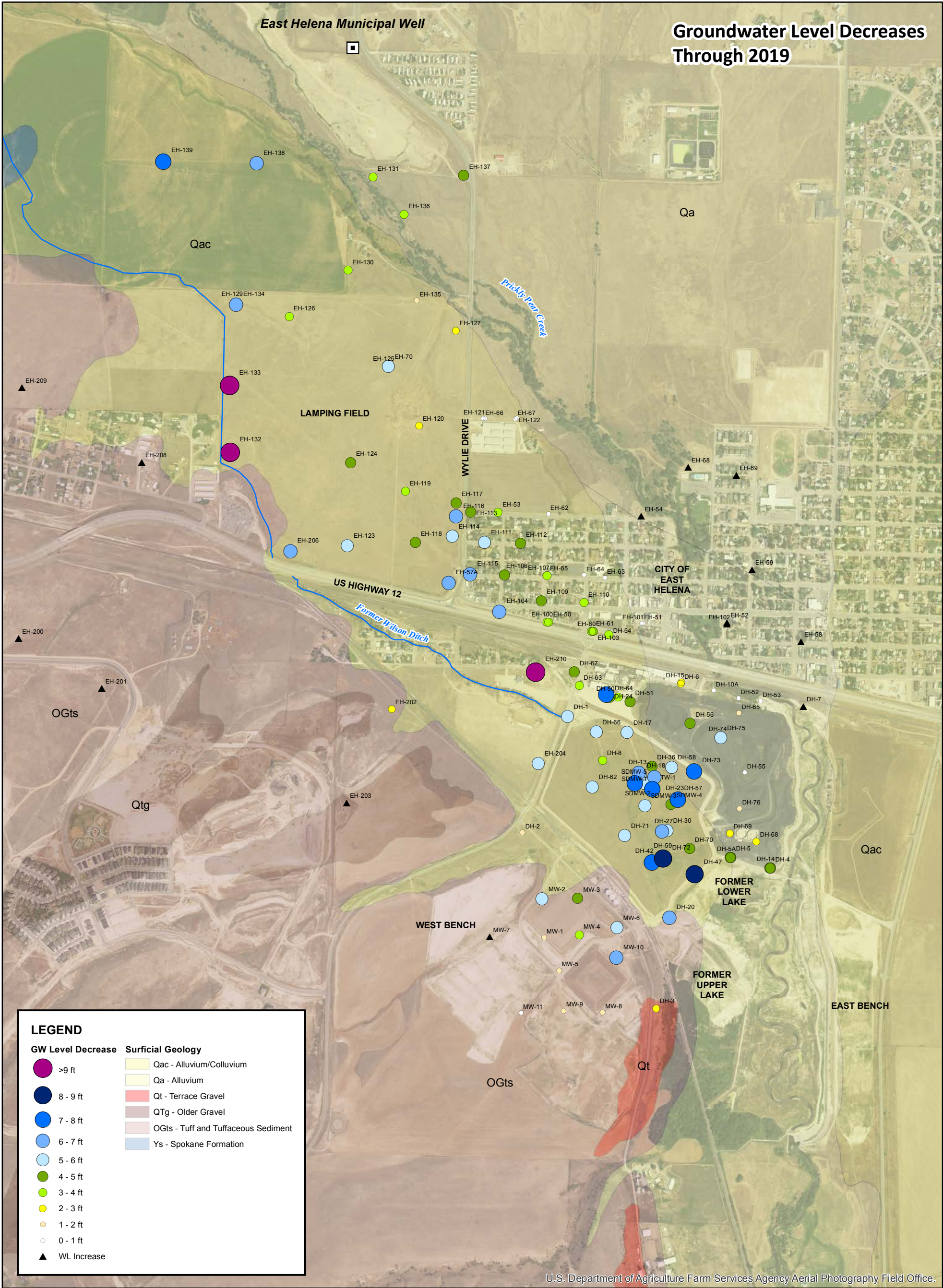


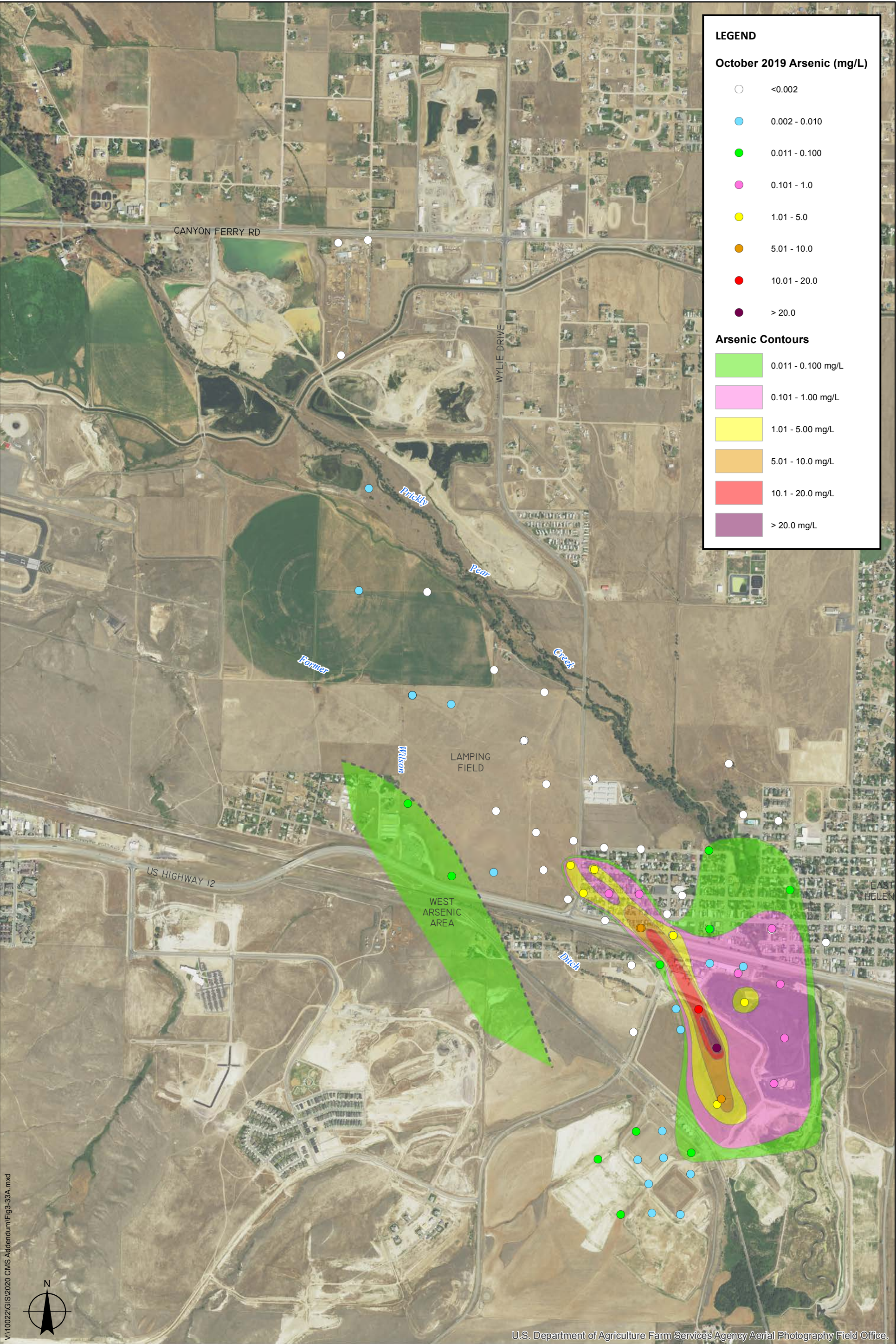
Figure 3-31A
October 2019 Potentiometric Surface Map
Former ASARCO East Helena Facility
Corrective Measures Study Report
East Helena, Montana

V:\10022\GIS\2020 CMS Addendum\Fig3-32A.mxd



NOTE: Groundwater level changes shown were calculated as the difference between 2002 -2010 average elevations (pre-SPHC) and 2019 average elevations.

Figure 3-32A
Relative Changes in Water Levels - 2019
*Former ASARCO East Helena Facility
Corrective Measures Study Report
East Helena, Montana*



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0 0.125 0.25 0.5
Scale in Miles

Hydrometrics, Inc.
Consulting Scientists and Engineers

Notes:
1. mg/L - milligrams per liter
2. West Arsenic Area - Occurs primarily from groundwater interaction with naturally-occurring arsenic-bearing soil and is not facility-related.

Figure 3-33A
October 2019 Dissolved Arsenic
Former ASARCO East Helena Facility
Corrective Measures Study Report
East Helena, Montana

