2015/2016 WATER RESOURCES MONITORING REPORT
EAST HELENA FACILITY

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LIST OF ACRONYMS AND ABBREVIATIONS

bgs	Below Ground Surface
CAMP	Corrective Action Monitoring Plan
CAMU	Corrective Action Management Unit
cfs	Cubic Feet Per Second
CGWA	Controlled Groundwater Area
CM	Corrective Measure
CMS	Corrective Measures Study
COC	Constituents of Concern
COEH	City of East Helena
CSM	Conceptual Site Model
Custodial Trust	Montana Environmental Custodial Trust
°C	Degrees Centigrade
DI	Deionized
DMP	Data Management Plan
DO	Dissolved Oxygen
EI	Environmental Indicator
ET	Evapotranspiration
EVCGWA	East Valley Controlled Groundwater Area
gpm	Gallons Per Minute
HDPE	High Density Polyethylene Tubing
HDS	High Density Sludge
HHS	Human Health Standard
IM	Interim Measures
METG	Montana Environmental Trust Group
µmhos/cm	micromhos/centimeter
mg/L	milligrams/liter
NTU	Nephelometric Turbidity Units
ORP	Oxidation-Reduction Potential
PRDL	Project Required Detection Limit
PQL	Practical Quantification Limits
QAPP	Quality Assurance Project Plan
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RPD	Relative Percent Difference
SAI	Source Area Investigations
SC	Specific Conductance
SOPs	Standard Operating Procedures
SPHC	South Plant Hydraulic Control
SWL	Static Water Level
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Load
USEPA	United States Environmental Protection Agency
WRM	Water Resources Monitoring

2015/2016 WATER RESOURCES MONITORING REPORT
EAST HELENA FACILITY

1.0 INTRODUCTION

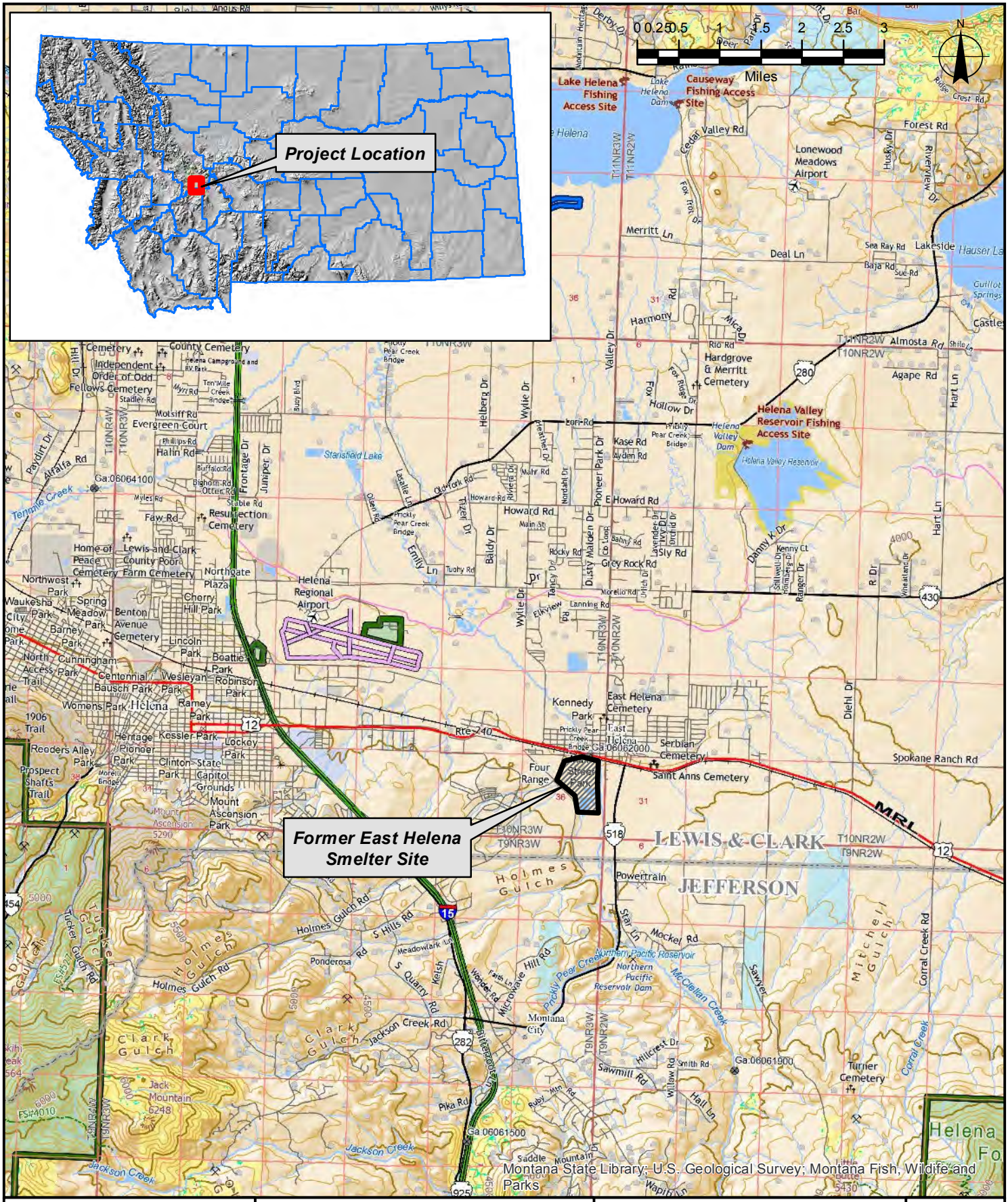
This report presents a summary of water resources monitoring (WRM) activities conducted in 2015 and 2016 for the former East Helena Smelter remediation project. For purposes of this WRM report, the project area includes the former East Helena smelter site or Facility[1], and the surrounding area encompassing two groundwater plumes and the project groundwater monitoring network. The WRM program has been implemented by the Montana Environmental Trust Group (METG), Trustee of the Montana Environmental Custodial Trust (the Custodial Trust). The 2015 and 2016 monitoring activities were conducted as a key component of the Corrective Measures Study (CMS) implemented by the Custodial Trust to identify and address groundwater contamination originating from the Facility, under the Resource Conservation and Recovery Act (RCRA) Corrective Action Program. This report summarizes the WRM activities and associated data collected in 2015 and 2016, as outlined in the annual Corrective Action Monitoring Plans (CAMPs). Information provided in this report, including an updated conceptual site model (CSM) of the project area hydrogeology, will also serve as a foundation for planning and implementation of future long-term WRM activities, along with ongoing remedial measure evaluations and other CMS-related activities. The 2015/16 WRM report is part of the overall groundwater remedy completion strategy for the former East Helena smelter.

1.1 PROJECT BACKGROUND

The former East Helena Smelter was a custom lead smelter located in Lewis and Clark County, Montana (Figure 1-1). The former smelter began operations in 1888 and produced lead bullion from smelting of a variety of foreign and domestic concentrates, ores, fluxes, and other non-ferrous metal bearing materials. In addition to lead bullion, the Facility produced copper by-products and food-grade sulfuric acid. The Facility ceased operation in April 2001.

The Facility covers approximately 142 acres located primarily on the Prickly Pear Creek alluvial plain. The Facility is bounded to the east and northeast by Prickly Pear Creek; to the west and southwest by uplands or foothills comprised of tertiary-age sediments; and to the north by U.S. Highway 12 and the American Chemet plant (a manufacturer of copper and zinc-based chemicals) with the City of East Helena (COEH) business district and residential areas located a short distance to

[1] The former smelter site or Facility refers to the approximately 142 acres previously occupied by the East Helena Lead Smelter.



Hydrometrics, Inc. Consulting Scientists and Engineers Date Saved: 5/26/2017 9:22:08 AM	2015-2016 WATER RESOURCES MONITORING REPORT EAST HELENA FACILITY	**EAST HELENA FACILITY LOCATION MAP**

FIGURE

1-1

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the north (Figure 1-2). Prior to 2014, the Facility was bordered to the south by Upper Lake, a large lake/marsh complex. The lake has since been eliminated and the Prickly Pear Creek channel and floodplain lowered to reduce groundwater levels and groundwater interaction with contaminated soils (Section 1.2). The site background and history of the former smelter is described further in numerous reports including Hydrometrics (1999 and 2010) and GSI (2014).

Soils and non-native fill material (i.e., slag, ore, concentrates, demolition debris) located on the Facility contain elevated concentrations of a number of contaminants, primarily arsenic, selenium, and certain trace metals. Contaminants within site soils and fill are the result of more than a century of ore handling and processing, storage and disposal of smelting wastes and byproducts, and periodic releases of plant process water. The contaminated soil/fill represents the primary historic and current source of contaminant loading to groundwater. Loading of contaminants to groundwater has resulted in the generation and migration of groundwater plumes (primarily arsenic and selenium) from the Facility to the north and northwest. The Custodial Trust has implemented a number of interim corrective measures concurrent with the CMS, including the South Plant Hydraulic Control (SPHC), contaminant source removal, and plant site capping Interim Measures (IMs) (CH2M, 2015). The primary purpose of the IMs completed to date by the Custodial Trust is to reduce contaminant mass loading to groundwater and downgradient migration of contaminants from the Facility in order to protect public health and the environment.

1.2 CORRECTIVE MEASURES STUDY PROGRAM

The Custodial Trust is currently conducting a CMS for the East Helena Facility, under the oversight of the United States Environmental Protection Agency (USEPA). The CMS is one of the RCRA Corrective Actions being conducted at the Facility pursuant to the First Modification to the 1998 RCRA Consent Decree (U.S. District Court, 2012), and has involved the completion of several site investigations designed to delineate groundwater contaminant source areas and aid in selection of groundwater contaminant corrective measures. Concurrent with the CMS program, the Custodial Trust has implemented a number of IMs intended to address ongoing groundwater contaminant loading. The three IMs completed to date include:

1. The South Plant Hydraulic Control (SPHC) IM: The SPHC IM is a multicomponent remedial action intended to lower groundwater levels across the Facility. Since the primary source of contaminant loading to groundwater is groundwater flow through contaminated soils on the Facility and associated contaminant leaching, lowering the water table has reduced the volume of contaminated soil in contact with groundwater and associated contaminant leaching. Components of the SPHC include: dewatering of former Upper Lake immediately south of the Facility, previously a major source of recharge to the Facility groundwater system; removal of the Smelter Dam from Prickly Pear Creek thereby lowering the creek stage by up to 15 feet and reducing leakage from the creek to the shallow groundwater system; and reconstructing Prickly Pear Creek upstream of and adjacent to the Facility to further reduce the creek stage and leakage to groundwater.



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2. Plant Site Evapotranspiration Cover IM: The evapotranspiration (ET) Cover IM included placement of an engineered soil cover over approximately 57 acres of the western portion of the Facility where smelting operations and associated activities occurred (the Former Plant Site). The ET Cover is designed to store precipitation infiltration in the engineered soil cap for subsequent evapotranspiration during the growing season. The purpose of the ET Cover IM is to minimize deep percolation of incident precipitation and snowmelt water through contaminated vadose zone soils and associated leaching of contaminants to the shallow groundwater system.
3. Contaminant Source Removal IM: Source removal actions were performed on the Facility to remove areas of localized, higher contaminant concentration soils from below the groundwater table where accessible. Source removal actions were completed in the southern portion of the Facility (South Plant Area), including the former Tito Park and Upper Ore Storage areas, and in the Former Acid Plant Area. The excavated soils were placed beneath the ET Cover and the excavations backfilled with clean soil.

Additional information on the completed IMs is available in the various CMS and IM work plans (CH2MHill, 2012, 2014, 2015). As noted in Section 1.3, evaluation of the IM effectiveness in terms of the groundwater system response is a primary focus of the East Helena Project CAMP.

1.3 CORRECTIVE ACTION MONITORING PROGRAM

The groundwater and surface water monitoring activities performed in 2015/16 for the East Helena Project were conducted in accordance with the 2015 and 2016 CAMPs (Hydrometrics, 2015a and 2016a). As described in these documents, the overall objective of the 2015/16 monitoring program was to generate adequate and appropriate groundwater and surface water data to support selection of CMS remedies and support evaluation of the effectiveness of implemented IMs. The 2015/16 CAMPs also provided for continued monitoring of residential and municipal water supply wells in the project area to ensure protection of groundwater users (nearby residents) and to support implementation of a Controlled Groundwater Area (CGWA) (Hydrometrics, 2014). Specific objectives of the 2015/16 CAMPs include:

1. Continue monitoring overall arsenic and selenium plume stability, in terms of the geographic extent of the plumes and contaminant concentrations;
2. Document groundwater contaminant concentration trends at Facility source areas and within the downgradient plumes to assess the groundwater response to the implemented IMs;
3. Provide ongoing water quality data at residential and public water supply wells in the project area to protect groundwater users, document groundwater usage, and provide additional information on the groundwater plume extent and stability;
4. Support the planning and implementation of the East Valley Controlled Groundwater Area (EVCGWA);

5. Document groundwater quality in the Phase I and II Corrective Action Management Unit (CAMU) areas, in order to document any potential groundwater quality changes attributable to the CAMUs; and
6. Provide hydrologic data and information for use by the project technical team and managers in overall project planning.

The multi-year CAMP Program is one component of the CMS currently being implemented by the Custodial Trust. The hydrologic data collected under the CAMP program also supports additional project activities, including refinement of a groundwater contaminant fate and transport model and periodic updates to the groundwater CSM for the Facility. As the Facility corrective measures program has progressed over the past several years, the focus of the monitoring program has transitioned from primarily groundwater plume characterization, largely complete by 2015, to an evaluation of performance and effectiveness of the implemented groundwater IM remedies. The annual CAMPs are supported by other monitoring program documents, including the East Helena Facility Quality Assurance Project Plan (QAPP) for Environmental Data Collection Activities (Hydrometrics, 2015b), and Data Management Plan (DMP) for Environmental Data Collection Activities (Hydrometrics, 2011). These documents include detailed discussions of the project and Facility history and background, as well as requirements for data review, reporting, and management. Brief summaries of the data review, management, and validation activities are provided in this report for context.

This 2015/16 WRM Report presents a summary of groundwater and surface water monitoring activities and resulting data for the East Helena Facility for the two year period. This report covers all WRM activities outlined in the 2015 and 2016 CAMPs. The scope of monitoring activities is presented in Section 2 and monitoring results presented in Section 3. Discussion and interpretation of the monitoring results and current groundwater and surface water conditions is provided in Section 4. A review and update of the hydrogeologic CSM for the project area is presented in Section 5.

2.0 2015/16 CAMP MONITORING ACTIVITIES

The 2015/16 CAMP program included seasonal monitoring at an extensive network of groundwater and surface water locations spanning the project area. Following is a summary of 2015/16 WRM activities. Monitoring results are described in Sections 3 and 4.

2.1 2015/16 SURFACE WATER MONITORING

Surface water monitoring under the CAMP includes surface water elevation or stage measurements, streamflow measurements and water quality sampling and analysis. Due to ongoing site remediation activities, certain surface water features on or near the Facility were either eliminated or relocated in 2016, requiring adjustments to the 2016 surface water monitoring program. These program modifications are noted below.