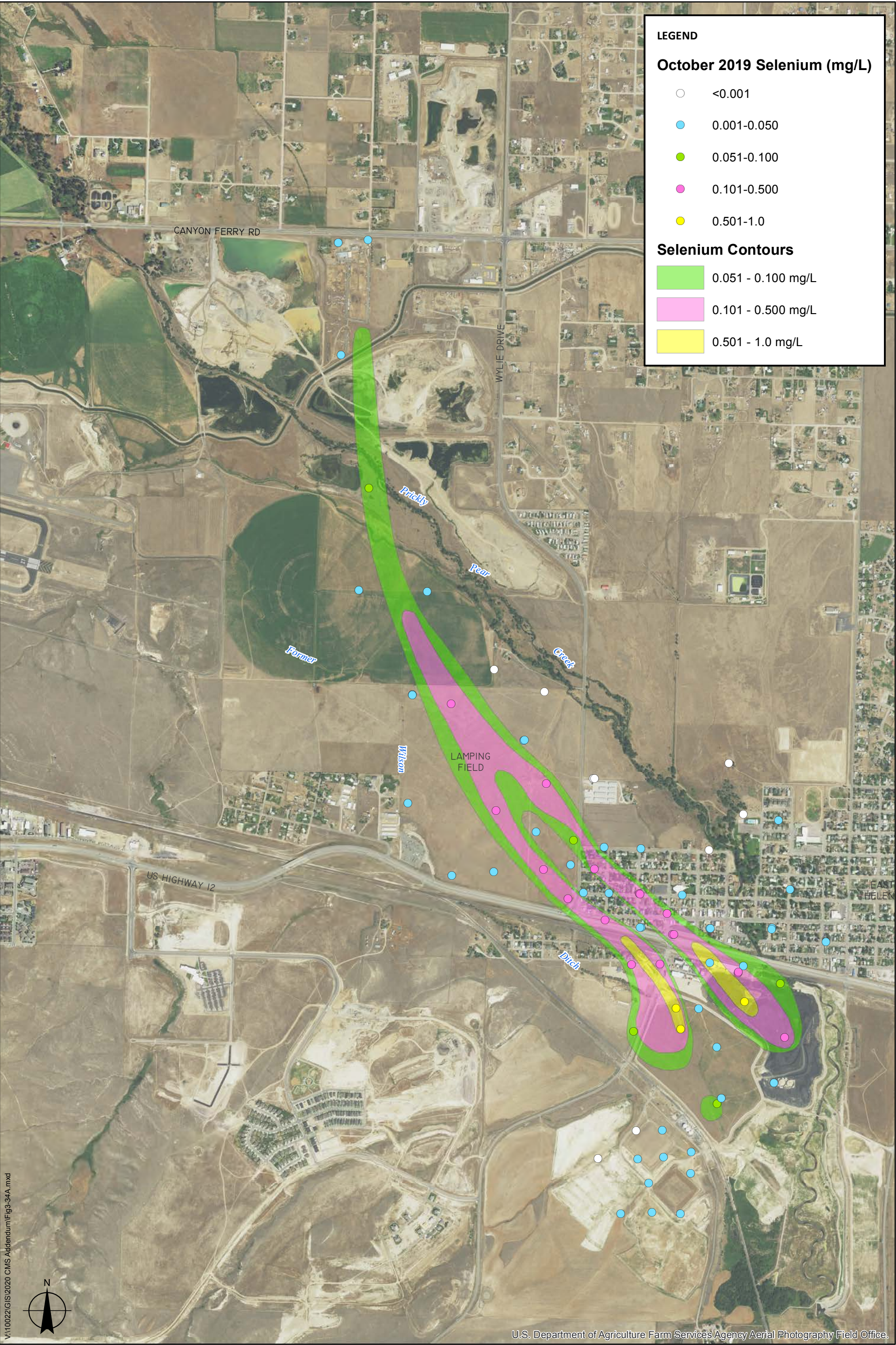
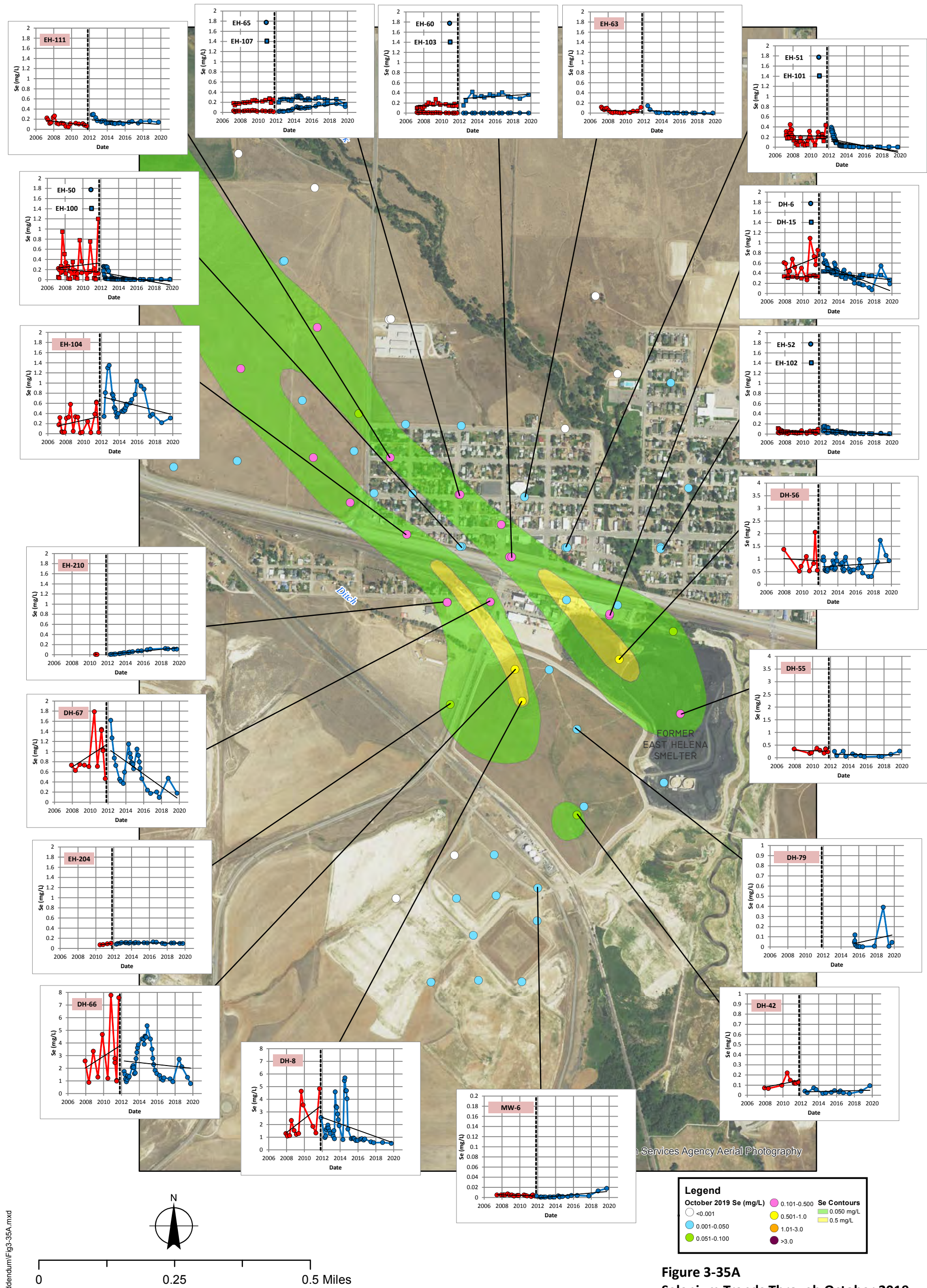


Figure 3-34A
October 2019 Dissolved Selenium
*Former ASARCO East Helena Facility
Corrective Measures Study Report
East Helena, Montana*



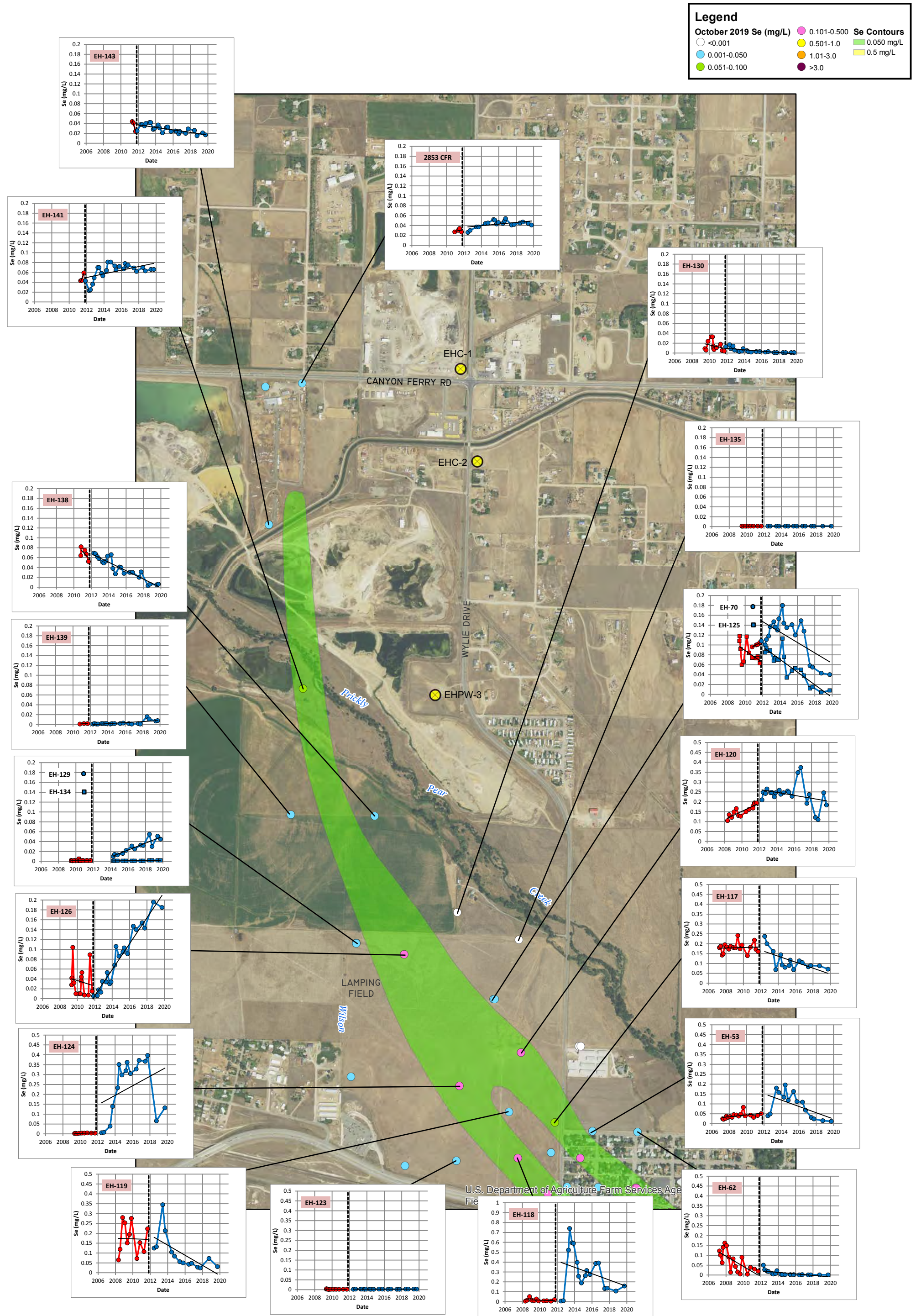
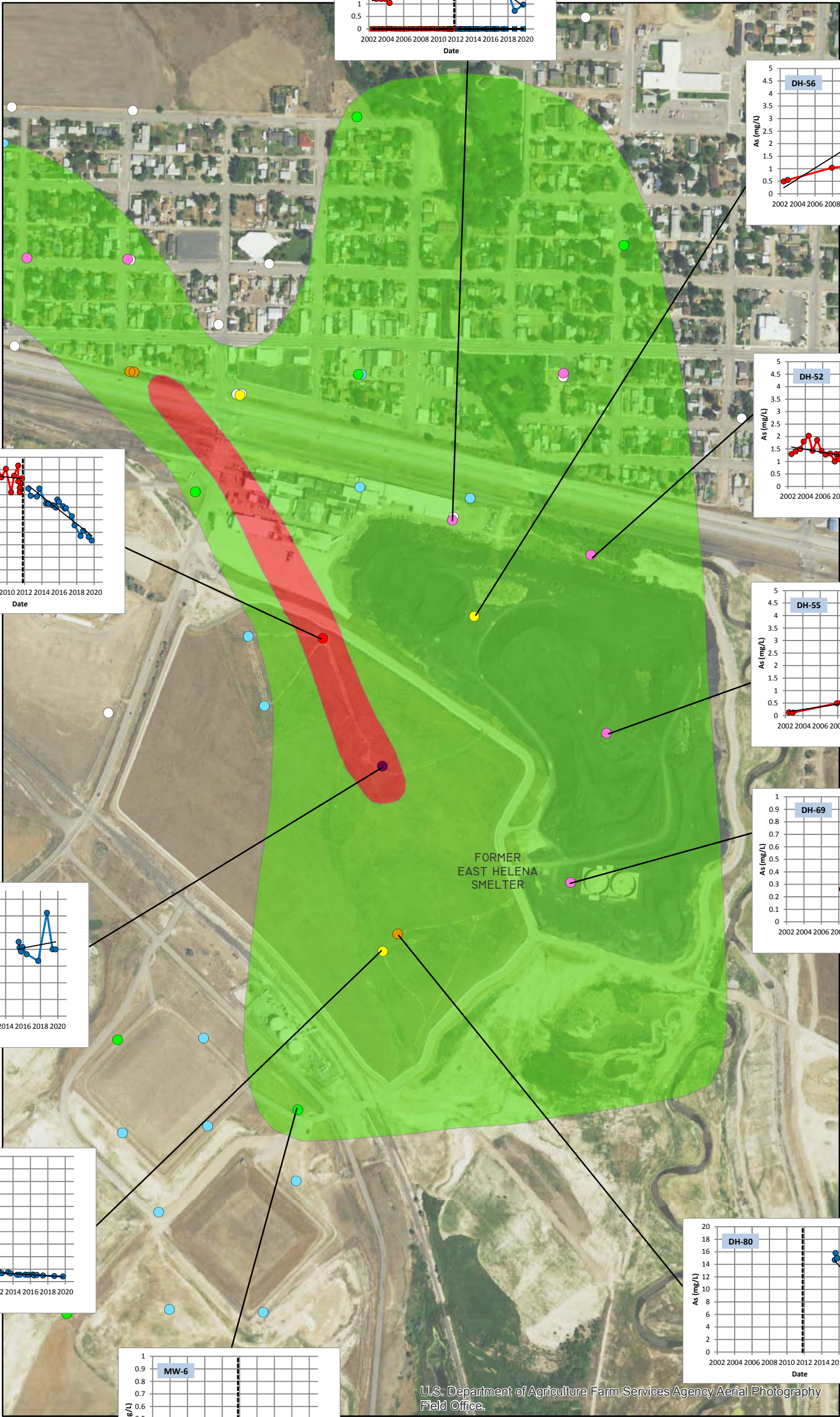
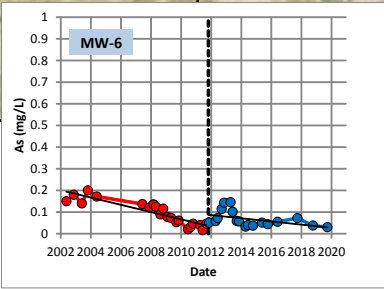
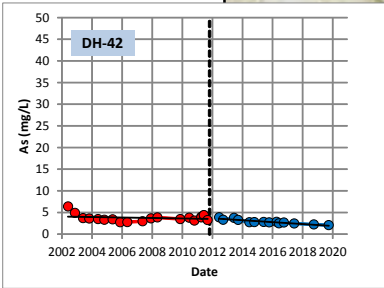
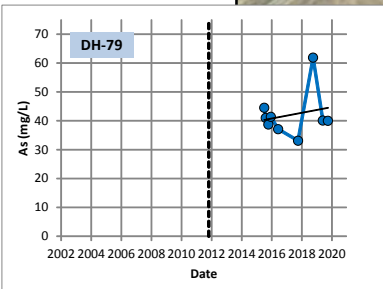
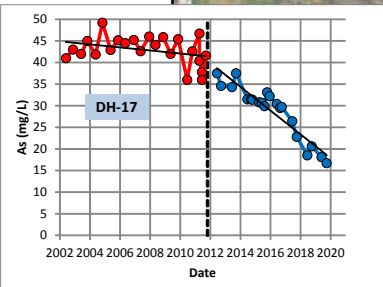
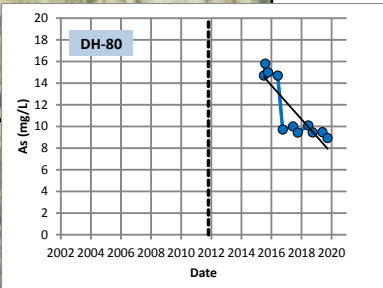
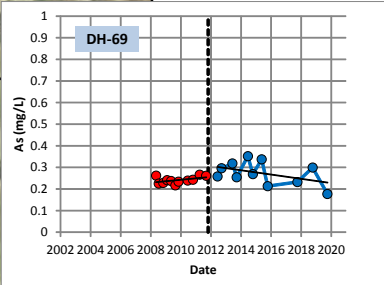
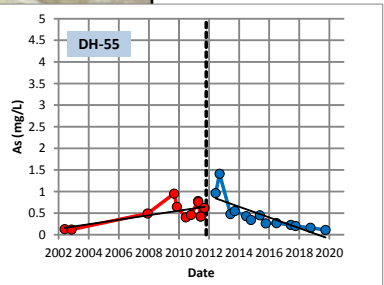
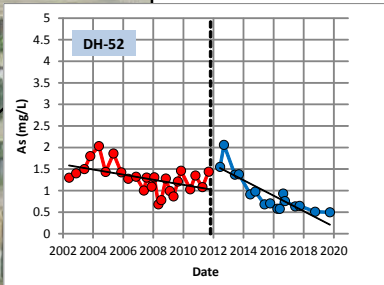
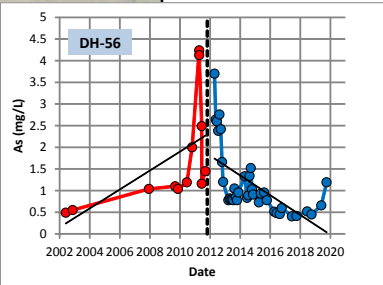
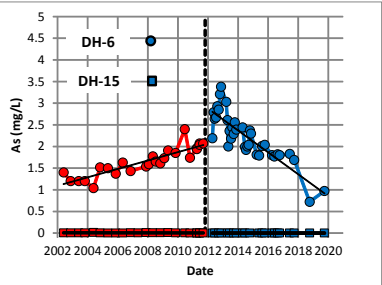
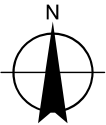


Figure 3-36A
Selenium Trends Through October 2019
Downgradient Area
Former ASARCO East Helena Facility
Corrective Measures Study Report
East Helena, Montana



U.S. Department of Agriculture Farm Services Agency Aerial Photography
Field Office.

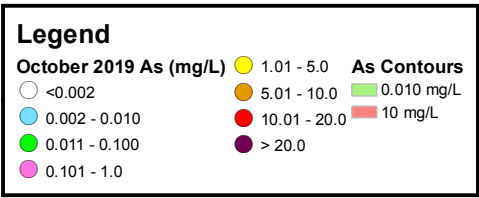
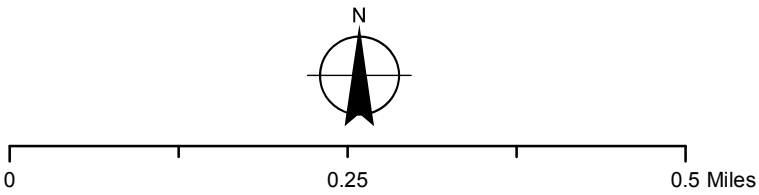
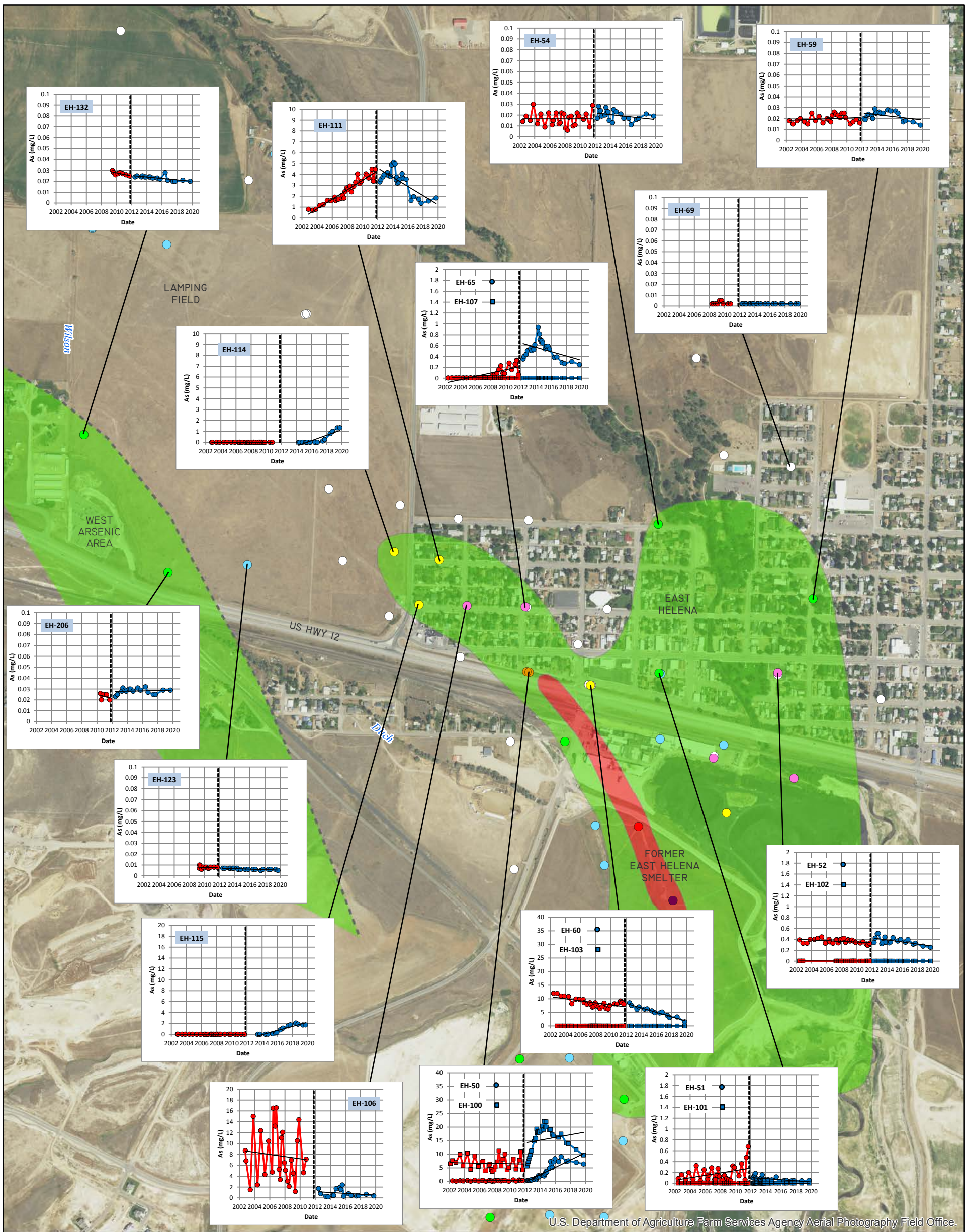


0 250 500 1,000 Feet

Legend

October 2019 As (mg/L)		As Contours	
○ <0.002	● 1.01 - 5.0	■ 0.011 - 0.100 mg/L	■ 10.1 - 20.0 mg/L
● 0.002 - 0.010	● 5.01 - 10.0		
● 0.011 - 0.100	● 10.01 - 20.0		
● 0.101 - 1.0	● > 20.0		

Figure 3-37A
Arsenic Trends Through October 2019
Plant Area Wells
Former ASARCO East Helena Facility
Corrective Measures Study Report
East Helena, Montana



Note: West Arsenic Area - Occurs primarily from groundwater interaction with naturally-occurring arsenic-bearing soil and is not facility-related.