2.1.1 Surface Water Monitoring Network and Schedule

A total of 20 surface water sites were monitored in 2015 and/or 2016 with monitoring sites listed and described in Table 2-1 and shown on Figure 2-1. Ten of the sites are located on Prickly Pear Creek with coverage extending from upstream of the Facility to the Canyon Ferry Road crossing approximately three miles downstream (northwest) of the site. Six of the sites (GP-1 through GP-5A) are ponds within active or inactive gravel pits located two to three miles north of the Facility. The remaining sites are on Prickly Pear Creek tributaries, irrigation features, or former Facility process ponds (Table 2-1). Several sites listed in Table 2-1, including Lower Lake, SG-05, and Former PPC-BD were eliminated in 2015/16 as part of the South Plant source removal and SPHC IMs.

Surface water elevations were measured monthly from April through November 2015 and April through October 2016 at all sites using a survey grade GPS. The surface water elevation surveys were conducted concurrently with site-wide groundwater static water level (SWL) measurements to allow development of site-wide potentiometric maps incorporating groundwater and surface water elevation data. Besides documenting groundwater flow directions and gradients, the resulting data was used to assess potential gaining and losing reaches of Prickly Pear Creek. The surface water monitoring schedule is included in Table 2-2.

Streamflow and water quality monitoring was conducted at select surface water sites during high flow (June) and low flow (October) conditions in 2015/16 (Table 2-2). The timing of the surface water monitoring events was coordinated with semiannual groundwater monitoring events to obtain a more complete picture of seasonal groundwater and surface water quality conditions in the project area.

2.1.2 Surface Water Sampling Methodology

Instantaneous flow measurements were obtained using current velocity meters and the cross-section method, or (for smaller flows) portable flumes or volumetric methods as described in the 2015 and 2016 CAMPs (Hydrometrics, 2015a, 2016a). Field parameter and streamflow measurements were recorded at the time of water sample collection, with all monitoring events completed within one day to minimize possible temporal variability. Surface water quality samples were collected from each

Table 2-1. 2015/16 Surface Water Monitoring Locations -- East Helena Facility

Site ID	Northing	Easting	Description
PPC-3A	856283.87	1361694.37	Prickly Pear Creek upstream of former smelter site
PPCB-1	859199.48	1361720.04	Prickly Pear Creek bypass channel adjacent to former smelter
Trib-1	858008.43	1360249.85	Spring fed tributary to Prickly Pear Creek originating southwest of former smelter site
SG-05	858797.46	1361263.58	Discharge from Upper Lake/Marsh to Prickly Pear Creek. Eliminated in 2016.
Lower Lake	859613.71	1360690.93	Former process pond in southern portion of former smelter. Pond eliminated in summer/fall 2016
Former PPC-BD	859466.51	1361434.66	Ponded water in former Prickly Pear Creek channel below smelter dam (after creek relocation)
PPC-5	859954.78	1361478.38	Original Prickly Pear Creek channel below smelter dam. Creek channel relocated in summer 2016
PPC-7	861473.74	1360743.50	Prickly Pear Creek channel upstream of Highway 12 bridge; between slag pile and Highway 12
PPC-8	863372.55	1360137.99	Prickly Pear Creek at West Gail Street in East Helena
PPC-36A	864556.11	1358753.31	Prickly Pear Creek approximately 3,500 feet (0.67 miles) downstream of former smelter site
PPC-9A	865555.92	1357841.22	Prickly Pear Creek approximately 5,250 feet (1.0 miles) downstream of former smelter site
PPC-10	867712.58	1356117.83	Prickly Pear Creek approximately 8,000 feet (1.5 miles) downstream of former smelter site
SG-16	872677.17	1350559.96	Prickly Pear Creek downstream of Canyon Ferry Road bridge
HVIC-1	870433.13	1354118.75	Helena Valley Irrigation Canal upstream (east) of Prickly Pear Creek
GP-1	869382.84	1355642.76	Gravel pit pond south of Canyon Ferry Road
GP-2	870307.35	1354223.32	Gravel pit pond south of Canyon Ferry Road
GP-3	872295.33	1352636.82	Gravel pit pond south of Canyon Ferry Road
GP-4	869942.71	1352286.21	Gravel pit pond south of Canyon Ferry Road
GP-5	868811.08	1355741.50	Gravel pit pond south of Canyon Ferry Road
GP-5A	867206.54	1357125.85	Gravel pit pond south of Canyon Ferry Road

Site locations shown on Figure 2-1.
Sites listed in upstream to downstream order.



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2015-2016 WATER RESOURCES MONITORING REPORT
EAST HELENA FACILITY

2015-2016 SURFACE WATER MONITORING LOCATIONS

FIGURE

2-1

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Table 2-2. Surface Water Monitoring Schedule -- East Helena Facility

Monitoring Location	2015			2016		
	Water Elevation Measurements	Instantaneous Flow Measurements	Water Quality Monitoring	Water Elevation Measurements	Instantaneous Flow Measurements	Water Quality Monitoring
	Monthly -April through November	Semiannual (June and October)	Semiannual (June and October)	Monthly -April through October	Semiannual (June and October)	Semiannual (June and October)
PPC-3A	X	X	X	X	X	X
PPCB-1	X	X	X	X	X	X
Trib-1	X	X	X	X	X	X
Lower Lake	X	X	X	X		X
SG-5	X		X			
Former PPC-BD	X	X	X	X		
PPC-5	X	X	X	X	X	X
PPC-7	X	X	X	X	X	X
PPC-8	X			X		
PPC-36A	X	X	X	X	X	X
PPC-9A	X			X		
PPC-10	X	X	X	X	X	X
SG-16	X	X	X	X	X	X
HVIC-1	X			X		
GP-1	X			X		
GP-2	X			X		
GP-3	X			X		
GP-4	X			X		
GP-5	X	X		X	X	
GP-5A	X			X		

Site locations shown on Figure 2-1 and described in Table 2-1.
Sites listed in upstream to downstream order.

monitoring location by passing an uncapped sample container across the stream width to the extent possible. When wading, samples were collected across the area of flow upstream of the sampler; during unsafe wading conditions, samples were collected from the stream bank. Samples were preserved as appropriate for the intended analysis and stored in ice filled coolers at approximately 4±2°C for storage. Water sample container and preservation requirements for surface water samples are specified in the project QAPP (Hydrometrics, 2015b) and the annual CAMPs (Hydrometrics, 2015a and 2016a). All surface water sampling information, including sample sites, sample identification numbers, date and time of sample collection, sampling personnel, field parameter measurements, flow measurements and other notes and observations, was documented in project field books and on standard field forms. Field quality control (QC) samples included deionized (DI) water blanks and field duplicate samples, both collected at a minimum frequency of 1 per 20 samples or 1 per day (whichever was greater). All surface water sampling procedures were consistent with the methodology and Standard Operating Procedures (SOPs) presented in the 2015/16 project CAMPs and the project QAPP (Hydrometrics, 2015b).

2.1.3 Surface Water Field Measurements and Analytical Parameters

Surface water samples were analyzed for the parameters shown in Table 2-3, including field analysis of pH, specific conductance (SC), dissolved oxygen (DO), and water temperature, and laboratory analysis of common constituents and total recoverable metals. Laboratory analysis was conducted by Energy Laboratories in Helena, Montana. All of the 2015/16 CAMP surface water stage, flow, and water quality results have been entered into the project database and validated for data quality and usability. The 2015/16 validated database is included in Appendix A.

2.2 2015/16 GROUNDWATER MONITORING

2.2.1 Groundwater Monitoring Network and Schedule

The 2015/16 groundwater monitoring programs included groundwater level and water quality monitoring at a wide network of monitoring wells and residential/public water supply wells. The monitoring well network includes more than 200 monitoring wells with well coverage extending from south of the Facility northward approximately four miles beyond Canyon Ferry Road. Monitoring well depths range from less than 10 feet for some wells located near Prickly Pear Creek, to 247 feet north of Canyon Ferry Road. The groundwater monitoring network is shown on Exhibit 1 with a complete list of monitoring wells and completion details included in Appendix B. Following is a description of the various groundwater monitoring program components.

2.2.1.1 Groundwater Level Monitoring

Groundwater level monitoring has been a key component of the monitoring program for the past several years due to its relevance to the groundwater remediation program. As noted in Section 1, the objective of the SPHC IM is to lower groundwater levels on the Facility thereby reducing groundwater interaction with, and contaminant leaching from, contaminated plant site soils. The groundwater level data also provides information on changing hydraulic gradients and groundwater (and contaminant) flow directions, and provides for development of project-area groundwater potentiometric maps.

Table 2-3. 2015/16 Surface Water Sample Analytical Parameter List

East Helena Facility

Parameter	Analytical Method [1]	Project Required Detection Limit (mg/L)
Physical Parameters		
pH	150.2/SM 4500H-B	0.1 s.u.
Specific Conductance	120.1/SM 2510B	1 µmhos/cm
TDS	SM 2540C	10
TSS	SM 2540D	10
Common Ions		
Alkalinity	SM 2320B	1
Bicarbonate	SM 2320B	1
Sulfate	300.0	1
Chloride	300.0/SM 4500CL-B	1
Bromide	300.0	0.05
Calcium	215.1/200.7	5
Magnesium	242.1/200.7	5
Sodium	273.1/200.7	5
Potassium	258.1/200.7	5
Trace Constituents (Total Recoverable)		
Antimony (Sb)	200.7/200.8	0.0005
Arsenic (As)	200.8/SM 3114B	0.001
Beryllium (Be)	200.7/200.8	0.0008
Cadmium (Cd)	200.7/200.8	0.00003
Chromium (Cr)	200.7/200.8	0.01
Copper (Cu)	200.7/200.8	0.002
Iron (Fe)	200.7/200.8	0.02
Lead (Pb)	200.7/200.8	0.0003
Manganese (Mn)	200.7/200.8	0.01
Mercury (Hg)	245.2/245.1/200.8/SM 3112B	0.000005
Nickel (Ni)	200.7/200.8	0.002
Selenium (Se)	200.7/200.8/SM 3114B	0.001
Thallium (Tl)	200.7/200.8	0.0002
Zinc (Zn)	200.7/200.8	0.008
Field Parameters		
Stream Flow	HF-SOP-37/-44/-46	NA
Water Temperature	HF-SOP-20	0.1 °C
Dissolved Oxygen (DO)	HF-SOP-22	0.01 mg/L
pH	HF-SOP-20	0.01 s.u.
Specific Conductance (SC)	HF-SOP-79	1 µmhos/cm

Notes:

(1) Analytical methods are from *Standard Methods for the Examination of Water and Wastewater* (SM) or EPA's *Methods for Chemical Analysis of Water and Waste* (1983).

Groundwater level monitoring under the 2015/16 CAMPs included obtaining water level measurements at approximately 200 sites on a monthly basis from spring through fall. All water levels were measured manually with electronic meters with depths to water from the top of the well casing recorded to the nearest 0.01 foot. The depth to water measurements were converted to elevations (relative to mean sea level) using surveyed casing elevations for each well. The monthly water level monitoring events are all completed in a single day to provide a snapshot of seasonal groundwater elevation and flow conditions, and are coordinated with the surface water elevation surveys (Section 2.1) to provide more comprehensive monthly water level datasets for the project area. The 2015/16 water level monitoring schedule is included in Table 2-4 with results presented in Section 3.1.

In addition to the monthly manual measurements, a number of wells are instrumented with pressure sensitive transducers and dataloggers for continuous water level (and water temperature) monitoring. Approximately 40 monitoring wells are instrumented at any time, with the list of instrumented wells changing over time in response to project activities and data needs. Table 2-5 includes a list of instrumented wells over time and the water level recording intervals.

2.2.1.2 Groundwater Quality Monitoring

The 2015/16 groundwater quality monitoring programs included multiple sampling events of varying scope and objectives depending on yearly project activities and data needs. Besides the monthly water level monitoring events, the 2015/16 monitoring programs included semi-annual (spring and fall) groundwater quality sampling at 111 monitoring wells in 2015 and 95 wells in 2016 (Table 2-4). In addition to the comprehensive semi-annual events, smaller supplemental sampling events were conducted in early spring and mid-summer each year. The supplemental sampling events provided additional information on seasonal water quality trends in areas of interest such as groundwater contaminant source areas. Thirty wells were sampled in the early spring and 15 wells in the summer 2015 supplemental events, and 18 wells in the early spring and summer 2016 supplemental events. In addition, groundwater samples from 16 wells were analyzed for arsenic and/or selenium speciation in 2015 to provide information on the geochemical conditions within the groundwater plume source areas (Table 2-4).

In addition to the monitoring well sampling, residential and public water supply well sampling is conducted semi-annually each year. Residential/public water supply well sampling is conducted in spring (May or June) and fall (September or October) to monitor the quality of local drinking water sources. As noted in the RCRA groundwater protection guidance (USEPA, 2004a), documenting and addressing potential human exposures is one of USEPA's high priority short-term protection goals. The residential/public water supply well sampling program includes measurement of water levels (where well access permits) and collection of groundwater samples for water quality analyses, with the water quality data provided to the well owners. Besides updating well owners and project planners on current drinking water supply conditions, the 2015/16 (and prior) water supply data was used in the planning and implementation of the EVCGWA (Hydrometrics, 2014).