Figure 3-38A
Arsenic Trends Through October 2019
East Helena Area Wells
Former ASARCO East Helena Facility
Corrective Measures Study Report
East Helena, Montana

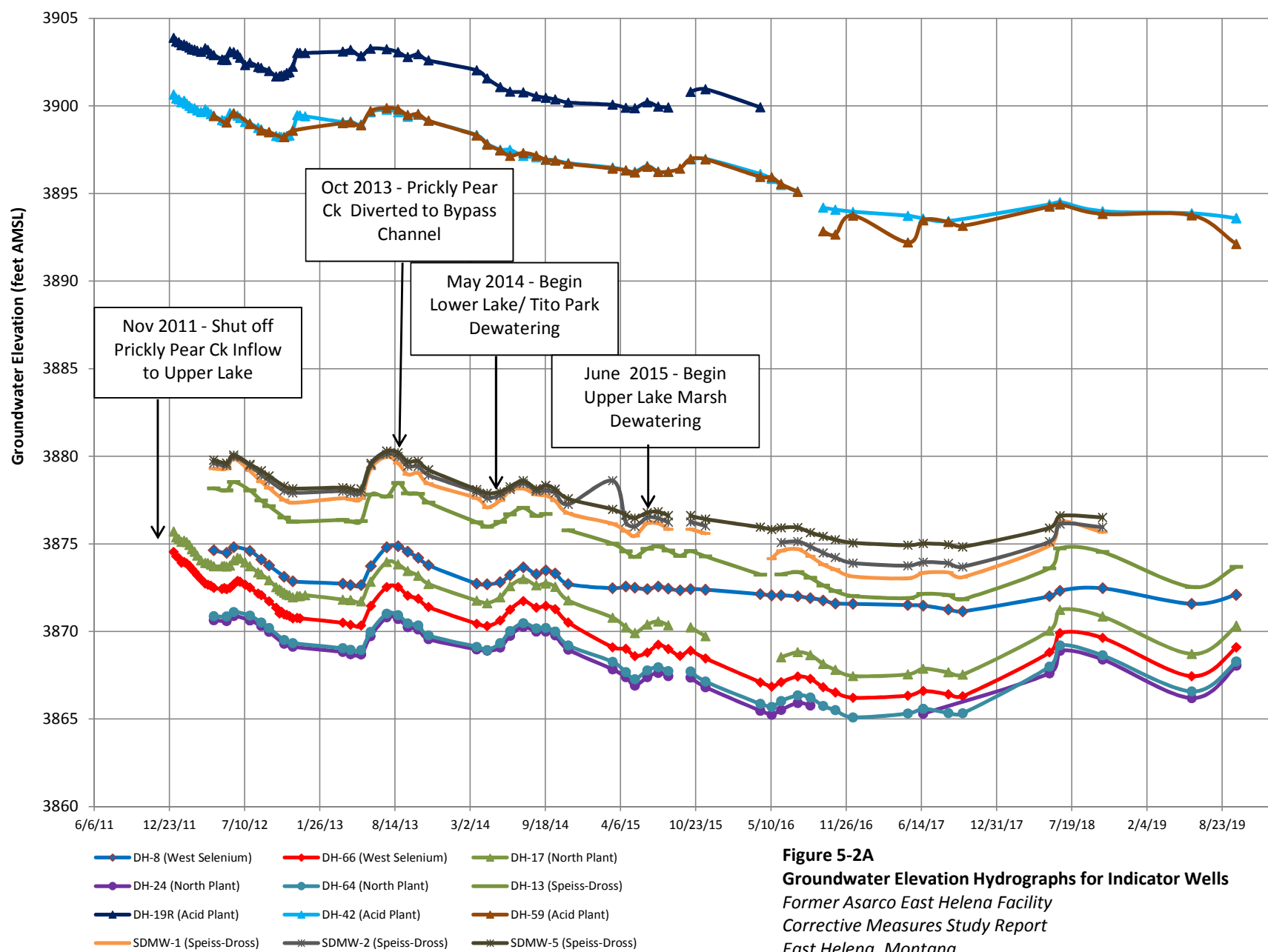


Figure 5-2A
Groundwater Elevation Hydrographs for Indicator Wells
 Former Asarco East Helena Facility
 Corrective Measures Study Report
 East Helena, Montana

ATTACHMENT C

USEPA RESPONSE TO COMMENTS FROM CMS PUBLIC COMMENT PERIOD

Appendix A - EPA Response to Comments

- A. Written comments submitted by Lewis and Clark County Water Quality Protection District
- B. Written comments submitted by Robert Rasmussen
- C. Transcript of Public Comment Period – April 11, 2018 – Responses provided to:
 - 1. Jean Riley
 - 2. Council Member Mike Misowic
 - 3. Jean Riley
 - 4. Jill Cohenour
 - 5. Representative Mary Ann Dunwell
 - 6. Luke Serati
 - 7. John Herrin
 - 8. Luke Serati

EPA RESPONSE TO LEWIS AND CLARK COUNTY WATER QUALITY PROTECTION DISTRICT (WQPD)
COMMENTS ON THE *PUBLIC REVIEW DRAFT FORMER ASARCO EAST HELENA FACILITY CORRECTIVE
MEASURES STUDY REPORT, MARCH 2018*



Lewis and Clark County
Water Quality Protection District

316 North Park, Room 220
Helena, MT 59623
(406) 457-8927 Fax: (406) 447-8398



May 29, 2018

Betsy Burns
USEPA Region 8 Montana Office 10 West
15th Street, Suite 3200
Helena, Montana 59626

Re: Comments on Former ASARCO East Helena Facility Corrective Measure Study Report

Dear Betsy,

The Lewis & Clark Water Quality Protection District (LCWQPD) is pleased that the cleanup actions at the former ASARCO facility in East Helena (site) are nearing completion. The following are comments on the above referenced Corrective Measure Study Report (CMS) represent concerns related to the implemented measures, and the long-term disposition of the site. While LCWQPD is part of Lewis & Clark Public Health, these comments focus on the issues related to surface and ground water in accordance with the mission of the district “to preserve, protect and improve water quality.” The comments are presented with general comments, which reflect larger issues related to the site and CMS approach; and specific comments which address specific sections of the CMS document.

As background to these comments, LCWQPD has been working with the Montana Bureau of Mines and Geology (MBMG) on developing regional datasets characterizing local water resources. From this work, we are addressing the occurrence of background concentrations of arsenic, uranium and fluoride in local groundwater at concentrations exceeding state and federal drinking water standards. Ongoing studies are characterizing the relationship between local geology and groundwater quality from a regional perspective. With the work at the former ASARCO facility providing additional data to characterize local conditions within a regional context, some comments reflect requests to integrate the datasets to address specific concerns for local water users. The most important issue is ensuring the long-term integrity of groundwater resources developed for potable water downgradient from the site, including numerous public water supply (PWS) source wells in the southeast Helena Valley. Long term water level monitoring by LCWQPD has identified areas where groundwater depletion appears present increasing the gradient away from the site. A groundwater potentiometric surface map of the southeast Helena Valley with PWS source well locations, depicted in Figure 1, shows the estimated extent of the cone of depression. The depletion problem shows that there is a strong gradient from Prickly Pear Creek and the site directly towards the PWS sources – suggesting primary recharge to groundwater occurs from the

stream.

General Comments

1. *1.a:* The dataset characterizing the interaction of Prickly Pear Creek with the groundwater system, specifically as the primary recharge source to the southeast Helena Valley groundwater system, does not appear to be identifying the recharge mechanisms. This may reflect the conclusions derived from semi-annual synoptic stream measurements used to assess gaining and losing characteristics of the stream. *1.b:* With the turbulent nature of streamflow, and the variable geometry of streambeds, there is a significant amount of error in these types of measurements without stream gauging. *1.c: **With this memorandum, LCWQPD requests permission to access the stream piezometers to install instrumentation needed to help characterize the connection with the local groundwater system.*** Piezometers were installed to monitor groundwater adjacent to the streams; however, only hand measurements of water levels were collected to compare with stream height measurements. LCWQPD wishes to construct datasets characterizing the relationship between surface and groundwater as depicted in Figure 2, an example of data taken from a memo prepared by LCWQPD dated January 7, 2016 to the East Helena Ground Water Working Group Members on the Downgradient Fate of the Ground Water Plume(s).

EPA Responses – The comment has been divided into three questions.

1.a. The complete dataset supports the CMS Report conclusion that groundwater recharge from the creek strongly influences groundwater flow and plume migration. This point has been stressed in the multiple Public and Groundwater Working Group meeting presentations. The supporting information is provided in the Phase II RFI report as referenced in the CMS Report, the 2015/2016 Water Resources Monitoring Report (distributed to the Groundwater Working Group in 2017), and the various meeting presentations previously distributed to the Groundwater Working Group and available on the METG website.

1.b. It is not clear what exactly the comment is referring to since the conclusion that recharge from the creek influences groundwater flow is based on multiple factors, including stream gaging data showing a decrease in flow in a downstream direction, the steep downward vertical gradients adjacent to the creek, and the obvious groundwater mounding beneath the creek. The accuracy associated with streamflow measurements is well documented and accounted for in using the data. As referenced in the annual Corrective Action Monitoring Program (CAMP) sampling plans, all streamflow measurements collected under the CMS program followed protocol detailed in the USGS Techniques and Methods 3-A8 publication, Discharge Measurements at Gaging Stations (Turnipseed and Sauer, 2010). In accordance with the USGS manual, flow measurements are rated as excellent (+/-2%), good (+/-5%), fair (+/-8%) or poor (>8%) at the time of measurement based on channel, flow, substrate and weather conditions. The USGS manual notes that, as a general rule, most streamflow measurements fall within the +/-5% range. Based on the significant loss in streamflow documented downstream of the former smelter, any error associated with the synoptic streamflow measurements, or stream stage/groundwater level measurements, would not alter the monitoring results or the conclusion that leakage from the creek is a significant source of recharge to groundwater.

1.c. The monthly piezometer readings and corresponding stream stage measurements are believed to accurately document vertical hydraulic gradients and groundwater mounding beneath the creek. However, with the understanding that the primary purpose of the piezometers is to inform the evaluation of corrective measures performance through ongoing groundwater monitoring, LCWQPD is welcome to instrument select piezometers if desired.

2. *2.a.* The groundwater assessment relies upon natural sorption processes of arsenic to iron oxides at the

leading edge of the arsenic plume as the mechanism for controlling the size of the plume. While this is generically a reasonable statement, there is really no full understanding of what actual processes are happening. Understanding the actual processes allow for a determination of the long-term fate and transport of the arsenic that has migrated off-site. Unanswered questions reflect the processes – such as is there a finite capacity for these processes such that in the future, the arsenic plume will start to migrate further downgradient? Will a change in redox conditions onsite over time result in release of the arsenic in the future? 2.b. Invoking natural attenuation as a remedial component is reasonable and consistent with the EPA Handbook of Groundwater Protection and Cleanup Policies for RCRA Corrective Action (2004), cited in the CMS as a guidance document. Chapter 11 is focused on monitored natural attenuation. While these processes are typically applied to organic chemicals, this is still essentially what has been applied to the site, but only at a generic level. Mining sites with arsenic issues provide an excellent example of how science is applied to understand the complex geochemistry associated with the long-term fate and transport of metals and metalloids (e.g. arsenic and selenium).

2.c. For this site, LCWQPD recommends that mineral speciation modeling is completed to identify minerals phases that are anticipated within the system based on the extensive groundwater chemistry dataset that exists for the site. This dataset includes major ions and trace elements, includes redox conditions, and can be used to characterize the geochemical system. The assessment can answer multiple questions, such as: Is arsenic incorporated into the amorphous iron oxide crystalline structure in precipitates or onto existing iron oxide surfaces? Does this reflect a redox boundary between mixing of stream water with ambient groundwater? Do the organics in the system play a part in controlling the chemistry?

2.d. Completion of this type of assessment showing an understanding of the processes would potentially help in remedial design alternatives to manage the plume. This type of work was done with the EPA assessment of the slurry wall containment system, but seems to have been overlooked with respect to understanding the plume(s) and fate and transport properties for contaminants migrating offsite. Again, the concern is the long-term disposition of the site- derived contaminants, and the needed assurance that natural changes in site geochemistry as a result of the excavation and capping interim measure may eventually change the chemistry such that the arsenic held in the soil profile may be released back into the groundwater system. A good example of how changes in local geochemistry result in arsenic contamination occurs across much of Bangladesh – with abundant research on this by both academia and the World Health Organization.