Table 2-4. 2015/16 Monitoring Well Network and Sampling Schedule

Well ID	MP Elevation	2015 Monitoring Schedule				2016 Monitoring Schedule			
		Monthly Water Level Monitoring	Semi-annual Water Quality Monitoring	Supplemental Water Quality Monitoring		Monthly Water Level Monitoring	Semi-annual Water Quality Monitoring	Supplemental Water Quality Monitoring	
		March through November	Spring/Fall	Early Spring	Summer	April through November	Spring/Fall	Early Spring	Summer
APSD-7	3924.04	X	X			X			
APSD-8	3923.93	X	X			X			
ASIW-1	3913.75	X				X			
ASIW-2	3909.13	X				X			
DH-1	3910.89	X	X			X	X		
DH-10A	3886.97	X				X			
DH-11	3912.36	X	X						
DH-12	3910.16	X				X			
DH-13	3915.87	X				X			
DH-14	3916.06	X	X			X			
DH-15	3889.82	X	X			X	X	X	X
DH-16	3905.77	X				X			
DH-17	3904.84	X	X[a]	X	X	X	X	X	X
DH-18	3916.45	X	X			X			
DH-19R	3919.67	X	X[a]	X		X			
DH-2	3936.91	X				X			
DH-20	3930.89	X	X			X	X		
DH-21	3916.98	X							
DH-22	3941.28	X				X			
DH-23	3915.93	X				X			
DH-24	3899.59	X	X			X			
DH-27	3912.77	X				X			
DH-3	3947.48	X				X			
DH-30	3914.32	X	X[a,s]			X			
DH-31	3919.16	X							
DH-32	3918.23	X							
DH-33	3918.81	X							
DH-34	3916.55	X	X						
DH-35	3911.81	X							
DH-36	3907.98	X	X[a,s]			X			
DH-37	3916.71	X							
DH-38	3918.86	X							
DH-4	3917.26	X	X			X			
DH-42	3931.61	X	X			X	X	X	X
DH-47	3922.33	X	X	X		X	X		
DH-48	3905.96	X				X			
DH-49	3904.07	X	X			X			
DH-5	3921.18	X				X			
DH-50	3904.76	X				X			
DH-51	3904.34	X	X			X	X		
DH-52	3889.18	X	X			X	X	X	X
DH-53	3892.87	X	X			X			
DH-54	3890.27	X				X			
DH-55	3972.76	X	X			X			
DH-56	3958.17	X	X[a,s]	X	X	X	X	X	X
DH-57	3915.26	X				X			
DH-58	3899.64	X				X			
DH-59	3917.74	X	X			X	X	X	X
DH-5A	3921.92	X				X			
DH-6	3889.85	X	X[a,s]	X	X	X	X	X	X
DH-61	3923.76	X				X			
DH-62	3923.48	X	X			X			
DH-63	3905.37	X				X			
DH-64	3904.02	X	X	X	X	X	X	X	X
DH-65	3945.85	X				X			
DH-66	3916.15	X	X[s]	X	X	X	X	X	X
DH-67	3899.77	X	X[s]	X	X	X	X		
DH-68	3943.28	X				X			
DH-69	3934.40	X	X			X			
DH-7	3898.66	X	X			X	X		
DH-70	3918.94	X				X			
DH-71	3938.63	X	X			X			
DH-72	3918.51	X	X			X			
DH-73	3899.82	X	X			X			
DH-74	4001.49	X	X			X			
DH-75	4001.55	X	X			X			
DH-76	3994.28	X				X			
DH-77	3930.05	X	X[a,s]	X	X	X	X		
DH-78	3918.85	X	X[a,s]	X	X	X	X	X	X
DH-79	3916.04					X			
DH-8	3920.62	X	X[s]	X	X	X	X	X	X
DH-80	3919.52					X	X	X	X
DH-81	3926.66					X			
DH-82	3908.18					X	X		
DH-83	3918.83					X			
DH-9	3896.56	X				X			
East-PZ-1	3911.93	X				X			
East-PZ-2	3924.58	X				X			
East-PZ-4	3935.66	X				X			

Table 2-4. 2015/16 Monitoring Well Network and Sampling Schedule

Well ID	MP Elevation	2015 Monitoring Schedule				2016 Monitoring Schedule			
		Monthly Water Level Monitoring	Semi-annual Water Quality Monitoring	Supplemental Water Quality Monitoring		Monthly Water Level Monitoring	Semi-annual Water Quality Monitoring	Supplemental Water Quality Monitoring	
		March through November	Spring/Fall	Early Spring	Summer	April through November	Spring/Fall	Early Spring	Summer
East-PZ-6	3943.83	X				X			
East-PZ-7	3928.83	X				X			
EH-100	3889.83	X	X[a]	X	X	X	X		
EH-101	3879.95	X	X			X	X		
EH-102	3880.45	X	X			X	X		
EH-103	3890.54	X	X			X	X		
EH-104	3887.83	X	X	X		X	X		
EH-106	3882.07	X	X	X	X	X	X		
EH-107	3880.15	X	X	X	X	X	X		
EH-109	3885.67	X				X			
EH-110	3884.05	X	X			X	X		
EH-111	3876.50	X	X[a,s]	X		X	X		
EH-112	3875.78	X				X			
EH-113	3871.34	X				X			
EH-114	3878.07	X	X	X		X	X		
EH-115	3883.29	X	X			X	X		
EH-116	3874.52	X				X			
EH-117	3871.33	X	X	X		X	X		
EH-118	3879.95	X	X	X		X	X		
EH-119	3873.75	X	X			X	X		
EH-120	3865.78	X	X	X		X	X		
EH-121	3869.49	X	X			X	X		
EH-122	3868.08	X				X			
EH-123	3885.71	X	X			X	X		
EH-124	3874.46	X	X	X		X	X		
EH-125	3863.22	X	X			X	X		
EH-126	3870.00	X	X	X		X	X		
EH-127	3860.75	X				X			
EH-128	3892.17	X				X			
EH-129	3870.21	X	X			X	X		
EH-130	3858.55	X	X			X	X		
EH-131	3834.44	X	X			X	X		
EH-132	3893.90	X	X			X	X		
EH-133	3884.36	X				X			
EH-134	3870.21	X	X			X	X		
EH-135	3852.25	X	X			X	X		
EH-136	3838.59	X				X			
EH-137	3839.66	X				X			
EH-138	3839.70	X	X	X		X	X		
EH-139	3839.78	X	X			X	X		
EH-140	3812.08	X	X			X	X		
EH-141	3813.32	X	X	X		X	X	X	X
EH-142	3804.68	X	X	X		X	X	X	X
EH-143	3803.37	X	X	X		X	X	X	X
EH-144S	3778.70	X	X			X	X		
EH-144M	3778.95	X	X			X	X		
EH-144D	3778.86	X	X			X	X		
EH-200	3953.33	X				X	X*		
EH-201	3973.48	X				X	X*		
EH-202	3930.56	X				X	X*		
EH-203	4003.92	X				X	X*		
EH-204	3925.69	X	X			X	X		
EH-205	3900.66	X				X			
EH-206	3898.10	X	X			X	X		
EH-208	3910.58	X				X	X*		
EH-209	3898.34	X				X	X*		
EH-210	3901.19	X	X			X	X		
EH-211	3905.75	X	X			X			
EH-212	3905.90	X	X			X			
EH-50	3889.39	X	X[a]	X	X	X	X		
EH-51	3880.09	X	X			X	X		
EH-52	3880.50	X	X			X	X		
EH-53	3872.82	X	X			X	X		
EH-54	3869.66	X	X			X	X		
EH-57	3885.05	X				X			
EH-57A	3885.45	X	X	X	X	X	X		
EH-58	3888.15	X	X			X	X		
EH-59	3876.57	X	X			X	X		
EH-60	3888.46	X	X[a]			X	X		
EH-61	3889.77	X	X			X	X		
EH-62	3875.07	X	X			X	X		
EH-63	3878.32	X	X			X	X		
EH-64	3882.67	X				X			
EH-65	3879.96	X	X	X	X	X	X		
EH-66	3869.48	X	X			X	X		
EH-67	3869.46	X				X			
EH-68	3867.60	X				X			
EH-69	3869.10	X	X			X	X		
EH-70	3863.48	X	X			X	X		

Table 2-4. 2015/16 Monitoring Well Network and Sampling Schedule

Well ID	MP Elevation	2015 Monitoring Schedule				2016 Monitoring Schedule			
		Monthly Water Level Monitoring	Semi-annual Water Quality Monitoring	Supplemental Water Quality Monitoring		Monthly Water Level Monitoring	Semi-annual Water Quality Monitoring	Supplemental Water Quality Monitoring	
		March through November	Spring/Fall	Early Spring	Summer	April through November	Spring/Fall	Early Spring	Summer
EHMW-3	3825.45	X				X			
EHTW-3	3827.66	X				X			
MW-1	3953.05	X	X			X	X*		
MW-10	3946.28	X	X			X	X*		
MW-11	3973.33	X	X			X	X*		
MW-2	3945.97	X	X			X	X*		
MW-3	3940.95	X	X			X	X*		
MW-4	3947.06	X	X			X	X*		
MW-5	3956.18	X	X			X	X*		
MW-6	3938.14	X	X			X	X*		
MW-7	3963.67	X	X			X	X*		
MW-8	3958.65	X	X			X	X*		
MW-9	3965.36	X	X			X	X*		
AirLiqNorth	3920.62	X							
AirLiqSouth	3922.05	X							
PBTW-1	3907.85	X				X			
PBTW-2	3906.73	X				X			
PPCRPZ-01	3923.96	X							
PPCRPZ-02	3919.76	X				X			
PPCRPZ-03	3924.59	X							
PPCRPZ-04	3922.73	X							
PPCRPZ-05	3926.56	X							
PPCRPZ-06	3928.48	X							
PPCRPZ-07	3928.08	X							
PRB-1	3910.87	X	X[a,s]			X			
PRB-2	3905.34	X				X			
PRB-3	3916.31	X				X			
PZ-102	3922.21	X				X			
PZ-103	3921.82	X				X			
PZ-33B	3894.26	X							
PZ-36A	3858.96	X							
PZ-36B	3858.75	X				X			
PZ-36C	3859.60	X				X			
PZ-9A	3850.70	X				X			
PZ-9B	3849.43	X				X			
SC-1	3890.42	X				X			
SDMW-1	3914.36	X				X			
SDMW-2	3914.21	X	X[a]	X		X	X	X	X
SDMW-3	3925.16	X	X			X			
SDMW-4	3917.69	X	X			X			
SDMW-5	3925.34	X	X			X			
SP-3	3905.91	X				X			
SP-4	3908.16	X				X			
SP-5	3903.52	X				X			
STW-1	3905.58	X				X			
ULM-PZ-1	3924.40	X				X			
ULM-PZ-2	3925.41	X							
ULTP-1	3919.63	X				X			
ULTP-2	3921.23	X				X			
GPPZ-06	3923.36	X							
GPPZ-12	3928.09	X							
GPPZ-14	3927.32	X							
GPPZ-18	3926.53	X							
TW-1	3918.258					X			
IW-01	3888.28					X			
IW-02	3871.08					X			
2843 Canyon Ferry	NA					X	X	X	X
2853 Canyon Ferry	NA					X	X	X	X
Amchem4	NA					X	X		
Total Sites Per Monitoring Event		**206**	**111**	**30**	**15**	**193**	**95/78**	**18**	**18**

NA - Not Available

Well locations shown on Exhibit 1.

X* - Sampled in June only.

X[a] - Arsenic speciation analysis performed.

X[s] - Selenium speciation analysis performed.

Table 2-5. List of East Helena Project Transducer-Instrumented Wells

Site ID	Location	Transducer Schedule	
		Installed	Removed
SURFACE WATER			
SG-16	PPC at Canyon Ferry Rd Bridge	6/3/2011	8/23/2012
Smelter Dam	PPC at Smelter Dam	4/5/2012	10/30/2013
Lower Lake	South Plant Site	10/20/2011	7/8/2014
Upper Lake	South Plant Site	8/5/2011	12/17/2013
GROUNDWATER			
Upper Lake Marsh			
PPCRPZ-02	South Marsh	9/5/2013	7/5/2016
PPCRPZ-05	South Marsh	9/6/2013	4/8/2015
PPCRPZ-06	South Marsh	9/6/2013	4/8/2015
PPCRPZ-07	South Marsh	9/5/2013	3/16/2015
South Plant			
APSD-7	East of Lower Lake	4/7/2010	7/8/2014
APSD-8	East of Lower Lake	4/7/2010	4/15/2011
APSD-9	Tito Park	10/20/2011	7/8/2014
APSD-10	Tito Park	4/15/2011	3/19/2014
APSD-12	Tito Park	4/15/2011	7/8/2014
APSD-16	Tito Park	4/15/2011	7/8/2014
DH-4	North of Lower Lake	2/10/2016	Currently Installed
DH-5	North of Lower Lake	4/22/2011	Currently Installed
DH-14	North of Lower Lake	9/5/2013	Currently Installed
DH-19R	West of Lower Lake	2/10/2016	5/1/2016
DH-47	West of Lower Lake	2/10/2016	Currently Installed
DH-68	West of Lower Lake	2/10/2016	Currently Installed
East Bench			
DH-11	East of PPC	4/21/2011	7/15/2015
East-PZ-2	East of PPC	9/5/2013	Currently Installed
East-PZ-4	East of PPC	9/5/2013	10/18/2016
East-PZ-6	East of PPC	9/5/2013	Currently Installed
East-PZ-7	East of PPC	9/5/2013	Currently Installed
Air Liquide North	East of PPC	9/5/2013	7/15/2015
East Plant / Slag Pile			
DH-74	Slag Pile	10/20/2011	Currently Installed
DH-75	Slag Pile	10/20/2011	Currently Installed
DH-76	South end of Slag Pile	10/20/2011	Currently Installed
IP-102A/B	East of Lower Lake	4/7/2010 & 7/19/10	12/3/2010
IP-103A/B	East of Lower Lake	4/8/2010 & 7/16/10, 4/22/11	1/24/2012
PZ-33A	NE Plant Site, near PPC	4/22/2011	10/23/2012
PZ-33B	NE Plant Site, near PPC	4/22/2011	9/12/2014
PZ-102	East of Lower Lake	4/7/2010	4/22/2011
PZ-103	East of Lower Lake	4/7/2010, 2/28/13	11/26/2013
Central Plant			
DH-8	NW of Ore Storage Building	10/20/2011	4/12/2016
DH-12	Plant Site	4/22/2011	8/23/2012
DH-13	Plant Site	4/7/2010	4/12/2016
DH-18	Plant Site	4/7/2010	4/12/2016
DH-20	Upper Ore Storage Area	10/20/2011	7/29/2014
		3/2/2016	Currently Installed
DH-23	Plant Site	10/23/2014	Currently Installed
DH-29	Plant Site	4/15/2011	7/29/2014
DH-30	Plant Site	4/15/2011	11/18/2015
DH-31	Plant Site	7/22/2015	3/16/2016
DH-33	Plant Site	5/24/2011	9/12/2014

Table 2-5. List of East Helena Project Transducer-Instrumented Wells

Site ID	Location	Transducer Schedule	
		Installed	Removed
DH-34	Plant Site	12/8/2015	3/28/2016
DH-59	N of former AP Settling Pond	10/20/2011	Currently Installed
DH-62	Lower Ore Storage Area	10/20/2011	Currently Installed
DH-66	Plant Site	10/2/2012	Currently Installed
DH-70	Central Plant Site	10/20/2011	4/7/2016
DH-72	N of former AP Settling Pond	10/20/2011	Currently Installed
CAMU / West of Plant			
MW-4	CAMU monitoring well	2/10/2016	Currently Installed
MW-6	CAMU monitoring well	10/20/2011	Currently Installed
MW-8	CAMU monitoring well	10/20/2011	Currently Installed
MW-11	CAMU monitoring well	10/20/2011	Currently Installed
DH-3	West of Upper Lake	4/8/2010	12/3/2010
		10/20/2011	Currently Installed
North of Plant			
DH-10A	North of Plant near PPC	4/21/2011	Currently Installed
EH-60	East Helena	4/7/2010	Currently Installed
EH-61	East Helena	4/21/2011	7/5/2016
EH-103	East Helena	4/7/2010	Currently Installed
EH-126	Lamping Field	4/7/2010	4/21/2011
EH-127	Lamping Field	4/21/2011	7/5/2016
EH-128	SW Lamping Field	4/7/2010	10/20/2011
EH-130	Lamping Field	4/7/2010	4/21/2011
EH-132	SW Lamping Field	4/7/2010	10/20/2011
EH-134	NW Lamping Field	10/9/2010	4/21/2011
EH-141	South of Irr. Canal	4/22/2011	Currently Installed
EH-142	South of Irr. Canal	4/22/2011	Currently Installed
EH-205	N of Wilson Ditch, S of Manlove Ave.	10/9/2010	8/23/2012
EH-208	Seaver Park	6/18/2010	4/21/2011
EH-210	N of Wilson Ditch, S of Manlove Ave.	10/9/2010	7/5/2016
EH-211	Manlove Subdivision	4/22/2011	2/10/2016
EH-212	Manlove Subdivision	4/22/2011	2/10/2016
2840 Winslow	Seaver Park	7/2/2010	4/21/2011
SP-4	N of Wilson Ditch, N of Manlove Ave.	10/9/2010	10/20/2011

Well locations shown on Exhibit 1.

The semi-annual residential/public water supply sampling events included 29 wells in 2015 and 19 wells in 2016 (Table 2-6, Exhibit 1). The number of wells decreased in 2016 due to a number of residential wells being abandoned and residences connected to the COEH municipal water supply system in 2015/16 though a Custodial Trust-funded program, or due to inoperable pumps. The COEH public water supply wells (numbers 27, 28, and 29, Table 2-6, and Exhibit 1) are included in each semi-annual sampling event.

Besides the semi-annual sampling, a number of additional residential wells were sampled one time in 2016. The supplemental residential well sampling occurred in May 2016 and included seven wells in the Seaver Park subdivision, and eight wells located north of Canyon Ferry Road near the leading edge of the selenium plume (Figure 2-2). Both of these areas were included in previous residential well sampling events and these subsets of wells were resampled in 2016 to provide current information on drinking water quality in the area.

2.2.2 Groundwater Sampling Methodology

As outlined in the annual CAMPs (Hydrometrics, 2015a and 2016a) and the project QAPP (Hydrometrics, 2015b), monitoring well sampling consisted of three main steps:

1. Measurement of SWL;
2. Well purging and monitoring for field parameter stabilization; and
3. Water quality sample collection.

Before collection of samples or removal/introduction of any equipment into the well, the SWL was measured and recorded on the sampling field forms. Next, submersible pumps, either a 12-volt submersible pump for shallower wells or a 2-inch Grundfos or Geotech submersible pump for deeper wells, fitted to dedicated high density polyethylene (HDPE) tubing installed in each monitoring well were utilized for well purging and sampling. Purging was conducted using the standard purge method of removing three to five well volumes while routinely monitoring field parameters (pH, DO, temperature, SC, turbidity, and oxidation-reduction potential (ORP)) using a flow-through cell. Following removal of the first well volume, field measurements were collected at regular time intervals during purging of the second and third well volumes, based on the purge rate and required purge volume. A minimum of five sets of field parameter measurements were collected during well purging to monitor stabilization of field parameters. All purge water was contained and transported to the Facility water treatment plant for treatment and discharge, or stored on site for future offsite disposal after removal of the water treatment plant in mid-2016.

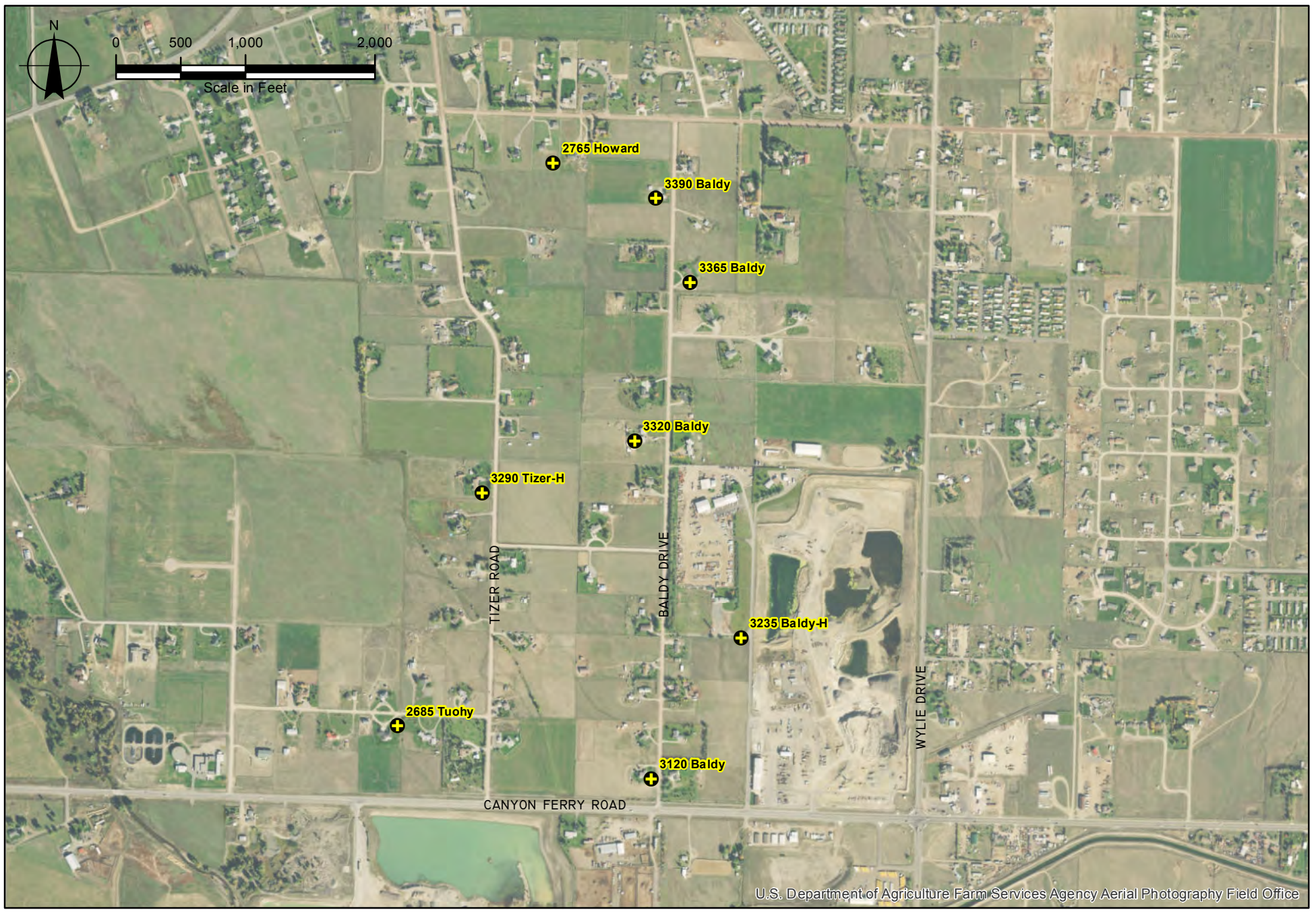
Samples for laboratory analysis were collected after one of the following purge conditions was met:

- A minimum of three well volumes has been removed, and three successive field parameter measurements agree to within the stability criteria given below.

Table 2-6. 2015/16 Residential/Public Water Supply Well Semiannual Sampling Schedule
East Helena Facility

			Sampling Schedule	
Map Key (see Exhibit 1)	**Northing**	**Easting**	**2015**	**2016**
1	863237.91	1360019.06	X	Well Abandoned
2	863270.75	1359501.67	X	Well Abandoned
3	862873.52	1360767.10	X	Well Abandoned
4	863425.39	1359501.01	X	X
5	863266.68	1359337.84	X	X
6	863296.03	1360955.74	X	X
7	863250.07	1359185.43	X	Well Abandoned
8	863263.27	1359031.01	X	Well Abandoned
9	863053.71	1361184.11	X	X
10	864206.53	1358674.56	X	X
11	866156.57	1356934.48	X	X
12A				
12B	872346.42	1354330.00	X	X
13A				
13B	872391.53	1354773.24	X	X
14	872086.41	1355030.70	X	X
15	863256.45	1359904.15	X	Well Abandoned
16	863376.30	1361815.27	X	X
17	863250.07	1358456.08	X	Pump Inoperative
18	863255.39	1358240.44	X	X
19	861502.42	1362101.41	X	X
20	863671.87	1362422.81	X	Pump Inoperative
21	855347.37	1359909.48	X	X
22	863233.58	1359840.14	X	Abandonment Scheduled
23	861784.41	1356574.41	X	X
24	861925.29	1356400.09	X	X
25	861781.59	1356290.54	X	X
26	863256.45	1359757.14	X	Well Abandoned
27	872558.37	1356681.06	X	X
28	871444.75	1356882.84	X	X
29	868437.60	1356673.10	X	X
No. Wells Sampled			**29**	**19**

Well locations shown on Exhibit 1.





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2015-2016 WATER RESOURCES MONITORING REPORT EAST HELENA FACILITY	**SEAVER PARK AND CANYON FERRY ROAD AREA RESIDENTIAL WELLS SAMPLED IN JUNE 2016**	FIGURE **2-2**

- At least five well volumes have been removed although field parameter stabilization criteria have not been met.
- The well has been pumped dry and allowed to recover sufficiently such that adequate sample volumes for rinsing equipment and collecting samples can be removed.

Criteria for field parameter stabilization include:

Parameter (Units)	Stability Criteria
pH (standard units)	±0.1 pH unit
Water temperature (°C)	±0.2°C
Specific conductance (µmhos/cm)	±5% (SC ≤100 µmhos/cm) ±3% (SC >100 µmhos/cm)
Dissolved oxygen (mg/L)	±0.3 mg/L
Turbidity (NTU)	±10% (turbidity 10-100 NTU), or 3 consecutive readings <10 NTU

NOTES:
Stability criteria obtained from USGS *National Field Manual for the Collection of Water Quality Data: Chapter A4, Collection of Water Samples* (September 1999). Turbidity criteria modified for low turbidity (<10 NTU) samples.
µmhos/cm = micromhos/centimeter
NTU = nephelometric turbidity units

Following well purging, final field parameter measurements were collected and recorded, and groundwater quality samples were obtained by filling sample bottles directly from a sampling port upstream of the flow-through cell. Samples for dissolved metals analyses (including trace metals and the common cations calcium, magnesium, sodium, and potassium) were filtered through a 0.45-micrometer (µm) filter before preservation. Samples for common anions (sulfate, chloride, bicarbonate) and other constituents were not filtered. Collection of water samples from residential/public water supply wells followed the same general sequence as that for monitoring wells, although these wells are equipped with permanent pumps.

Following sample collection, samples were preserved as appropriate, and stored on ice in coolers at approximately 4±2°C for storage and transport. Groundwater quality sample container and preservation requirements are specified in the project QAPP (Hydrometrics, 2015b) and the annual CAMPs. All groundwater quality sampling information, including sample sites, sample numbers, date and time of sample collection, field parameter stabilization and final measurements, SWL measurements and other notes and observations, was documented in a dedicated project field notebook and on standard field forms. Groundwater sampling equipment reused between monitoring locations (flow-through cell, sampling pumps, non-dedicated tubing) was thoroughly decontaminated between uses per the project QAPP and CAMPs.

Field QC samples collected as part of groundwater monitoring program included DI blanks, equipment rinsate blanks (to evaluate the effectiveness of the decontamination procedure), and field duplicate samples, all collected at a minimum frequency of 1 per 20 field samples or 1 per day (whichever was greater) for monitoring wells, and 1 per 20 total for residential wells. DI blanks consisted of DI water placed directly from storage containers into sample containers and preserved. Equipment rinsate blanks consisted of DI water processed through decontaminated sampling equipment (including filtration equipment as appropriate), collected into sample bottles and preserved. Field duplicate samples consisted of replicate samples from a single sampling location submitted to the laboratory for the same set of analyses.

2.2.3 Groundwater Field Measurements and Analytical Parameters

Groundwater quality samples were analyzed for the parameters shown in Table 2-7, including field analysis of pH, SC, DO, turbidity, ORP, and water temperature, laboratory analysis of common constituents and dissolved metals at all sites, and arsenic and/or selenium speciation at selected sites in 2015 (Table 2-4). Laboratory analysis was conducted by Energy Laboratories in Helena, Montana. All groundwater data collected under the 2015/16 CAMPs has been entered into the project database and validated for data quality and usability. The validated database is included in Appendix A.

2.3 2015 – 2016 DATA MANAGEMENT AND QUALITY CONTROL

Procedures for data review, validation, and reporting are presented and discussed in the East Helena QAPP (Hydrometrics, 2015b), the DMP (Hydrometrics, 2011), and the 2015 and 2016 CAMPs, including control limits and criteria for specific types of field and laboratory QC samples, data validation and verification methods, potential corrective actions if criteria are not met, and database management procedures. The DMP includes checklists for review of both field and laboratory documentation (prior to formal validation of laboratory data), and post-validation review and approval of the East Helena database (Hydrometrics, 2011).

Analytical data deliverables for 2015/16 and accompanying QC information was reviewed for overall completeness of the data packages. Completeness checks were administered on all data to verify that deliverables specified in the project planning documents were present. Deliverables included field notes and/or forms, transmittal information, sample chain-of-custody forms, analytical results, methods and practical quantification limits (PQL), and laboratory QC summaries.

The number and type of samples collected was compared to project specifications to ensure conformance with the sampling process design. Review of sample collection and handling procedures included verification of the following:

- Completeness of submittal packages;
- Completeness of field documentation, including chain-of-custody documentation;
- Field equipment calibration and maintenance and/or quality of field measurements; and
- Adherence to proper sample collection procedures.

Table 2-7. 2015/16 Groundwater Sample Analytical Parameter List -- East Helena Facility

Parameter	Analytical Method [1]	Project Required Detection Limit (mg/L)	Montana Groundwater Human Health Standards (mg/L)[2]
Physical Parameters			
pH	150.2/SM 4500H-B	0.1 s.u.	NA
Specific Conductance	120.1/SM 2510B	1 µmhos/cm	NA
TDS	SM 2540C	10	NA
TSS	SM 2540D	10	NA
Common Ions			
Alkalinity	SM 2320B	1	NA
Bicarbonate	SM 2320B	1	NA
Sulfate	300.0	1	NA
Chloride	300.0/SM 4500CL-B	1	NA
Bromide	300.0	0.05	NA
Calcium	215.1/200.7	5	NA
Magnesium	242.1/200.7	5	NA
Sodium	273.1/200.7	5	NA
Potassium	258.1/200.7	5	NA
Trace Constituents (Total and/or Dissolved) [3][4]			
Antimony (Sb)	200.7/200.8	0.003	0.006
Arsenic (As)	200.8/SM 3114B	0.002	0.01
Beryllium (Be)	200.7/200.8	0.001	0.004
Cadmium (Cd)	200.7/200.8	0.001	0.005
Chromium (Cr)	200.7/200.8	0.001	0.1
Copper (Cu)	200.7/200.8	0.001	1.3
Iron (Fe)	200.7/200.8	0.02	NA
Lead (Pb)	200.7/200.8	0.005	0.015
Manganese (Mn)	200.7/200.8	0.01	NA
Mercury (Hg)	245.2/245.1/200.8/SM 3112B	0.001	0.002
Nickel (Ni)	200.7/200.8	0.01	0.1
Selenium (Se)	200.7/200.8/SM 3114B	0.001	0.05
Thallium (Tl)	200.7/200.8	0.001	0.002
Zinc (Zn)	200.7/200.8	0.01	2
Field Parameters [5]			
Static Water Level	HF-SOP-10	0.01 ft	NA
Water Temperature	HF-SOP-20	0.1 °C	NA
Dissolved Oxygen (DO)	HF-SOP-22	0.01 mg/L	NA
pH	HF-SOP-20	0.01 pH standard unit	NA
Turbidity		0.1 NTU	NA
ORP/Eh	HF-SOP-23	1 mV	NA
Specific Conductance (SC)	HF-SOP-79	1 µmhos/cm	NA

Notes:

(1) Analytical methods are from *Standard Methods for the Examination of Water and Wastewater* (SM) or EPA's *Methods for Chemical Analysis of Water and Waste* (1983).

(2) Standards from Montana Circular DEQ-7 (October 4, 2012 Version). NA = not applicable (no human health standard).