[EPA Responses](#) – The comment has been divided into 4 sections.

2.a. The processes controlling the behavior of the East Helena groundwater arsenic plume (and, more recently, the selenium plume) both on-site and off-site, including interactions with solid phases in aquifer materials and the redox state of the groundwater system, have been the focus of numerous investigations at the Facility, from the earliest RI/FS work, through the Phase I and II RFIs, and the 2014 and 2015 Source Area Investigations conducted to support the CMS. A wide range of testing has been conducted on soil samples collected from borings in the saturated and unsaturated zones, including measurement of total concentrations, leach tests with various solutions (SPLP-type, saturated paste, upgradient groundwater), sequential batch leach tests, batch adsorption tests, sequential extraction tests, and mineralogical analysis of selected samples at Montana Tech. The redox status of groundwater has been characterized through arsenic and selenium speciation analysis of groundwater samples, as well as measurement of dissolved oxygen and oxidation-reduction potential (ORP), observations of the presence of organics in certain areas of the plume, and correlations between redox indicators and contaminant mobility. As referenced in the CMS report, the results of this testing are presented and summarized in multiple reports, including the Phase I and Phase II RFI reports, and the 2014 and 2015 Source Area Investigation Reports. One of the primary considerations throughout the RFI and CMS process regarding

groundwater remedy evaluations has been the contrasting geochemical behavior of arsenic and selenium (i.e., increased arsenic mobility under reducing conditions and increased selenium mobility under oxidizing conditions), and the potential impacts of this behavior on the feasibility of different remedial approaches.

The results of the investigations described above, as presented in the referenced documents, have yielded a good understanding of geochemical controls on arsenic and selenium plume behavior in the East Helena groundwater system. For example, arsenic speciation results show aqueous phase reduced arsenic (As(III)) in source areas, transitioning to As(V) prior to attenuation from the aqueous to the solid phase. Sequential extraction results have consistently shown that arsenic retained in aquifer material is distributed across a wide variety of solid phases by a variety of binding mechanisms, from more available (water soluble or ion exchangeable) to less available (incorporated in iron/manganese oxides or present in refractory phases), with the percentage of arsenic present in different phases varying by location. Mineralogical examination of saturated soil in the primary arsenic source area showed iron oxide phases present with associated arsenic up to 2% (20,000 ppm). Leach tests of arsenic-bearing saturated materials with different solutions have shown that saturated soils in source areas are capable of generating leachate concentrations similar to those observed in groundwater, although mass leaching rates (percent of arsenic leached from the solid phase) are typically low. Finally, adsorption tests on saturated soils within the arsenic plume downgradient of the former smelter indicate that these soils retain additional capacity for arsenic adsorption, although this capacity is diminished compared with adsorption test results at the arsenic plume front. Overall, groundwater geochemistry data, along with the leaching and adsorption test data from aquifer materials collected to date at the East Helena Facility have provided a significant basis for evaluating the processes controlling fate and transport at this geochemically complex site and for selecting appropriate corrective measures.

The finite capacity of off-site soils to retain arsenic, and the potential for arsenic (and selenium) remobilization from soils under changing future redox conditions have been explicitly addressed as part of CMS remedy evaluations; these factors are a relevant concern at any site where contaminants remain in situ. The selected remedies for groundwater at the site are intended to (1) reduce contaminant loads entering groundwater and leaving the site through a combination of source removal, capping, and desaturation of contaminated soils through lowering of the water table; (2) eliminate pathways to receptors, and (3) provide for institutional controls and long-term monitoring. While the selected remedies are not expected to result in future remobilization of arsenic, the remedy performance evaluation monitoring program will include monitoring to verify this.

2.b. It should be noted that natural attenuation is not one of the selected remedies for the East Helena Facility. As described in the CMS, the proposed final corrective measures include (1) existing Interim Measures (ET Cover, South Plant Hydraulic Control, Speiss-Dross Slurry Wall, Source Removals and CAMUs), (2) slag pile cover, and (3) institutional controls. Long-term monitoring will be conducted to evaluate the performance of the final corrective measures in terms of decreasing contaminant concentrations in groundwater.

Given the extensive work completed at the Facility to assess the aqueous and solid phase geochemistry of the groundwater system and the effects on arsenic and selenium transport and mobility, as described above, characterizing this work as “at a generic level” does not seem correct. On the contrary, the majority of the investigations described in the CMS supporting documents included site-specific observations and empirical testing, supported as necessary by modeling efforts (e.g., remedy evaluations involving groundwater flow and fate and transport modeling).

2.c. The geochemical system has been well-characterized through the groundwater monitoring and other investigations conducted to date, and it is unclear how a modeling effort to ascertain anticipated mineral phases would add significantly to addressing the questions posed in the comment. As far as elucidating

adsorbed arsenic vs. arsenic incorporated into iron oxide precipitates, the key questions of the attenuation capacity of off-site soils and the remobilization potential of attenuated arsenic has been investigated through empirical adsorption, leaching, and sequential extraction testing, as well as mineralogical analyses. Site-specific adsorption coefficients were also incorporated into the groundwater modeling conducted as part of remedy evaluations. Groundwater monitoring has shown that elevated arsenic concentrations in groundwater are directly correlated with reducing conditions typified by low dissolved oxygen concentrations, and that as downgradient groundwater becomes more oxic through mixing with Prickly Pear Creek water (from the east) and/or tertiary groundwater (from the west), arsenic concentrations decrease. The influence of organic aquifer contamination in the central plant site on the redox status of groundwater, and hence on the speciation and mobility of both arsenic and selenium is well-established, with reducing conditions corresponding with increased arsenic concentrations and mobility and decreased selenium concentrations and mobility, and vice versa for oxidizing conditions.

2.d. Remedial alternatives considered in the CMS were evaluated based on a conceptual site model that includes an understanding of site-specific contaminant geochemistry obtained from numerous historical investigations as described above. The potential response of the groundwater arsenic and selenium plumes to various remedial scenarios was evaluated (in part) using predictive groundwater modeling, which utilized the results of site-specific geochemical testing. It is assumed that the comment intends to reference the EPA permeable reactive barrier (PRB) work rather than the slurry wall. The PRB demonstration project was a research effort intended to test the applicability of the technology at the East Helena site, which included detailed sampling and evaluations including some geochemical modeling and an extensive set of advanced spectroscopic techniques for mineral identification.

The proposed remedies for the East Helena Facility presented in the CMS are based on reducing contaminant loading and concentrations through source removal and isolation, along with institutional controls to prevent exposure to groundwater contaminants. The long-term monitoring component of the remedy will address both the effectiveness of the proposed remedies and potential need for additional remedies in the future, along with monitoring the “long-term disposition” of site-related contaminants (i.e., potential remobilization) as the groundwater system moves toward a post-remediation geochemical and hydrologic steady-state.

3. With respect to understanding the relationship between Prickly Pear Creek and recharge to the local aquifer downgradient from the facility, 3.a: the groundwater flow model does not appear to be constructed in a way that can model the conditions related to aquifer depletion in the Southeast Helena valley. After reviewing the model and how it was constructed, there are some components that do not seem consistent with observed field conditions in the area.

- The hydraulic conductivities assigned to the different units in the model are not consistent with the results reported in previous project reports. Specifically, tables of aquifer tests results (e.g. Appendix A from Oct 2012 Groundwater Modeling Memo) indicate determined hydraulic conductivities reports values generally up to 200 ft/day, with some values higher. The aquifer tests determine the transmissivity for the well; however, these wells are all partially penetrating wells in the aquifer, and the hydraulic conductivities are determined by dividing the determined transmissivity by the aquifer thickness. The reported values reflect generally the screened interval in the well, or in some cases the thickness of the sand pack around the screen, which do not account for aquifer flow from above and below the screened intervals. As a result, these tests, especially when wells are only partially penetrating, results in hydraulic conductivity estimates that are biased high above actual values. 3.b: Figure 4.32 of the groundwater modeling memo in CMS Appendix A by Newfields shows values exceeding 1000 ft/day from some areas. There does not appear to be data supporting permeability values this high for the local geologic conditions.

- 3.c: An effective porosity figure of the model domain, included in previous groundwater modeling memos, was not included with the CMS document. The lack of this information makes reviewing the representativeness of the model to local conditions difficult, especially when compared to the permeability issues discussed above.
- 3.d: The interpretation of the paleo channel downgradient from the site reflects the interpretation of incision into the bentonitic clay unit (Figure 2.5, “Weathered Tuffaceous Sediment Surface,” CMS Appendix A by Newfields). While there may be some type of paleochannel directing groundwater flow, the arsenic and selenium plumes are not consistent with the location of this defined paleochannel. Further, since there is a dramatic change in the lithology of the bentonite clay unit in this area, the disposition of a specific, coarse grained channel would likely change at this location as well.

3.e: Based on this information, the model is not considered representative of the actual hydrogeologic conditions related to the downgradient migration of the plume off-site from the facility. In addition, while part of the model domain, the model is not constructed in such a manner that will allow an assessment of the risk to downgradient water users in the southeast part of the Helena Valley, directly downgradient from the site. ***LCWQPD requests a copy of the groundwater model files so that we can evaluate, in detail, the potential use of the model to characterize regional conditions.***

EPA Responses – The comment has been divided into five sections.

3.a. The model construction would in no way preclude simulation of the reported groundwater depletion area, if desired. However, as noted in Appendix A of the CMS report and in other modeling documents referenced in the report, calibration of water levels to individual transient pumping conditions a mile or more east of the former smelter was not an objective of the groundwater model. As shown in Figures 4-8, 4-9 and 4-10 of the CMS Report Appendix A, there are no groundwater level calibration targets within the area in question. Secondly, the area of reported aquifer depletion is apparently not affecting groundwater conditions in the project area since the depletion area is located to the east and groundwater flow and the Facility plumes have shown a significant shift to the west since 2012. Therefore, the presence of the reported groundwater depletion zone does not appear to have any detrimental effects on the completed model calibration or predictive simulations.

3.b. One purpose of groundwater modeling is to estimate aquifer parameters and conditions in areas of limited data based on calibration to known conditions. The higher hydraulic conductivity zone is included in the model based on calibration to the three-dimensional selenium plume geometry, vertical hydraulic gradients in the area, and an area of very high well yields and coarse gravel/cobbles noted in deeper wells such as EH-144d. Based on numerous model runs and sensitivity analyses, this scenario best simulates observed groundwater flow and contaminant transport patterns, and as such provides the best means for simulating future plume migration trends.

3.c. The simulated effective porosity is included in Figure 5.15 of Appendix A to the CMS Report.

3.d. Comment noted. The important point is that the simulated plume coincides closely with the location of the monitoring delineated plume.

3.e. The project technical team disagrees with the reviewer’s conclusion. Based on the detailed evaluations and analyses, the groundwater flow model meets its stated objectives and represents a valuable tool for assessing future groundwater quality trends and, in conjunction with the controlled groundwater area and completed interim measures, is an important tool in evaluating and assessing risk to downgradient water users within the project area.

As with all numerical and conceptual hydrologic models, models should be updated as new information becomes available and the need arises. Currently, the depressed groundwater levels do not appear to have any detrimental effect on groundwater flow and plume migration from the former smelter since current trends show a westward shift in flow away from the depletion area.