(3) Residential/water supply well samples will be analyzed for both total and dissolved trace constituents; monitoring well samples will be analyzed for dissolved metals only.

(4) Samples to be analyzed for dissolved constituents will be field-filtered through a 0.45 µm filter.

(5) Field parameters to be measured in a flow cell in accordance with project SOPs.

All 2015/16 WRM data was reviewed for completeness of deliverables, and adherence to the sampling and analytical protocols prescribed in the CAMPs and the project QAPP (Hydrometrics, 2015a). Data validation included a detailed review of all analytical results, including:

- Reporting limits and PQLs vs. Project Required Detection Limits (PRDLs);
- Holding times;
- Analytical methods;
- Field QC sample results; and
- Laboratory QC sample results.

Data qualifiers were applied to any analytical results associated with QC exceedances, as outlined in the QAPP. Data verification and validation results were summarized in Data Validation reports prepared following each of the CAMP monitoring events. All project data has been archived in hard copy format, and has also been imported to and stored in the electronic project database software, along with associated data qualifiers. Following completion of each sampling event and validation of the associated data, the updated project database was distributed to the project technical team including individuals from the State of Montana and the Lewis and Clark County Public Health Department.

3.0 2015/16 WATER RESOURCES MONITORING RESULTS

As described in Section 2, the 2015/16 CAMP programs included seasonal surface water and groundwater monitoring throughout the project area. This section presents the 2015/16 CAMP monitoring results. Discussion and interpretation of the 2015/16 groundwater data, with emphasis on the performance evaluation metrics outlined in the 2016 CAMP, is presented in Section 4.

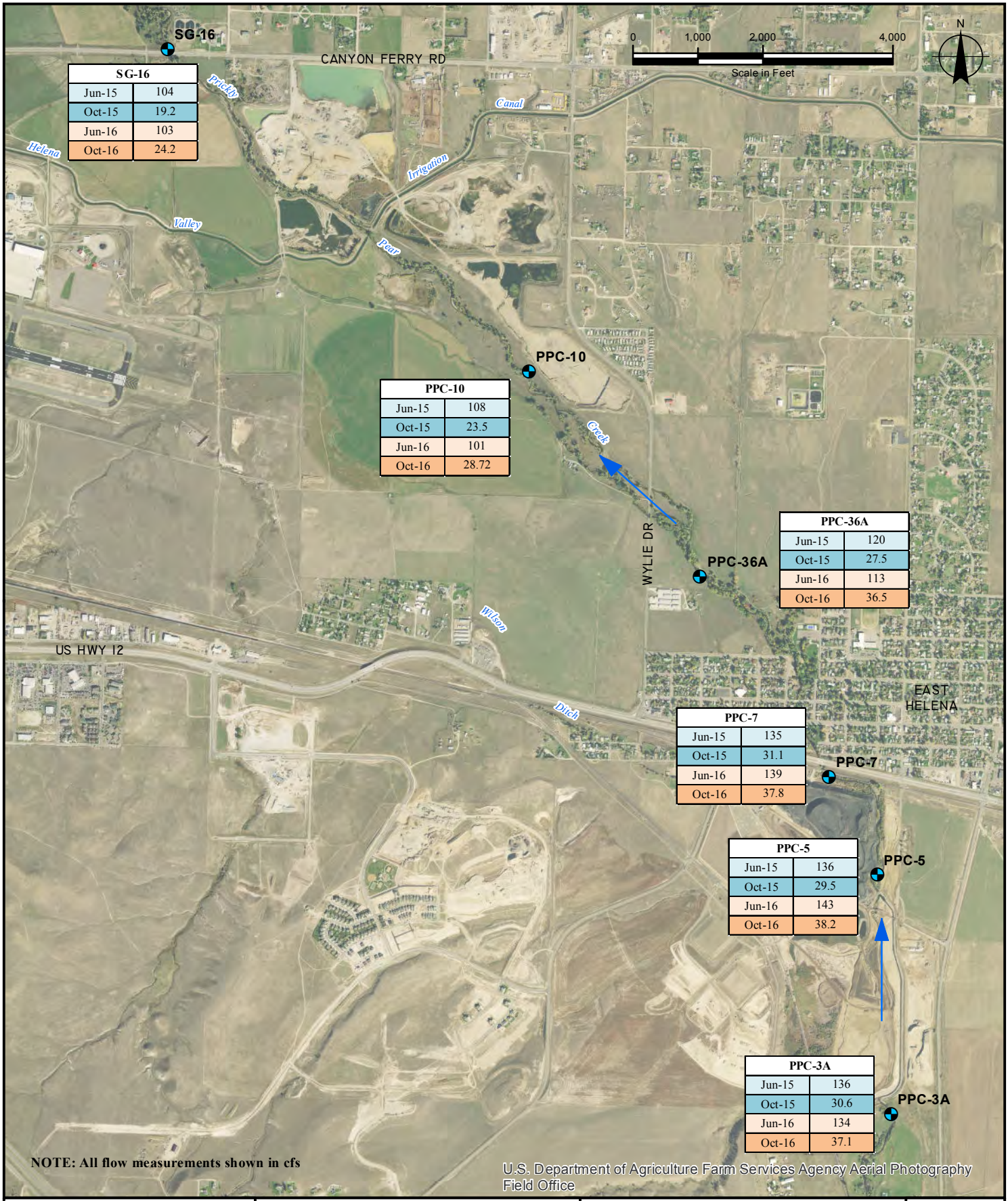
3.1 SURFACE WATER MONITORING RESULTS

The 2015/16 surface water monitoring programs included measurement of surface water elevations, streamflow rates, and surface water quality sampling (Section 2.1). The surface water elevation data (Appendix C) was used in conjunction with the monthly groundwater elevation monitoring to develop site-wide groundwater potentiometric maps and evaluate groundwater flow directions and groundwater/surface water interactions (Section 3.2). The streamflow and water quality data was used to delineate gaining and losing segments of Prickly Pear Creek, and document current water quality conditions in the project area.

3.1.1 Surface Water Elevation and Flow

The 2015/16 June and October Prickly Pear Creek streamflow data is shown on Figure 3-1 and listed in Table 3-1, with individual streamflow measurement forms included in Appendix C. Similar to past years, the 2015/16 data indicates that Prickly Pear Creek flow is relatively unchanged (no significant flow gains or losses) under both high flow (June) and low flow (October) adjacent to the Facility. This is consistent with previous flow data (GSI, 2014), suggesting there is minimal interaction between Prickly Pear Creek and the local groundwater system adjacent to the Facility. Downstream of the Facility however, flow rates consistently decrease in a downstream direction indicating leakage from the creek to groundwater. For example, accounting for irrigation diversions, streamflow decreased by a total of 9.25 cubic feet per second (cfs) in June 2015 and 11.7 cfs in October 2015 between sites PPC-7 near Highway 12 and SG-16 near Canyon Ferry Road (Figure 3-1). Based on an approximate distance of 16,000 feet, this equates to an average leakage rate of 0.26 to 0.33 gallons per minute (gpm) per foot of channel. In 2016, the June and October leakage rates were 22 and 13.6 cfs, or 0.62 and 0.38 gpm/foot, respectively.

Surface water elevations, or stage, were surveyed monthly from spring through fall in 2015 and 2016 using a survey grade GPS instrument (Section 2.1). The seasonal range in stage at each site is summarized in Table 3-2, with the complete dataset included in Appendix C. The surface water stage data was used in conjunction with monthly groundwater level data (Section 2.2) to produce site-wide potentiometric maps of the project area (Section 3.2).



SG-16	
Jun-15	104
Oct-15	19.2
Jun-16	103
Oct-16	24.2

PPC-10	
Jun-15	108
Oct-15	23.5
Jun-16	101
Oct-16	28.72

PPC-36A	
Jun-15	120
Oct-15	27.5
Jun-16	113
Oct-16	36.5

PPC-7	
Jun-15	135
Oct-15	31.1
Jun-16	139
Oct-16	37.8

PPC-5	
Jun-15	136
Oct-15	29.5
Jun-16	143
Oct-16	38.2

PPC-3A	
Jun-15	136
Oct-15	30.6
Jun-16	134
Oct-16	37.1

NOTE: All flow measurements shown in cfs

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2015-2016 WATER RESOURCES MONITORING REPORT
EAST HELENA FACILITY

2015-2016 PRICKLY PEAR CREEK SURFACE WATER FLOW MEASUREMENTS

FIGURE

3-1

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Table 3-1. 2015/16 Prickly Pear Creek Seasonal Streamflow Measurements

2015 Creek Flows

Monitoring Site	Location	June 12, 2015 Flows - cfs				October 14, 2015 Flows - cfs			
		Flow	Stream Leakage			Flow	Stream Leakage		
PPC-3A	Upstream of Facility	136	-1.0			30.6	0.5		
PPC-5	Adjacent to Facility	136				29.5			
PPC-7	Downstream Facility Boundary	135		-5.25	-9.25	31.1		-7.6	-11.7
Company Ditch	*0.6 miles downstream of Facility*	*-14.25*				*0*			
PPC-36A	0.7 miles downstream of Facility	120				27.5			
Browns Ditch	*1.2 miles downstream of Facility*	*-7.5*				*0*			
PPC-10	1.5 miles downstream of Facility	108				23.5			
SG-16	2.9 miles downstream of Facility	104				19.2			

2016 Creek Flows

Monitoring Site	Location	June 7, 2016 Flows - cfs				October 7, 2016 Flows - cfs			
		Flow	Stream Leakage			Flow	Stream Leakage		
PPC-3A	Upstream of Facility	134	5			37.1	0.7		
PPC-5	Adjacent to Facility	143				38.2			
PPC-7	Downstream Facility Boundary	139		-24.0	-22.0	37.8		-9.08	-13.6
Company Ditch	*0.6 miles downstream of Facility*	*-10.8*				*0*			
PPC-36A	0.7 miles downstream of Facility	113				36.5			
Browns Ditch	*1.2 miles downstream of Facility*	*-3.2*				*0*			
PPC-10	1.5 miles downstream of Facility	101				28.72			
SG-16	2.9 miles downstream of Facility	103				24.2			

cfs - cubic feet per second.

Sites listed in upstream to downstream order; locations shown on Figure 2-1.

Ditch sites are diversion points.

Table 3-2. Summary of 2015/16 Monthly Surface Water Elevation Surveys -- East Helena Facility

Site	Description	2015 Stage Measurements				2016 Stage Measurements			
		n	Min	Max	Mean	n	Min	Max	Mean
PPC-3A	Prickly Pear Creek	8	3927.09	3928.02	3927.39	7	3926.95	3927.94	3927.39
PPCB-1	Prickly Pear Creek Bypass Channel	8	3907.08	3908.03	3907.37	5	3907.37	3908.15	3907.68
Trib-1	Spring fed tributary to PP Creek	3	3917.7	3918.34	3918.12	6	3917.35	3918.1	3917.70
SG-05	Former Upper Lake discharge to PP Creek	5	3906.65	3910.45	3909.06	NM	NM	NM	NM
Lower Lake	Former smelter process pond	8	3910.1	3911.68	3910.62	7	3904.17	3911.01	3907.19
Former PPC-BD	Prickly Pear Creek	8	3904.86	3905.35	3905.15	3	3904.15	3905.3	3904.68
PPC-5	Prickly Pear Creek	8	3898.41	3900.56	3899.58	6	3900.2	3901.08	3900.58
PPC-7	Prickly Pear Creek	8	3881.93	3882.64	3882.20	7	3881.83	3882.79	3882.24
PPC-8	Prickly Pear Creek	8	3867.26	3868.01	3867.64	6	3867.72	3868.45	3867.97
PPC-36A	Prickly Pear Creek	8	3854.66	3855.25	3854.88	7	3854.56	3855.38	3854.92
PPC-9A	Prickly Pear Creek	8	3842.59	3845.5	3844.04	6	3845.15	3845.88	3845.46
PPC-10	Prickly Pear Creek	8	3819.75	3822.76	3821.11	7	3817.35	3821.26	3818.60
SG-16	Prickly Pear Creek	8	3765.14	3766.38	3765.95	7	3765.7	3766.77	3766.15
HVIC-1	Helena Valley Irrigation Canal	6	3797.3	3800.19	3799.40	4	3799.36	3800.34	3799.87
GP-1	Gravel Pit north of former smelter	8	3792.69	3797.75	3794.74	6	3792.59	3795.29	3793.71
GP-2	Gravel Pit north of former smelter	8	3787.51	3789.01	3788.39	6	3787.72	3788.5	3788.02
GP-3	Gravel Pit north of former smelter	8	3761.15	3764.68	3762.68	6	3758.62	3763.67	3762.07
GP-4	Gravel Pit north of former smelter	8	3781.48	3787.04	3784.40	6	3782.96	3787.19	3784.76
GP-5	Gravel Pit north of former smelter	8	3799.87	3800.68	3800.36	7	3800.13	3800.37	3800.25
GP-5A	Gravel Pit north of former smelter	8	3806.89	3814.28	3810.92	6	3810.49	3814.32	3811.40

n = number of measurements
NM = not measured (site removed during construction)
Site locations shown on Figure 2-1.
Prickly Pear Creek sites shown in upstream to downstream order.
Complete data included in Appendix C.

3.1.2 Surface Water Quality Results

The 2015/16 semi-annual surface water quality data is presented in Tables 3-3, 3-4, 3-5, and 3-6. The seasonal data shows Prickly Pear Creek water to be a calcium-bicarbonate type water with alkaline pH, and total dissolved solids (TDS) concentrations ranging from approximately 100 to 200 mg/L seasonally, with higher TDS concentrations occurring under fall low flow conditions. Major ion constituent concentrations are very consistent from upstream of the smelter site (site PPC-3A) to downstream site SG-16 near Canyon Ferry Road. For example, calcium concentrations in the creek ranged from 18 to 19 mg/L in June 2015, and from 34 to 36 mg/L in October 2015, were all 15 mg/L in June 2016, and ranged from 28 to 29 mg/L in October 2016. Similarly, observed sulfate concentration ranges were 17 mg/L (all sites) in June 2015, 53 to 56 mg/L in October 2015, 18 to 19 mg/L in June 2016, and 38 to 39 mg/L in October 2016.

Total recoverable trace metal concentrations are also relatively low and consistent throughout the sampled reach of Prickly Pear Creek (Tables 3-3 through 3-6). A number of trace metals including beryllium, chromium, nickel, selenium, and thallium were below the laboratory reporting limits in all 2015/16 samples. All antimony concentrations were also below the reporting limit (<0.0005 mg/L), with the exception of two values in October 2016 reported at a concentration equivalent to the reporting limit. Water quality criterion exceedances (DEQ-7 surface water standards) observed in Prickly Pear Creek samples in 2015/16 included the following:

- June 2015: 8 of 8 cadmium and lead results and 3 of 8 copper results exceeded criteria, with the highest concentrations reported at downstream site SG-16;
- October 2015: no exceedances observed;
- June 2016: 8 of 8 cadmium and lead results exceeded criteria, with the highest concentrations reported at downstream site SG-16; and
- October 2016: 4 of 7 cadmium results, 2 of 7 iron results, and 6 of 7 lead results exceeded criteria, with the highest concentrations reported at site PPC-5.