The model was not constructed to characterize regional conditions, but to evaluate the effectiveness of the proposed and implemented interim measures. Therefore, the project team does not agree that the groundwater model files would be an appropriate tool to characterize regional conditions and the model files will not be provided.

4. While not addressed in the CMS, the impact of removal of recharge to an irrigation canal from smelter dam to the northeast, in to the southeast part of the Helena Valley, east of east Helena, has not been evaluated. This issue was discussed in the recent public meeting for the CMS. A question that could be addressed by a proper model would be the impact of losing recharge to the groundwater system from the irrigation canal, and determining how this may relate to the aquifer depletion observed in the area (see Figure 1).

EPA Response – A review of the use of the Eastgate ditch indicated that the last time water flowed in the ditch was for a brief period in 1999. Accordingly, the ditch is not a significant source of recharge in the southeast part of the Helena Valley.

5. While not part of the determined contaminants of concern for the former Asarco site, uranium in groundwater represents a concern and has been detected in ground water at concentrations exceeding the drinking water standard in wells installed into Tertiary strata in the area (Figure 3). The USGS released a regional study of uranium and radionuclides in ground water near and proximal to the Boulder Batholith located south and southwest of the East Helena site, noting the occurrence of uranium in local ground waters (Caldwell, Nimick and DeVaney, 2014). With respect to the former Asarco site, uranium has been identified as present in the lower part of Tertiary beds in the region, from a USGS study identifying areas for potential mining of uranium (Becraft, 1958). The study is important since the East Helena site is located on the Tertiary unit as bedrock, and site studies indicate one or more organic rich lenses in the system which are related to elevated levels in groundwater. ***Due to the potential health concerns from public exposure, LCWQPD requests permission to obtain split samples from project groundwater sampling locations for analysis for uranium, to characterize the risk to groundwater users in the area.*** In addition to monitoring wells, this applies to residential wells in the Seaver Park area and area downgradient from the Controlled Ground Water Area. If sampling is not planned, LCWQPD can also work with Energy Laboratories to get estimated values for uranium concentrations from the electronic data maintained from previous sample analyses.

EPA Response – Uranium and radionuclides are not contaminants of concern for the former smelter site, and the groundwater monitoring program was not developed to address naturally occurring contaminants. EPA supports the work that the LCWQPD is doing with residential well owners to delineate areas of potential health concerns from naturally occurring uranium and radionuclides. To avoid any perceived contribution from the site, EPA will not allow for split samples from the existing groundwater monitoring network. Additionally, there are no plans to conduct groundwater sampling in any residential wells in Seaver Park or north of the Controlled Groundwater Area.

References:

- Becraft, G.E., 1958. Uranium in Carbonaceous Rocks in the Townsend and Helena Valleys, Montana. US Geological Survey Bulletin 1046-G.
- Caldwell, R.R., Nimick, D.A., and R.M. DeVaney, 2014. Occurrence and Hydrogeochemistry of Radiochemical Constituents in Groundwater of Jefferson County and Surrounding Areas, Southwestern Montana, 2007 through 2010. USGS Scientific Investigations Report 2013-5245.
- Thamke, J.N. and M.W. Reynolds, 2000. Hydrology of Helena Area Bedrock, West-Central Montana. USGS Water Resources Investigations Report 00-4212,

Specific Comments

p. 3-21, Section 3.3.6. This section utilizes results of the 2016 Corrective Action Monitoring Program, but does not provide a reference where any of the data results may be reviewed, nor does the CMS include any of the data results.

EPA Response – EPA agrees with this comment. The 2016 CAMP report has been added to the METG website and can be accessed at <https://www.mtenvironmentaltrust.org/east-helena/documents/>.

p. 3-28, Section 3.4.4. The characterization of Prickly Pear Creek not interacting with groundwater near the site is inconsistent with the groundwater surface map in Figure 3-31, which shows contours downgradient and parallel to the stream along Highway 12. It is unknown, based on information provided, whether the stream is linked to groundwater here, or perched above groundwater as occurs downgradient. If it is connected to groundwater, the stream may provide recharge to groundwater as a “flow-through” system, where groundwater recharges the stream in the upgradient streambank while at the same time losing water to groundwater into the downgradient bank. Again, this issue is important to determine where recharge occurs to the groundwater system in the southeast part of the Helena Valley.

EPA Response - EPA agrees with this comment. The text will be revised to say that streamflow rates remain relatively constant along the eastern margin of the facility, with flows decreasing due to leakage to groundwater north of the slag pile and upstream of Highway 12.

Figure 3-24, Conceptual Model of Post-Operational Smelter, and Figure 3-32, Conceptual Model of Operation Smelter. The conceptual site model figures showing groundwater recharge from the lake indicate recharge from the base of Upper Lake to the system. Recharge and discharge from open lakes generally occur laterally along the shoreline(s), since the water table surface under a lake connected to groundwater is essentially the lake, and flow is only driven with a difference in heads, or gradient. For Upper Lake, the water table should mound up to the lake surface with flow laterally to the north from this position. These models also show Lower Lake as perched above the water table, which does not seem likely given the shallow groundwater in the area.

EPA Response - Figures 3-24 and 3-26 (the reference to Figure 3-32 in the comment is incorrect) are illustrations that are intended to be generalized depictions of site conditions representing post-operating and during operations conditions relative to migration of contaminants of concern. They are simplified to illustrate general conditions and do not take the place of detailed analyses presented in report attachments and reference documents. These figures will be updated for Upper Lake and Lower Lake to show similar connection of a saturated zone to the groundwater table and associated flow arrow as shown for Upper Lake.

Figure 3-25, Conceptual Model of Current Conditions. The conceptual model appears to show that

Prickly Pear Creek is perched above the water table upgradient from the site. This seems inconsistent with the goal of lowering the creek to lower the water table elevation from that area. Additionally, it would be useful to include the general range of pre and post SPHC water levels since there can be significant fluctuations and it's unclear what an "approximate" water level means. The magnitude of the lowering of the water table downgradient from the site is not consistent with the data depicted in Figure 3-32, Relative Changes in Water Levels.

EPA Response - Figures 3-25 is an illustration that is intended to be a generalized depiction of current (during IM implementation) site conditions relative to migration of contaminants of concern. It is simplified to illustrate general conditions and is not intended to take the place of detailed analyses presented in report attachments and reference documents. Pre- and post-SPHC levels are currently shown on the figure as the commenter suggests, and these levels will be updated to more accurately depict these groundwater levels relative to the creek and elsewhere. The commenter is referred to the 2015/2016 Water Resources Monitoring Report-East Helena Facility, and the groundwater level data packets previously distributed to the East Helena Groundwater Working Group for more details on pre- and post-SPHC groundwater level fluctuations.

Closing

Thank you for the opportunity to comment on the CMS and the work completed at the former Asarco smelter site in East Helena. I also look forward to hearing from you with responses to requests included within these comments. Regarding the requests please contact me if you would like to discuss any of the issues, or set up a meeting with the benefactors to discuss them.

Sincerely,

James Swierc, PG LCWQPD
Hydrogeologist

Burns, Betsy

From: Robert Rasmussen <robertrasmussen@yahoo.com>
Sent: Wednesday, April 11, 2018 2:52 PM
To: Burns, Betsy
Subject: East Helena CMS

I have skimmed the CMS for East Helena site and reviewed the video on the reroute of Prickly Pear Creek. Although the charge and emphasis is on groundwater contamination and remediation, I saw no mention of the Prickly Pear Creek Greenway study commissioned by PPLT (and funded by NRDP), which involves the METG property. I would think that the trail should be addressed, but I may have missed the reference in my brief review. I think that Mary Hollow has discussed the issue with you and I believe that Andrea Silverman has been the point person at PPLT. I will not get out to East Helena this evening.

Thanks,

Robert Rasmussen

[EPA Response to Robert Rasmussen](#) - EPA appreciates your comments and support of the Prickly Pear Creek Greenway project. On November 4, 2019, Governor Steve Bullock approved the East Helena ASARCO Smelter Final Restoration Plan and Environmental Assessment Checklist. The plan funds \$3,200,000 for the Greenway Trail system along the restored Prickly Pear Creek. The Greenway Trail system will serve to protect the South Plant Hydraulic Control remedy in perpetuity.

PUBLIC MEETING ON
THE DRAFT CORRECTIVE MEASURES STUDY REPORT
FOR THE EAST HELENA SMELTER SITE

TRANSCRIPT OF PUBLIC COMMENT PERIOD OF THE MEETING

offices of the Montana Environmental Trust Group
325 Manlove Avenue
East Helena, Montana

April 11, 2018
6:30 p.m. - 8:48 p.m.

REPORTED BY:

CHERYL ROMSA
CHERYL ROMSA COURT REPORTING
ONE NORTH LAST CHANCE GULCH, SUITE 1
P. O. BOX 1278
HELENA, MONTANA 59624
(406) 449-6380

I N D E X

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7. John Herrin.....	7
8. Luke Serati.....	8

1 WHEREUPON, the following proceedings were had:

2
3 (The meeting was opened by Betsy Burns. Presentations
4 were given by Bob Anderson, Mark Rhodes, Joel Gerhart, and
5 Lauri Gorton, followed by a question-and-answer session.)
6

7 MS. BURNS: This is the moment that you've all
8 been waiting for. This is an opportunity to provide
9 formal public comment. We have a court reporter here
10 tonight. Cheryl will take your comments. If you do have
11 comments that you'd like to present, I'd like you to just
12 state your name clearly and then provide the comment. We
13 won't be providing responses tonight. We will provide a
14 formal comment response in the Statement of Basis when EPA
15 approves the final remedy that was proposed in the
16 Corrective Measures Study.

17 You also have the opportunity to write -- send me a
18 either a letter in the mail or send me an e-mail if you
19 have formal comments that you would like to have a
20 response provided in the Statement of Basis, and we'll be
21 happy to incorporate it in there.

22 So anyone want to do a formal?

23 MS. RILEY: I'll do that formal comment. My name
24 is Jean Riley. I'm the president of the Water & Sewer
25 Association for the Eastgate Water & Sewer Association.

1 And my question, again, I'm going to state. I realize
2 that the ASARCO cleanup has contaminated soils. There's
3 contaminated soils that right now are not revegetated, are
4 not capped, and do not have stormwater controls. I feel
5 that that needs to be addressed and needs to be addressed
6 quickly. That contaminated soil did go into the
7 subdivisions.

8 My question is, is the ASARCO or EPA willing to test
9 the soils that went through the subdivisions and whether
10 they're now deposited in my -- in our irrigation field for
11 where we do our deposits of our effluent from our
12 treatment plants?

13 MS. BURNS: Thanks, Jean.

14 Anyone else willing to provide or interested in giving
15 an oral public comment tonight?

16 Yes.

17 COUNCIL MEMBER MISOWIC: Mike Misowic. I'm on
18 the City Council for the City of East Helena, a resident
19 of East Helena.

20 Please, don't forget the citizens of East Helena
21 through all of this. We are the ones that have taken the
22 hardest hit with the loss of the smelter. We have to take
23 care of our infrastructure, and we need the help of the
24 Trust Group.

25 Thank you.

1 MS. BURNS: Thanks, Mike.

2 MS. RILEY: Jean Riley again, president of the
3 Eastgate Water & Sewer Association. I wanted to ask one
4 question, and I want to make a comment.