All of the Prickly Pear Creek water quality exceedances noted above occurred upstream of the Facility as well as downstream, indicating the contaminant sources responsible for the exceedances are located upstream. The occurrence of elevated metals concentrations far upstream of the Facility has been noted in numerous studies, including the watershed total maximum daily load (TMDL) document (USEPA, 2004b), and is attributed to historic mining activities.

3.2 GROUNDWATER MONITORING RESULTS

The 2015/16 CAMP groundwater monitoring programs included groundwater level and water quality monitoring (Section 2.2). Program results are presented below.

Table 3-3. June 2015 Surface Water Quality Monitoring Results -- East Helena Facility

			Field Parameters					General Chemistry					Major Ions						
Station ID	**Sample Date**	**Water Elevation (ft)**	**pH (s.u.)**	**SC (µmhos/cm)**	**Diss O_2 (mg/L)**	**Water Temp (°C)**	**Flow (cfs)**	**Lab pH (s.u.)**	**Lab SC (µmhos/cm)**	**Total Alkalinity as CaCO3**	**Total Suspended Solids**	**Total Dissolved Solids**	**Calcium**	**Magnesium**	**Sodium**	**Potassium**	**Bicarbonate**	**Chloride**	**Sulfate**
Prickly Pear Creek Mainstem Sites																			
PPC-3A	6/12/2015	3928.02	7.55	158	8.65	13.8	136	7.9	161	52	15	112	18	4	6	2	63	2	17
PPCB-1	6/12/2015	3908.03	7.48	158	8.75	13.7	NM	7.9	161	52	16	112	19	4	6	2	63	2	17
PPC-5	6/12/2015	3899.57	7.47	158	8.89	13.6	136	7.9	161	52	15	110	18	4	6	2	62	2	17
PPC-7	6/12/2015	3882.64	7.45	156	8.63	13.4	135	7.9	162	52	14	111	19	4	6	2	63	2	17
PPC-36A	6/12/2015	3855.25	7.29	158	8.96	13.2	120	7.8	162	52	16	116	18	4	6	2	63	2	17
PPC-36A (Dup)	6/12/2015	3855.25	7.28	158	8.98	13.2	120	7.9	162	51	17	112	18	4	6	2	62	2	17
PPC-10	6/12/2015	3822.76	7.21	159	8.94	13.2	108	7.9	163	52	18	115	18	4	7	2	63	2	17
SG-16	6/12/2015	3766.38	6.6	157	8.78	13.1	104	7.9	162	52	18	109	18	4	6	2	63	2	17
Other Surface Water Sites																			
Former PPC-BD	6/12/2015	3905.3	6.9	1020	8.38	19.6	0.022	7.4	1030	140	10 U	767	122	26	47	6	170	7	394
GP-5	6/12/2015	3800.68	No Water Quality Sample Collected				2.0	No Water Quality Sample Collected											
LOWER LAKE	6/12/2015	3910.31	7.67	1246	8.44	22.7	POND	8.2	1260	74	10 U	959	148	34	67	10	90	10	566
LOWER LAKE (Dup)	6/12/2015	3910.31	7.69	1247	8.46	22.7	POND	8.2	1260	74	10 U	952	149	34	67	10	89	11	569
SG-05	6/12/2015	3910.39	6.91	1034	5.42	19.7	0.015	6.8	1040	110	42	769	135	30	19	6	140	6	429
Trib-1	6/12/2015	3918.31	7.95	478	5.16	19.9	0.08	7.9	471	180	11	298	57	13	24	4	210	6	47

		Total Recoverable Metals													
Station ID	**Sample Date**	**Antimony**	**Arsenic**	**Beryllium**	**Cadmium**	**Chromium**	**Copper**	**Iron**	**Lead**	**Manganese**	**Mercury**	**Nickel**	**Selenium**	**Thallium**	**Zinc**
Prickly Pear Creek Mainstem Sites															
PPC-3A	6/12/2015	0.0005 U	0.005	0.0008 U	0.00029	0.01 U	0.006	0.75	0.0095	0.07	0.000010	0.002 U	0.001 U	0.0002 U	0.06
PPCB-1	6/12/2015	0.0005 U	0.005	0.0008 U	0.00028	0.01 U	0.005	0.67	0.01	0.06	0.000013	0.002 U	0.001 U	0.0002 U	0.057
PPC-5	6/12/2015	0.0005 U	0.006	0.0008 U	0.00033	0.01 U	0.006	0.68	0.0101	0.07	0.000015	0.002 U	0.001 U	0.0002 U	0.059
PPC-7	6/12/2015	0.0005 U	0.006	0.0008 U	0.00039	0.01 U	0.006	0.71	0.0105	0.07	0.000012	0.002 U	0.001 U	0.0002 U	0.066
PPC-36A	6/12/2015	0.0005 U	0.006	0.0008 U	0.00033	0.01 U	0.007	0.74	0.0109	0.07	0.000015	0.002 U	0.001 U	0.0002 U	0.063
PPC-36A (Dup)	6/12/2015	0.0005 U	0.006	0.0008 U	0.00033	0.01 U	0.006	0.73	0.011	0.07	0.000017	0.002 U	0.001 U	0.0002 U	0.062
PPC-10	6/12/2015	0.0005 U	0.006	0.0008 U	0.00036	0.01 U	0.007	0.85	0.0116	0.07	0.000015	0.002 U	0.001 U	0.0002 U	0.068
SG-16	6/12/2015	0.0005 U	0.006	0.0008 U	0.00041	0.01 U	0.008	0.88	0.015	0.08	0.000019	0.002 U	0.001 U	0.0002 U	0.077
Other Surface Water Sites															
Former PPC-BD	6/12/2015	0.0019	0.059	0.0008 U	0.0123	0.01 U	0.003	2.07	0.0024	8.83	0.000013	0.003	0.001 U	0.0034	0.742
GP-5	6/12/2015	No Water Quality Sample Collected													
LOWER LAKE	6/12/2015	0.0242	0.032	0.0008 U	0.0066	0.01 U	0.016	0.22	0.0167	0.12	0.0003	0.002 U	0.006	0.023	0.035
LOWER LAKE (Dup)	6/12/2015	0.024	0.033	0.0008 U	0.00664	0.01 U	0.016	0.2	0.0169	0.12	0.000097	0.002 U	0.006	0.0236	0.035
SG-05	6/12/2015	0.0005 U	0.013	0.0008 U	0.0141	0.01 U	0.005	22.5	0.0044	16.8	0.00011	0.003	0.001 U	0.0004	0.753
Trib-1	6/12/2015	0.0013	0.02	0.0008 U	0.0004	0.01 U	0.003	0.25	0.0239	0.11	0.000078	0.002 U	0.001 U	0.0002 U	0.01

NOTES: All concentrations in mg/L except as indicated.
U = below laboratory reporting limit (associated value).
Value exceeds DEQ-7 water quality criterion.

Table 3-4. October 2015 Surface Water Quality Monitoring Results -- East Helena Facility

			Field Parameters					General Chemistry					Major Ions						
Station ID	**Sample Date**	**Water Elevation (ft)**	**pH (s.u.)**	**SC (µmhos/cm)**	**Diss O_2 (mg/L)**	**Water Temp (°C)**	**Flow (cfs)**	**Lab pH (s.u.)**	**Lab SC (µmhos/cm)**	**Total Alkalinity as CaCO3**	**Total Suspended Solids**	**Total Dissolved Solids**	**Calcium**	**Magnesium**	**Sodium**	**Potassium**	**Bicarbonate**	**Chloride**	**Sulfate**
Prickly Pear Creek Mainstem Sites																			
PPC-3A	10/14/2015	3927.14	7.82	300	9.47	11.1	30.6	8.1	313	88	10 U	208	35	8	14	3	110	4	54
PPCB-1	10/14/2015	3907.22	7.9	300	9.94	11	31	8.2	314	90	10 U	210	36	8	14	3	110	4	56
PPC-5	10/14/2015	3900.12	7.81	293	9.93	10.3	29.5	8.1	315	89	10 U	210	34	8	14	3	110	4	54
PPC-5 (Dup)	10/14/2015	3900.12	7.81	293	9.94	10.3	29.5	8.2	314	89	10 U	203	36	8	14	3	110	4	53
PPC-7	10/14/2015	3881.99	7.8	307	9.9	9.7	31.1	8.2	317	89	10 U	208	34	8	15	3	110	4	54
PPC-36A	10/14/2015	3854.71	7.77	306	10.07	9.2	27.5	8.1	318	89	10 U	208	36	8	15	3	110	4	55
PPC-10	10/14/2015	3821.08	7.69	304	11.62	8.9	23.5	8.1	321	90	10 U	211	35	8	15	3	110	5	53
SG-16	10/14/2015	3765.99	7.48	305	10.24	8.7	19.2	8.1	319	90	10 U	211	36	8	15	3	110	5	54
Other Surface Water Sites																			
Former PPC-BD	10/14/2015	3905.20	7.49	882	8.11	11.3	0.056	7.4	955	110	10 U	695	115	24	45	8	130	8	359
GP-5	10/14/2015	3800.23	No Water Quality Sample Collected				0.95	No Water Quality Sample Collected											
LOWER LAKE	10/14/2015	3911.49	7.78	642	8.96	11.5	POND	8	667	110	10 U	465	84	18	25	6	140	6	210

		Total Recoverable Metals														Nutrients	
Station ID	**Sample Date**	**Antimony**	**Arsenic**	**Beryllium**	**Cadmium**	**Chromium**	**Copper**	**Iron**	**Lead**	**Manganese**	**Mercury**	**Nickel**	**Selenium**	**Thallium**	**Zinc**	**Ammonium as N**	**Nitrate + Nitrite as N**
Prickly Pear Creek Mainstem Sites																	
PPC-3A	10/14/2015	0.0005 U	0.004	0.0008 U	0.00014	0.01 U	0.002 U	0.13	0.0021	0.03	0.000005 U	0.002 U	0.001 U	0.0002 U	0.048		
PPCB-1	10/14/2015	0.0005 U	0.004	0.0008 U	0.00014	0.01 U	0.002 U	0.14	0.0021	0.03	0.000005 U	0.002 U	0.001 U	0.0002 U	0.048		
PPC-5	10/14/2015	0.0005 U	0.005	0.0008 U	0.00018	0.01 U	0.002 U	0.14	0.0026	0.04	0.000005 U	0.002 U	0.001 U	0.0002 U	0.05		
PPC-5 (Dup)	10/14/2015	0.0005 U	0.005	0.0008 U	0.00016	0.01 U	0.002 U	0.15	0.0025	0.04	0.000005 U	0.002 U	0.001 U	0.0002 U	0.05		
PPC-7	10/14/2015	0.0005 U	0.005	0.0008 U	0.0002	0.01 U	0.002 U	0.14	0.0027	0.04	0.000005 U	0.002 U	0.001 U	0.0002 U	0.055		
PPC-36A	10/14/2015	0.0005 U	0.005	0.0008 U	0.00018	0.01 U	0.002 U	0.14	0.0028	0.04	0.000005 U	0.002 U	0.001 U	0.0002 U	0.055		
PPC-10	10/14/2015	0.0005 U	0.006	0.0008 U	0.00023	0.01 U	0.002	0.21	0.0035	0.04	0.000005 U	0.002 U	0.001 U	0.0002 U	0.059		
SG-16	10/14/2015	0.0005 U	0.005	0.0008 U	0.00019	0.01 U	0.002	0.17	0.0029	0.03	0.000005 U	0.002 U	0.001 U	0.0002 U	0.055		
Other Surface Water Sites																	
Former PPC-BD	10/14/2015	0.0052	0.065	0.0008 U	0.0038	0.01 U	0.002 U	1.0	0.0022	3.72	0.000005 U	0.002	0.001 U	0.0036	0.378		
GP-5	10/14/2015	No Water Quality Sample Collected															
LOWER LAKE	10/14/2015	0.0159	0.018	0.0008 U	0.00323	0.01 U	0.008	0.45	0.0721	0.75	0.00008	0.002 U	0.002	0.002	0.072	0.07	0.04

NOTES: All concentrations in mg/L except as indicated.
U = below laboratory reporting limit (associated value)
Value exceeds DEQ-7 water quality criterion.

Table 3-5. June 2016 Surface Water Quality Monitoring Results -- East Helena Facility

			Field Parameters					General Chemistry					Major Ions							
Station ID	**Sample Date**	**Water Elevation (ft)**	**pH (s.u.)**	**SC (µmhos/cm)**	**Diss O_2 (mg/L)**	**Water Temp (°C)**	**Flow (cfs)**	**Lab pH (s.u.)**	**Lab SC (µmhos/cm)**	**Total Alkalinity as CaCO3**	**Total Suspended Solids**	**Total Dissolved Solids**	**Calcium**	**Magnesium**	**Sodium**	**Potassium**	**Bicarbonate**	**Chloride**	**Sulfate**	**Bromide**
Prickly Pear Creek Mainstem Sites																				
PPC-3A	6/7/2016	3927.92	7.89	131	9.26	16.3	134	8.0	134	41	10 U	98	15	3	5	1	50	1	18	0.05 U
PPCB-1	6/7/2016	3907.90	8.00	132	9.71	15.9	NM	8.0	135	42	11	103	15	3	5	1	51	1	19	0.05 U
PPC-5	6/7/2016	3901.08	7.83	128	9.71	16.1	143	8.0	134	42	12	99	15	3	5	1	51	1	18	0.05 U
PPC-7	6/7/2016	3882.79	7.86	130	9.58	16.0	139	8.0	135	41	11	95	15	3	6	2	50	1	18	0.05 U
PPC-36A	6/7/2016	3855.38	7.86	131	10.02	15.1	113	8.0	134	42	10	99	15	3	5	1	50	1	18	0.05 U
PPC-36A (Dup)	6/7/2016	3855.38	7.86	130	10.02	15.1	113	8.0	134	42	10	96	15	3	5	1	50	1	18	0.05 U
PPC-10	6/7/2016	3818.25	7.88	131	10.1	14.7	101	8.0	135	42	13	95	15	3	5	1	51	1	18	0.05 U
SG-16	6/7/2016	3766.66	7.71	130	10.03	14.1	103	8.0	136	42	12	109	15	3	5	1	51	2	18	0.05 U
Other Surface Water Sites																				
GP-5	6/7/2016	3800.36	7.45	155	8.03	9.7	1.65	No Water Quality Sample Collected												
LOWER LAKE	6/7/2016	3906.24	7.91	859	7.35	25.3	POND	8.0	867	97	35	664	110	22	35	8	120	8	363	0.09
Trib-1	6/7/2016	3917.81	7.82	413	4.25	26.0	0.015	7.9	411	150	13	267	41	12	24	4	190	5	49	0.05 U

		Total Recoverable Metals													
Station ID	**Sample Date**	**Antimony**	**Arsenic**	**Beryllium**	**Cadmium**	**Chromium**	**Copper**	**Iron**	**Lead**	**Manganese**	**Mercury**	**Nickel**	**Selenium**	**Thallium**	**Zinc**
Prickly Pear Creek Mainstem Sites															
PPC-3A	6/7/2016	0.0005 U	0.004	0.0008 U	0.00026	0.01 U	0.004	0.52	0.0061	0.05	0.000005	0.002 U	0.001 U	0.0002 U	0.048
PPCB-1	6/7/2016	0.0005 U	0.004	0.0008 U	0.00022	0.01 U	0.004	0.52	0.0063	0.05	0.000005	0.002 U	0.001 U	0.0002 U	0.046
PPC-5	6/7/2016	0.0005 U	0.004	0.0008 U	0.00024	0.01 U	0.004	0.51	0.0062	0.05	0.000006	0.002 U	0.001 U	0.0002 U	0.046
PPC-7	6/7/2016	0.0005 U	0.004	0.0008 U	0.00022	0.01 U	0.004	0.57	0.0067	0.05	0.000005	0.002 U	0.001 U	0.0002 U	0.048
PPC-36A	6/7/2016	0.0005 U	0.004	0.0008 U	0.00023	0.01 U	0.004	0.53	0.0071	0.05	0.000007	0.002 U	0.001 U	0.0002 U	0.049
PPC-36A (Dup)	6/7/2016	0.0005 U	0.004	0.0008 U	0.00024	0.01 U	0.004	0.54	0.0067	0.05	0.000007	0.002 U	0.001 U	0.0002 U	0.05
PPC-10	6/7/2016	0.0005 U	0.004	0.0008 U	0.00026	0.01 U	0.005	0.57	0.0073	0.05	0.000007	0.002 U	0.001 U	0.0002 U	0.049
SG-16	6/7/2016	0.0005 U	0.005	0.0008 U	0.00027	0.01 U	0.005	0.63	0.0089	0.05	0.000008	0.002 U	0.001 U	0.0002 U	0.055
Other Surface Water Sites															
GP-5	6/7/2016	No Water Quality Sample Collected													
LOWER LAKE	6/7/2016	0.0047	0.028	0.0008 U	0.00364	0.01 U	0.013	2.16	0.0259	0.89	0.00003	0.002 U	0.001	0.0033	0.064
Trib-1	6/7/2016	0.0028	0.035	0.0008 U	0.00087	0.01 U	0.004	0.92	0.0881	0.61	0.00009	0.002 U	0.001	0.0002 U	0.016

NOTES: All concentrations in mg/L except as indicated.
U = below laboratory reporting limit (associated value)
Value exceeds DEQ-7 water quality criterion.

Table 3-6. October 2016 Surface Water Quality Monitoring Results -- East Helena Facility

			Field Parameters					General Chemistry					Major Ions							
Station ID	**Sample Date**	**Water Elevation (ft)**	**pH (s.u.)**	**SC (µmhos/cm)**	**Diss O_2 (mg/L)**	**Water Temp (°C)**	**Flow (cfs)**	**Lab pH (s.u.)**	**Lab SC (µmhos/cm)**	**Total Alkalinity as CaCO3**	**Total Suspended Solids**	**Total Dissolved Solids**	**Calcium**	**Magnesium**	**Sodium**	**Potassium**	**Bicarbonate**	**Chloride**	**Sulfate**	**Bromide**
Prickly Pear Creek Mainstem Sites																				
PPC-3A	10/7/2016	NM	7.94	259	10.15	7.9	37.1	8.0	265	75	10 U	178	28	6	12	3	91	4	38	0.05 U
PPC-5	10/7/2016	NM	7.99	263	10.50	7.9	38.2	8.0	270	77	20	184	29	7	13	3	93	4	39	0.05 U
PPC-5 (Dup)	10/7/2016	NM	7.99	263	10.49	7.9	38.2	8.0	270	77	21	182	29	7	13	3	93	4	39	0.05 U
PPC-7	10/7/2016	NM	7.95	262	10.64	7.6	37.8	8.0	270	77	17	184	29	7	13	3	93	4	38	0.05 U
PPC-36A	10/7/2016	NM	7.98	264	10.34	7.3	36.5	8.0	271	76	12	186	28	7	13	3	92	4	39	0.05 U
PPC-10	10/7/2016	NM	7.61	265	10.94	7.0	28.7	8.1	274	77	10 U	185	29	7	14	3	93	4	39	0.05 U
SG-16	10/7/2016	NM	7.14	259	11.15	6.5	24.2	8.0	274	77	10 U	187	29	7	13	3	93	4	39	0.05 U
Other Surface Water Sites																				
GP-5	10/7/2016	NM	7.34	282	6.15	12.0	1.13	No Water Quality Sample Collected												
LOWER LAKE	10/7/2016	NM	7.97	1043	15.79	7.8	POND	8.1	1120	97	51	862	147	34	44	7	120	11	483	0.05 U
Trib-1	10/7/2016	NM	7.90	626	6.47	7.3	0.04	7.5	632	150	22	438	83	16	26	5	190	6	155	0.05 U

		Total Recoverable Metals													
Station ID	**Sample Date**	**Antimony**	**Arsenic**	**Beryllium**	**Cadmium**	**Chromium**	**Copper**	**Iron**	**Lead**	**Manganese**	**Mercury**	**Nickel**	**Selenium**	**Thallium**	**Zinc**
Prickly Pear Creek Mainstem Sites															
PPC-3A	10/7/2016	0.0005 U	0.004	0.0008 U	0.00012	0.01 U	0.002 U	0.19	0.0019	0.05 UJ	0.000005 U	0.002 U	0.001 U	0.0002 U	0.060
PPC-5	10/7/2016	0.0005	0.006	0.0008 U	0.00037	0.01 U	0.005	1.01	0.0117	0.09 UJ	0.000039	0.002 U	0.001 U	0.0002 U	0.057
PPC-5 (Dup)	10/7/2016	0.0005 U	0.007	0.0008 U	0.00038	0.01 U	0.005	1.04	0.0118	0.09 UJ	0.000038	0.002 U	0.001 U	0.0002 U	0.057
PPC-7	10/7/2016	0.0005	0.006	0.0008 U	0.00037	0.01 U	0.005	0.9	0.0102	0.08 UJ	0.000031	0.002 U	0.001 U	0.0002 U	0.057
PPC-36A	10/7/2016	0.0005 U	0.006	0.0008 U	0.00029	0.01 U	0.004	0.68	0.0075	0.07 UJ	0.000020	0.002 U	0.001 U	0.0002 U	0.052
PPC-10	10/7/2016	0.0005 U	0.005	0.0008 U	0.00018	0.01 U	0.003	0.3	0.0034	0.04 UJ	0.000008	0.002 U	0.001 U	0.0002 U	0.043
SG-16	10/7/2016	0.0005 U	0.005	0.0008 U	0.00016	0.01 U	0.003	0.28	0.0036	0.03 UJ	0.000009	0.002 U	0.001 U	0.0002 U	0.042
Other Surface Water Sites															
GP-5	10/7/2016	No Water Quality Sample Collected													
LOWER LAKE	10/7/2016	0.0047	0.017	0.0008 U	0.00102	0.01 U	0.012	1.52	0.0364	4.18	0.000048	0.002 U	0.001 U	0.0006	0.052
Trib-1	10/7/2016	0.0017	0.009	0.0008 U	0.00327	0.01 U	0.005	0.76	0.052	0.2	0.00017	0.002 U	0.001 U	0.0002 U	0.091

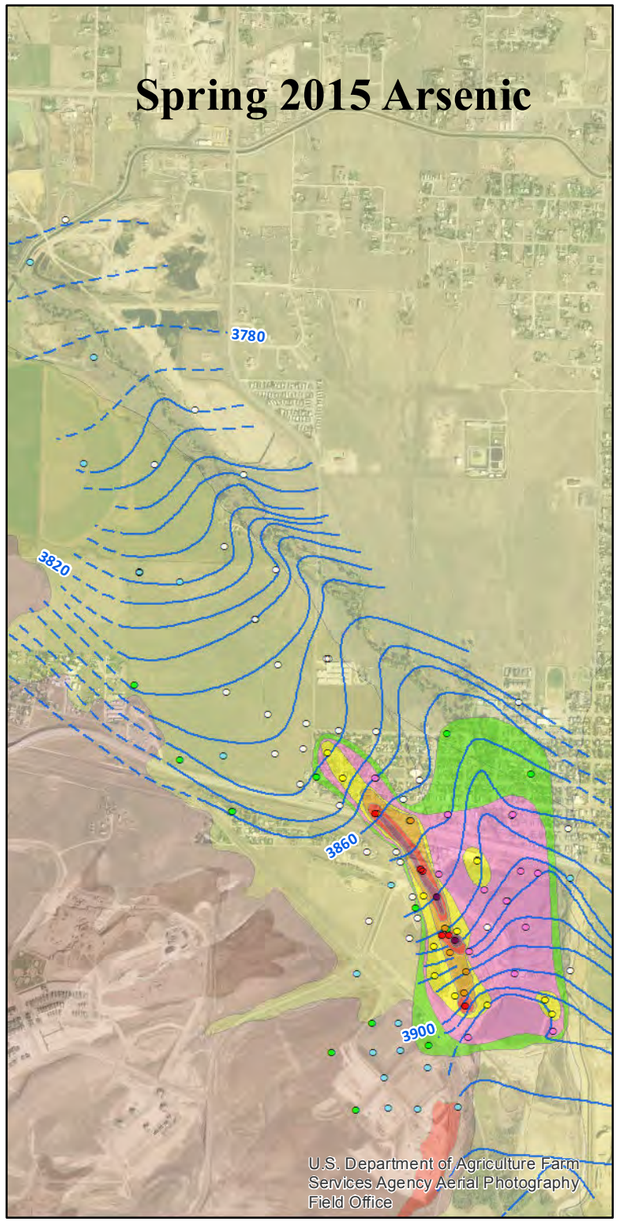
NOTES: All concentrations in mg/L except as indicated.
U = below laboratory reporting limit (associated value)
Value exceeds DEQ-7 water quality criterion.

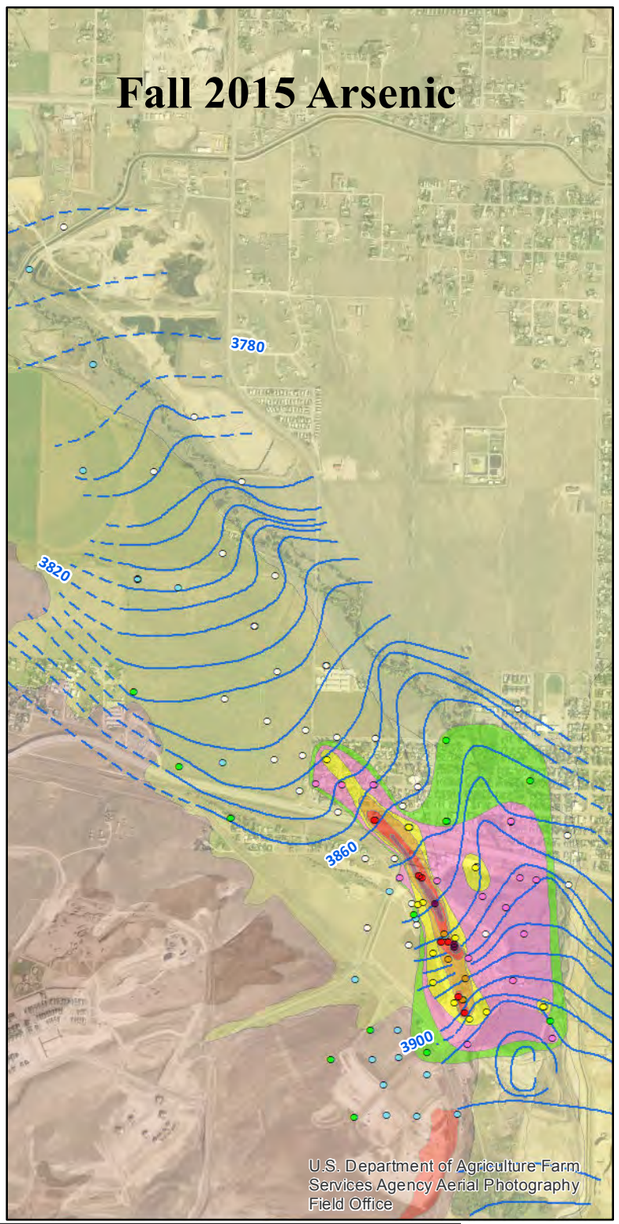
3.2.1 Groundwater Level Data

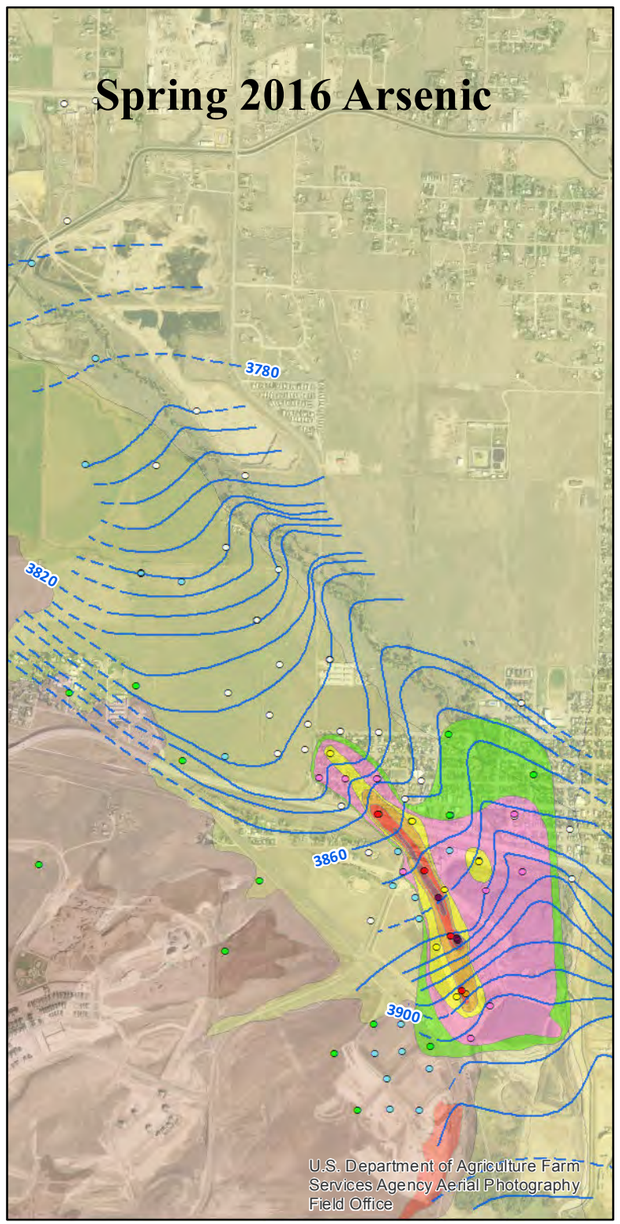
The CAMP groundwater level monitoring program in 2015/16 included monthly manual measurements at approximately 200 monitoring wells and continuous water level data collected at selected sites using pressure sensitive transducers and dataloggers. The wells included in the monthly measurement program are identified in Table 2-4 and shown on Exhibit 1, with the water level data included in Appendix D. As previously noted, groundwater levels on the Facility are of particular interest since groundwater flow through contaminated soils is the principal mechanism for contaminant loading to groundwater, and the SPHC IM is intended to lower groundwater levels and reduce contaminant leaching from soils. The monthly water level data provides a comprehensive accounting of water level trends on and around the Facility.