5 I do not understand why the Trust can go against state
6 law. I'm referring to 70-17-112. It is concerning the
7 irrigation ditches that were damaged and the diversion
8 structure that was removed when they did the creek
9 realignment. The statute actually says, "A person may not
10 encroach upon or otherwise impair any easement for" which
11 "a canal or ditch used for irrigation or any other lawful
12 domestic or commercial purpose, including carrying return
13 water." You cannot do that without written permission.
14 Written permission was never received. It was damaged
15 multiple times.

16 Again, that needs to be addressed, and it needs to be
17 addressed with this final.

18 MS. BURNS: Thanks, Jean.

19 MS. COHENOUR: I'd like to just add to that.
20 I'm Jill Cohenour. I'm also a member of the Eastgate
21 Water & Sewer Board.

22 I'm a bit concerned about the lack of response from
23 the Trust Group to the letters that have come from the
24 Eastgate Water & Sewer Board. We, we need some kind of a
25 response to the concerns that we've put forward to the

1 Trust Group on that particular issue. There has not been
2 a response, and I think it would be necessary that some
3 kind of formal response is received to our group so that
4 we can move forward on the things that we're trying to do
5 on behalf of our folks as well.

6 You know, we have property rights, essentially, and
7 water rights that are necessary to be able to be exercised
8 on behalf of our folks, and this situation has kind of
9 damaged our ability to do that. So I would ask that some
10 kind of formal response be given to our group as soon as
11 possible.

12 MS. BURNS: Thank you.

13 REPRESENTATIVE DUNWELL: Hi. I'm Mary Ann
14 Dunwell. I am a Montana representative. I represent
15 House District 84, which includes East Helena.

16 I think my takeaway is we only have a finite amount of
17 cleanup money. It's interesting to me that ASARCO was
18 given \$4 million for cleaning up something that they
19 caused and it detracted from the 100 million that was
20 estimated, so we get only 96 million. That sounds like a
21 chunk of change, but it's not. We heard tonight that
22 these protections will be required in perpetuity, these
23 measures will be required in perpetuity, and not a hundred
24 percent protected. We're going to have to let some soils
25 go contaminated, some plumes out there. And institutional

1 controls that we heard tonight are really subject to the
2 whims of the leadership of the time.

3 I just would encourage us as, as communities and a
4 society to think twice as we move forward when we allow
5 permits of construction industries that will most likely
6 require remediation in perpetuity. And frankly, the local
7 communities, like our good council member mentioned, are
8 left holding the bag.

9 So that's my public comment.

10 MS. BURNS: Thank you.

11 Any other public comments tonight?

12 Luke.

13 MR. SERATI: My name is Luke Serati. I'm from
14 East Helena.

15 Back to the runoff out of the east fields, they have
16 that huge pit out there. Why are you not using that for a
17 retaining pond? It just seems, you know, kind of remiss,
18 I guess.

19 MS. BURNS: Thanks, Luke.

20 MR. HERRIN: I'm John Herrin, a local valley
21 resident.

22 Unfortunately, I didn't get here to get the early gist
23 of a lot of the technical part of it, but what I hear is
24 roughly a \$50 million budget as we sit now and going
25 forward. And has there been some assessment of what the

1 cost needs are for doing the remediation?

2 And then is there anything that could be done to look
3 like what, what happened down in Anaconda when they did
4 the golf course repurposing or something that would help
5 the community as far as economic development going
6 forward? I don't know exactly what that would be, but
7 something that would allow the lands that ASARCO has to be
8 used in some capacity that generates jobs and income.

9 Like the gentleman was saying, and I guess the whole
10 community feels, the loss of ASARCO is a pretty heavy hit
11 to take. And if there's something -- I know a lot of the
12 people here are probably structured on the environmental
13 side of things, but there is a whole socioeconomic side of
14 this thing that seems like it should be part of this whole
15 plan too. Maybe you should look at bringing in some
16 predevelopment folks that could help give you an idea of
17 what, what might be done with these lands and associated
18 lands that would make something that would boost the
19 community and maybe make a difference for the next
20 generation.

21 MS BURNS: Thank you very much. Again, there's a
22 public meeting tomorrow on redevelopment at City Hall.

23 Luke.

24 MR. SERATI: Yeah, one more. It's about cleanup.

25 All the water that washed out of the -- behind the

1 Smelter Dam and down through East Helena, I'm just
2 wondering if there's any plans to clean up the creek
3 through East Helena yet and why not.

4 MS. BURNS: Thanks.

5 Going once. Going twice.

6 We're done, guys. Thank you so much for your
7 patience. Please look online at the Corrective Measures
8 Study. The public comment period stays open until
9 May 29th.

10 So thank you for your interest in this project.

11 (The public hearing concluded at 8:48 p.m.)

12 * * * * *

STATE OF MONTANA)
)
) ss.
COUNTY OF LEWIS AND CLARK)

That the foregoing proceedings were reported by me in shorthand and later transcribed into typewriting; and that the foregoing -9- pages constitute a true and accurate transcription of my stenotype notes of the proceedings.

/s/Cheryl A. Romsa
CHERYL A. ROMSA

EPA responses to oral comments provided by at Public Meeting on April 11, 2018 as transcribed in above transcript:

1. Jean Riley
2. Council Member Mike Misowic
3. Jean Riley
4. Jill Cohenour
5. Representative Mary Ann Dunwell
6. Luke Serati
7. John Herrin
8. Luke Serati

EPA Response to Jean Riley – EPA formally responded to Jean Riley, President of Eastgate Village Water & Sewer Association, on November 16, 2018 regarding her comment as transcribed during the oral formal public provided on April 11, 2018. The arsenic and lead levels in the analytical results submitted on October 31, 2018 fall well below the cleanup thresholds and are representative of lead and arsenic values in soil samples relatively the same distance from the smelter. See attached November 16, 2018 letter, below.

EPA Response to Mike Misowic – EPA appreciates the comment on infrastructure improvements for the City of East Helena. The Custodial Trust has proposed and EPA has approved several environmental actions to be implemented for the City. The Trust is currently drilling a new water supply well for the City and participated in the cost of installation of the new waterline to connect the new water supply well to the City water main lines.

EPA Response to Jean Riley - EPA and the Counsel for the Custodial Trust have previously formally responded to Jean Riley, President of Eastgate Village Water & Sewer Association, regarding her comments on the Company Ditch as transcribed during the oral formal public provided on April 11, 2018.

On June 5, 2014, the Montana Department of Natural Resources and Conservation issued a Change Authorization. Paragraph 20 of the Change Authorization states, “Applicant’s share of the three water rights will be left instream at the historic point of diversion to mitigate 134.5 AF of the net depletion to Prickly Pear Creek caused by a groundwater well permitted by the Department on July 21, 2009”.

EPA is relying on the statement in the Change Authorization and a paragraph in the below referenced letter from the Custodial Trust Counsel to Betsy Burns – “Several years ago, Eastgate applied to the DNRC for a permit to install a new well. On July 21, 2009, DNRC granted the application and issued Beneficial Water Use Permit No. 41I 30026328. This permit was granted with the condition that Eastgate obtain approval to use three Prickly Pear water rights as mitigation in an amount of not less than 185 acre feet. Obtaining approval for mitigation required a separate application. The mitigation application was approved in an authorization (Authorization No. 41I-30050020) dated June 5, 2014. The authorization states that portions of acres formerly authorized for irrigation “will be retired”. The DNRC order granting the change authorization indicates that the water historically diverted from the Company Ditch Headgate on Prickly Pear Creek now will be left in the creek and not diverted”.

As stated previously, the Company ditch was not damaged during construction. Before the June 5, 2014 DNRC authorization, the Custodial Trust had offered numerous times to deliver water to the ditch. It appears that all of the water rights owned by Eastgate to divert Prickly Pear Creek water to the Company ditch were used as mitigation for the new well.

See EPA formal response to Eastgate Village Water & Sewer Association on the same comments received on the Former ASARCO Facility Interim Measures Work Plan - 2016 and 2016 at <https://www.mtenvironmentaltrust.org/final-interim-measures-work-plan-2015-and-2016-may-29-2015/> and attached March 20, 2015 letter below from Stephen Brown to Betsy Burns that was provided in the EPA response to comments on the Final Former ASARCO Facility Interim Measures Work Plan - 2016 and 2016.

EPA Response to Jill Cohenour – See responses to Jean Riley above. Additionally, EPA has provided the March 20, 2015 letter to Jill Cohenour via e-mail on February 16, 2016.

EPA Response to Representative Mary Ann Dunwell – EPA appreciates your comments and is committed to a Corrective Action remedy in East Helena that is protective of human health and the environment. EPA is approving long term (perpetual) performance monitoring and evaluation as a final corrective measure at the East Helena site.

EPA Response to Luke Serati – EPA appreciates your comments on runoff from the East Fields. See the first response to Jean Riley above. The arsenic and lead levels in the analytical results submitted by Ms. Riley on October 31, 2018 fall well below the cleanup thresholds and are representative of lead and arsenic values in soil samples relatively the same distance from the smelter.

EPA Response to John Herrin – EPA appreciates your comments on the economic impacts on the closure of the smelter. EPA and the Custodial Trust are committed to remediating and seeking redevelopment opportunities for the former ASARCO properties. As of the end of 2018, all the former ASARCO property north of Highway 12 has been sold for redevelopment or transferred to the community for public use – East Helena School District and Lewis & Clark County Search and Rescue. During the bankruptcy proceedings, the United States and State of Montana filed claims for the estimated costs of remediation. The bankruptcy court awarded approximately \$95 million for the East Helena cleanup, which was a portion of the original claim. METG has approached the remediation in a unique and innovative manner, expending approximately \$50 million. The remaining assets will be used for the slag pile remediation, perpetual groundwater monitoring of the arsenic and selenium plumes and the long-term operation and maintenance of the cap on the former smelter site and slag pile, the engineered landfills and the reconstructed Prickly Pear Creek corridor.

EPA Response to Luke Serati - The Custodial Trust completed human health and ecological risk assessments on soil and sediment from Prickly Pear Creek as detailed in Section 4 of the CMS Report. The results indicated that the human health and ecological risks for the soil and sediment do not represent unacceptable human health or ecological risk.

Burns, Betsy

From: Riley, Jean <jriley@mt.gov>
Sent: Wednesday, October 31, 2018 10:57 AM
To: Burns, Betsy; cb.g-etg.com
Cc: Harris, Harley; Kathy Moore; Jan Williams; 'cness@lccountymt.gov'; 'egws@eastgatevillage.org'
Subject: Lead contamination migration
Attachments: Eastgate soil report2018t.pdf

Cindy/Betsy,

At the last public meeting I asked why the soil repositories did not have stormwater containment. I explained that the ditches that run through the Eastgate area were receiving water from the area of the repositories and we were concerned with the potential for contamination. I was told that there the repositories were capped and would not impact the Eastgate area and there was no need for stormwater containment.

Eastgate Village Water Sewer Association completed some sampling of our field that receives water from the ditch culvert where it crosses under Lake Helena Drive and a background sample in the pivot field where ditch flow is not received .

The background sample has Arsenic at 2.55 ug/g and Lead at 11.6 u/g. The sample at the culvert was Arsenic at 8.75 ug/g and Lead at 131 ug/g. This shows that the ditches are moving sediment from the repositories into the subdivisions.

As a resident of the area, why is EPA and the Trust allowing the contamination to move and contaminate previously uncontaminated areas. What is the plan to not clean the ditches, and to prevent further migration of contaminated soils?

I have attached the sampling results to this email for your information. .

Jean Riley
President
Eastgate Village Water Sewer Association

State of Montana
Department of Health and Human Services
Environmental Laboratory
1400 Broadway, Room B 206 Helena, MT 59620
phone: 406-444-2642 fax: 406-444-5527

RESULTS OF CHEMICAL ANALYSIS

Billing ID: G0008640

Eastgate Village
2630 Winchester Dr.
East Helena, MT 59635

Lab #: 1808155-02

Sample ID: Culvert sample

Account ID #: 01784001
PWSID #: MT0001784

Collected: 08/08/2018
Time: 9:15
By: Brian Palkovich
Received Date: 08/08/2018

Sample Type:
Matrix: Sediment

Report Date: 09/27/2018
Print Date: 09/27/2018

TEST	FLAG	RESULT	UNITS	**EPA Drinking Water Limit	ANALYSIS DATE	METHOD
Metals by EPA 200.7						
Arsenic	x	8.75	ug/g		09/13/2018	200.7
Metals by EPA 200.8						
Lead		131	ug/g		09/13/2018	200.8
Selenium	<	0.50	ug/g		09/13/2018	200.8

Reviewed By: 

Flags: < = less than

> = greater than

H = above EPA limit for drinking water

* = holding time exceeded

** Not all parameters have EPA Drinking Water Limits

Comments:

Sieved sample > 2 mesh not analyzed. Three fractions analyzed. Average reported. Results for fraction -2 +35 mesh were 5.1 for As, 55.6 for Pb. Fraction -35 +100 Mesh was 9.14 for As, 127 for Pb. Fraction -100 Mesh was 12 for As, 211 for Pb. (ug/g)

Qualifiers: x

All three metal results represent an average of fractions below 2 mesh (GAL).

State of Montana
Department of Health and Human Services
Environmental Laboratory
1400 Broadway, Room B 206 Helena, MT 59620
phone: 406-444-2642 fax: 406-444-5527

RESULTS OF CHEMICAL ANALYSIS

Billing ID: G0008640

Eastgate Village
2630 Winchester Dr.
East Helena, MT 59635

Lab #: 1808155-01
Sample ID: Control Pivot Field

Account ID #:	01784001
PWSID #:	MT0001784
Collected:	08/08/2018
Time:	9:15
By:	Brian Palkovich
Received Date:	08/08/2018
Sample Type:	
Matrix:	Sediment
Report Date:	09/27/2018
Print Date:	09/27/2018

TEST	FLAG	RESULT	UNITS	**EPA Drinking Water Limit	ANALYSIS DATE	METHOD
Metals by EPA 200.7						
Arsenic		2.55	ug/g		09/13/2018	200.7
Metals by EPA 200.8						
Lead		11.6	ug/g		09/13/2018	200.8
Selenium	<	0.50	ug/g		09/13/2018	200.8

Reviewed By: 

Comments:

Flags: < = less than
> = greater than

H = above EPA limit for drinking water

* = holding time exceeded

** Not all parameters have EPA Drinking Water Limits

Qualifiers: No Qualifiers were applied to the sample results.



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8, MONTANA OFFICE**

FEDERAL BUILDING, 10 West 15TH Street, Suite 3200
Helena, MT 59626-0096
Phone 866-457-2690
www.epa.gov/region8

SENT VIA E-MAIL

Ref: 8EPR-D

November 16, 2018

Jean Riley, President
Eastgate Village Water & Sewer Association, Inc.
P. O. Box 1220
East Helena, MT 59635

Dear Jean,

Thank you for your e-mail dated October 31, 2018, and for the attached analytical results. The analytical results from the samples collected by Eastgate Village indicate that the levels of lead and arsenic fall below the threshold for cleanup in the *East Helena Superfund Site Operable Unit No. 2, Residential Soils and Undeveloped Land Final Record of Decision, September 2009*. The remedial goal for human receptors in residential areas is to prevent direct contact/ingestion with soil having concentrations in excess of the cleanup level of 1,000/500 ppm lead – once cleanup is triggered by a section of the yard exceeding 1,000 ppm, all sections of the yard with concentration of lead exceeding 500 ppm will be cleaned up.

The arsenic and lead levels submitted on October 31, 2018 fall well below the cleanup threshold and are representative of lead and arsenic values in soil samples relatively the same distance from the smelter. We have seen in surrounding agricultural land, that has been tilled, similar lead and arsenic values to your reported background sample.

I appreciate your commitment to the community of East Helena and to the work being conducted by EPA. Please feel free to contact me at 406-457-5013 if you have any further questions or concerns.

Sincerely,

A handwritten signature in blue ink, which appears to read "Betsy Burns".

Betsy Burns
Project Manager

Cc: Cindy Brooks, METG
Harley Harris, Montana NRD
Kathy Moore, Lewis & Clark County
Jan Williams, Lewis & Clark County
Crystal Ness, Lewis & Clark County
Daryl Reed, Montana DEQ
Tom Stoops, Montana DEQ

March 20, 2015

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

RE: Draft 2015-16 Interim Measures Work Plan Comments Regarding Company Ditch

Dear Betsy:

This letter is in reference to two comments that were sent to the Environmental Protection Agency ("EPA") in response to the Draft 2015-16 Interim Measures Work Plan that recently was released for public comment. The first letter is dated March 2, 2015, and is from Paul Johnson on behalf of the Eastgate Village Water & Sewer Association, Inc. ("Eastgate"). The second letter is dated March 6, 2015, and is from Jerry Hamlin, Trustee for the Hamlin Family Revocable Trust ("Hamlin Trust"). Both letters raise issues as to the effect the Prickly Pear Creek temporary bypass channel interim measure ("IM") has on the diversions to the irrigation ditch known as the "Company Ditch."

On behalf of the Custodial Trust we provide the following background, and responses to each letter.

A. BACKGROUND

Eastgate and the Hamlin Trust jointly own three water rights that list Prickly Pear Creek as the source of supply. The point of diversion for each of the three water rights is in Section 36, Township 10 North, Range 3 West in Lewis & Clark County. The Company Ditch is the name for an irrigation ditch that is shown on some maps as having a point of diversion on Prickly Pear Creek at a point near Smelter Dam. The Custodial Trust owns the property where the point of diversion is depicted on the maps.

According to records maintained in the Montana Department of Natural Resources and Conservation ("DNRC") online database, Eastgate and the Hamlin Trust jointly own the following three water rights:

Water Right No.	Priority	Flow Rate	Acres¹
41I 89277-00	11/24/1866	1.25 CFS	63.00
41I 89278-00	2/10/1869	1.69 CFS	63.00
41I 89279-00	10/15/1866	421.87 GPM	63.00

When the predecessors of the current owners filed their water right claims with the DNRC in 1981, they described the point of diversion as a headgate located on the east bank of “Smelter Pond” on Prickly Pear Creek. The water right claim files do not indicate how long the diversion point had been at that particular location. At the time the water right claims were filed, water evidently flowed 400 feet through an 18 inch diameter pipeline, then into an open ditch that conveyed water northeast across what is now Custodial Trust property. The records indicate that ditch then passed under U.S. Highway 12 through a 36 inch pipeline, and then further north and east to reach its ultimate place of use on property now owned by either Eastgate, the Hamlin Trust or others.

Several years ago, Eastgate applied to the DNRC for a permit to install a new well. On July 21, 2009, DNRC granted the application and issued Beneficial Water Use Permit No. 41I 30026328. This permit was granted with the condition that Eastgate obtain approval to use three Prickly Pear water rights as mitigation in an amount of not less than 185 acre feet. Obtaining approval for mitigation required a separate application. The mitigation application was approved in an authorization (Authorization No. 41I-30050020) dated June 5, 2014. The authorization states that portions of acres formerly authorized for irrigation “will be retired.” The DNRC order granting the change authorization indicates that the water historically diverted from the Company Ditch headgate on Prickly Pear Creek now will be left in the creek and not diverted.

B. RESPONSE TO LETTERS

1. Eastgate Water and Sewer

When the IMs were proposed last year, Eastgate submitted comments objecting to the effect of the bypass channel on its Company Ditch diversion. The Custodial Trust held several conference calls with Eastgate to discuss its concerns, but understood that Eastgate’s change application would make Eastgate’s concerns moot because the mitigation requirements would require it to leave water in Prickly Pear Creek and would prohibit any diversions. Until receiving Eastgate’s March 2, 2015 letter, the Custodial Trust had assumed that Eastgate’s issues were resolved because there no longer were any diversions, nor had there been for many years. The June 5, 2014 approval order approved the condition that Eastgate no longer divert water from Prickly Pear Creek, but instead leave it instream.

The Custodial Trust remains willing to listen to any remaining concerns that Eastgate might have. However, in light of the mitigation conditions on its water rights that appear to prohibit diversions,

¹ Note that these acreage figures are overlapping, not cumulative, which means a total of up to 63 acres can be irrigated with all three water rights.

Eastgate's letter does not provide sufficient information for a response. It does not appear to be consistent with Eastgate's current water rights to provide and maintain a diversion point that Eastgate cannot use without violating the mitigation conditions under which it now must operate. The Custodial Trust is, however, willing to work directly with Eastgate to reconcile these positions.

2. Hamlin Trust

The Hamlin Trust does not appear to be part of the Eastgate water rights change authorization mitigation conditions. Mr. Hamlin's March 10 letter makes several assumptions that do not appear to be accurate. First, the letter states that the Custodial Trust has caused a loss of the Hamlin Trust water right. That statement is not accurate. Under Montana law, a water right and a ditch right are separate property rights. The Custodial Trust has not taken any public position, filed any objections, nor made any public statements concerning the validity of the Hamlin Trust water rights. The validity of those rights is a matter between the Hamlin Trust, DNRC and the Montana Water Court.

As to the Hamlin Trust rights to the Company Ditch, the Custodial Trust does not believe that any improper interference has occurred. As part of the process for implementing the Prickly Pear Creek temporary bypass, the Custodial Trust interviewed the Water Commissioner to ensure that the work would not interfere with any active water use. The Water Commissioner assured us that no diversion has occurred since 1999. The records submitted in the Eastgate change authorization proceeding appear to support this statement. We also collected the filings that the Water Commissioner makes with the state district court. Our review of those filings confirmed the Water Commissioner's reports.

The Custodial Trust remains open to meeting with Mr. Hamlin to better understand his plans for continued use of the Company Ditch now that the Eastgate water rights have been carved out of the joint Eastgate-Hamlin Trust water right. Until receiving this letter, however, the Custodial Trust was not aware that the Hamlin Trust had concerns distinct from Eastgate. Because the vast majority of the Company Ditch on the Custodial Trust property remains intact, addressing whatever legitimate concerns Mr. Hamlin can discuss should not be difficult. However, based upon the review that has been done, the Custodial Trust does not agree that any unreasonable interference with the Hamlin Trust diversion and ditch rights has occurred. The Custodial Trust will reach out to Mr. Hamlin and offer to work with him and the Hamlin Trust to determine any necessary steps to restore a diversion structure on the Prickly Pear Creek, similar to what was in place prior to the implementation of the bypass project.

RE: Draft 2015-16 Interim Measures Work Plan Comments Regarding Company Ditch
March 20, 2015
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Please let us know if you have any questions about this letter.

Very truly yours,

GARLINGTON, LOHN & ROBINSON, PLLP

A handwritten signature in blue ink, appearing to read 'S. Brown', is written over the firm name.

Stephen R. Brown

C: Chuck Figur
Lauri Gorton
Dean Brockbank
Marc Weinreich
Cindy Brooks

SRB:srb