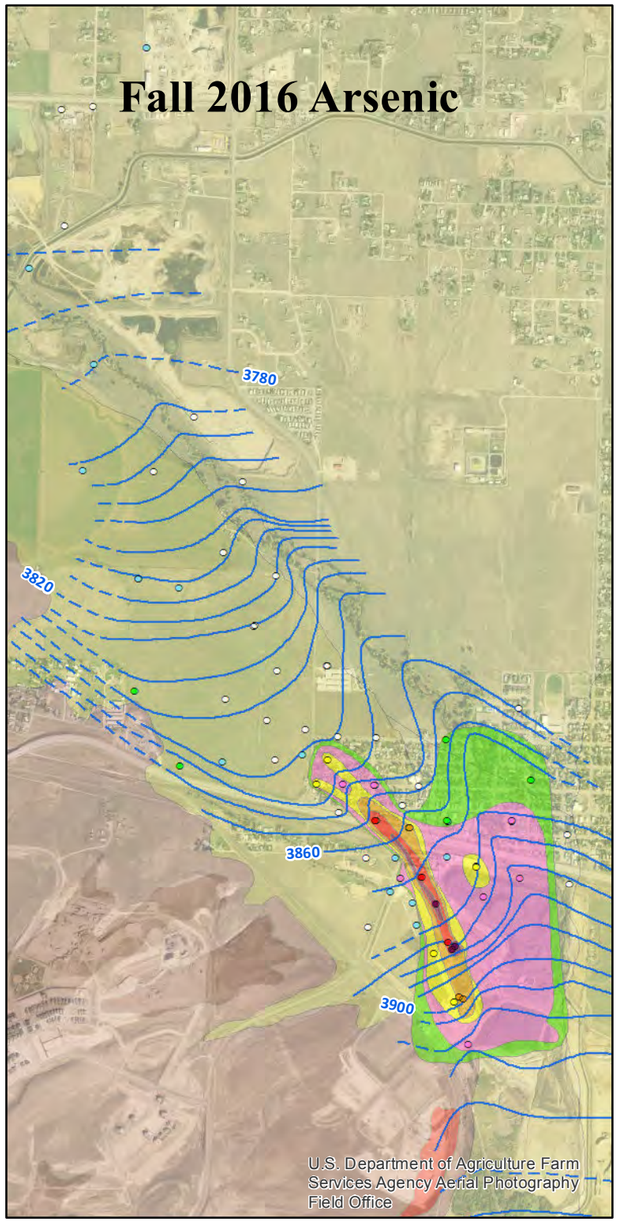
Overall, 2015/16 depths to groundwater in the project area range from less than 10 feet below ground surface (bgs) in the southern portion of the Facility and near Prickly Pear Creek, to as much as 50 feet bgs near and north of Canyon Ferry Road. The monthly water level data was used to develop seasonal (spring/fall) groundwater potentiometric maps for the local alluvial/colluvial aquifer. A groundwater potentiometric map is a contoured rendering of the groundwater or water table surface. Based on the shape of the contours, variations in groundwater depths and general flow directions can be ascertained. Figures 3-2 and 3-3 show the June and October 2015 and 2016 potentiometric maps for the project area, the local surficial geology, and the groundwater arsenic and selenium plumes. As shown on the figures, groundwater flow through the Facility and surrounding area is generally from the south through the Facility to the north/northwest. The strong influence of Prickly Pear Creek on groundwater flow is evident from the elevated groundwater ridge (groundwater divide) beneath the creek, and the groundwater flow direction paralleling the creek. Figure 3-3 also shows the influence of leakage from Prickly Pear Creek and associated groundwater divide on selenium transport through the alluvial aquifer, with the selenium plume paralleling the creek north of the Facility. Also evident on the potentiometric maps is the positive hydraulic gradient and groundwater flow pattern from the West Bench (and Seaver Park) towards the alluvial aquifer. The north/northeastward gradient from the Tertiary uplands toward the valley fill alluvial aquifer has been augmented by the significant water level declines in the alluvial system resulting from the SPHC, which helps constrain the westward migration of the selenium plume. The groundwater level trends and relevance to the East Helena groundwater remediation program are discussed further in Section 4.

In addition to the monthly manual measurements, a number of monitoring wells have been instrumented with automated transducers/data loggers for continuous water level (and temperature) monitoring since 2010. The list of instrumented wells is included in Table 2-5 and the transducer data hydrographs are included in Appendix D.









Legend

As Contours

- 0.011 - 0.100 mg/L
- 0.101 - 1.00 mg/L
- 1.01 - 5.00 mg/L
- 5.01 - 10.0 mg/L
- 10.1 - 20.0 mg/L
- > 20.0 mg/L

As Conc (mg/L)

- <0.002
- 0.002 - 0.010
- 0.011 - 0.100
- 0.101 - 1.0
- 1.01 - 5.0
- 5.01 - 10.0
- 10.01 - 20.0
- > 20.0

Surficial Geology

- Qac - Alluvium/Colluvium
- Qa - Alluvium
- Qt - Terrace Gravel
- QTg - Older Gravel
- OGts - Tuff and Tuffaceous Sediment
- Ys - Spokane Formation

Groundwater Potentiometric Contour

- 5-foot Contour
- 5-foot Contour (Inferred)

N

0 0.5 1

Scale in Miles

2015-2016 WATER RESOURCES MONITORING REPORT
EAST HELENA FACILITY

2015-2016 GROUNDWATER ARSENIC PLUMES AND POTENTIOMETRIC CONTOURS EAST HELENA FACILITY

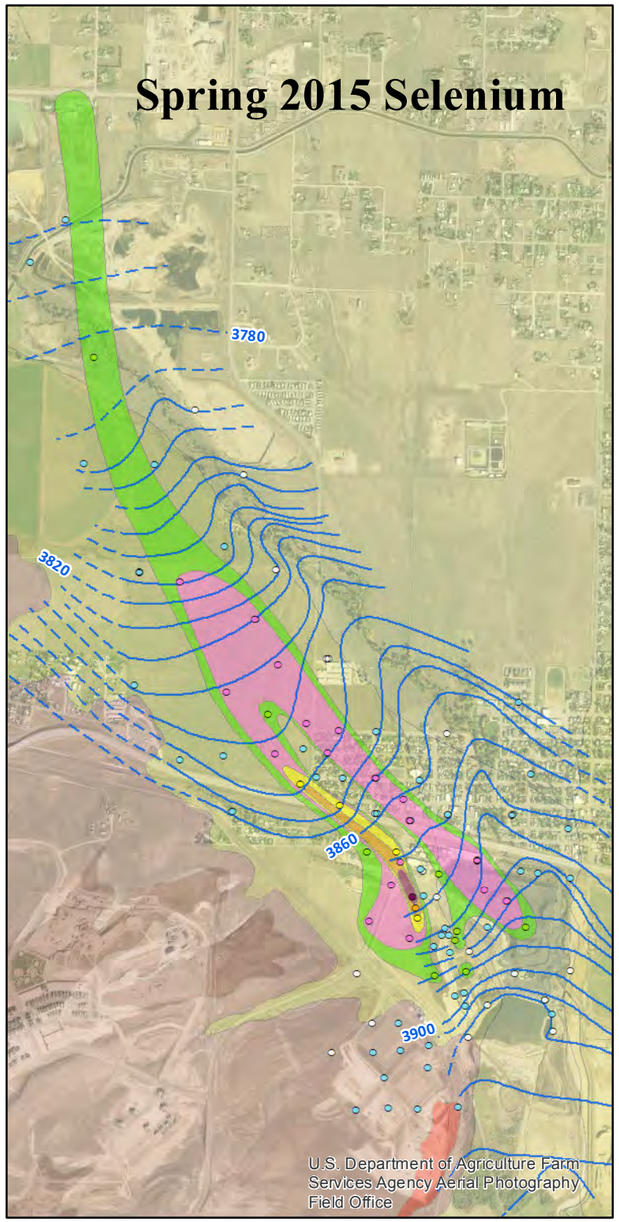
FIGURE

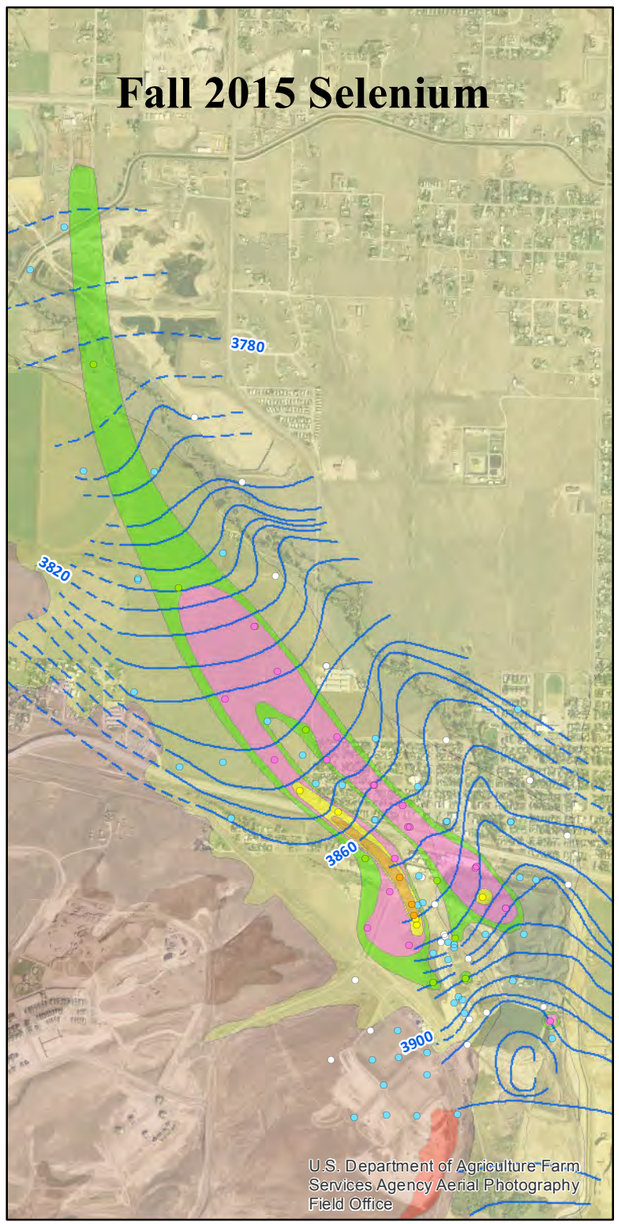
3-2

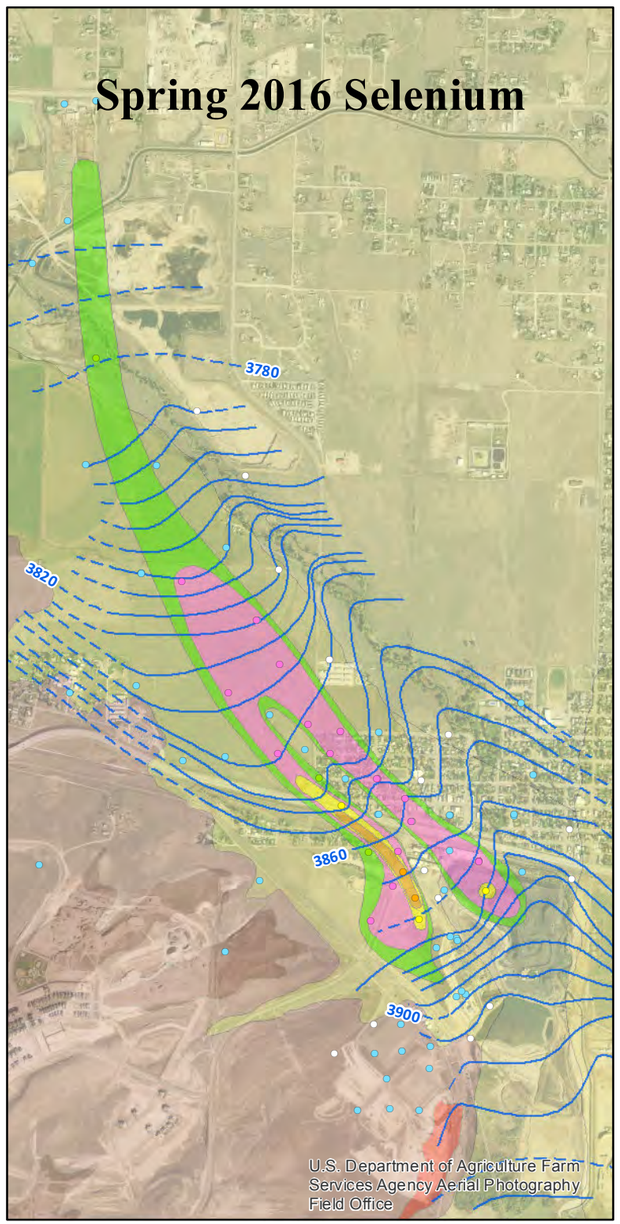
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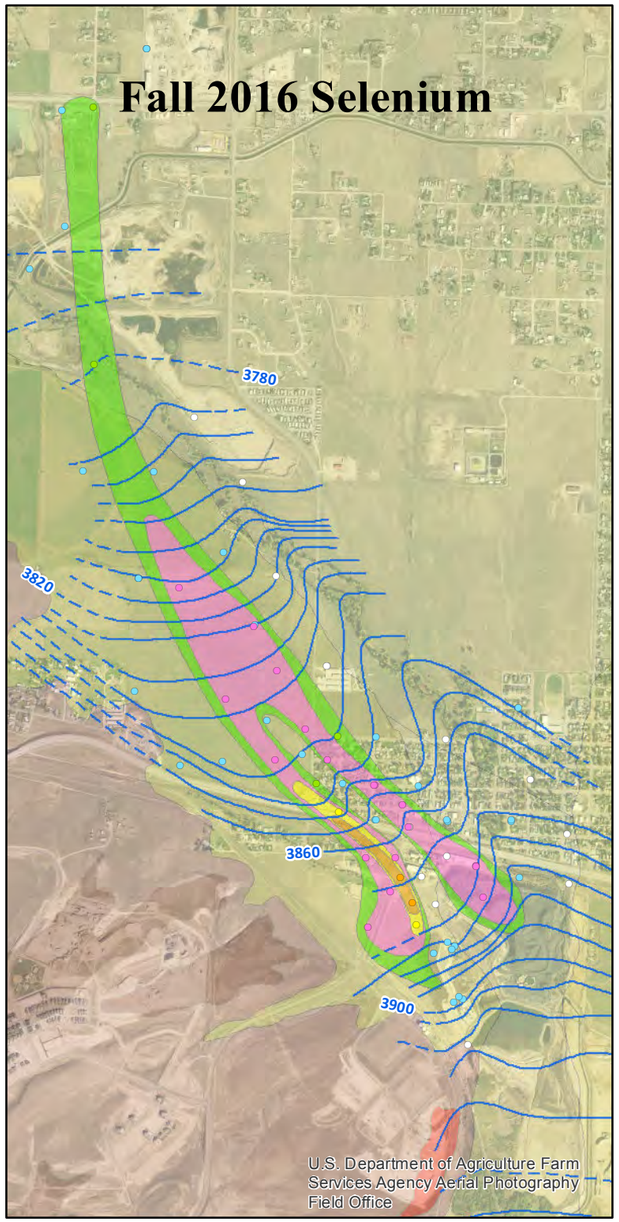
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Legend

Se Contours

- 0.051 - 0.100 mg/L
- 0.101 - 0.500 mg/L
- 0.501 - 1.0 mg/L
- 1.01 - 3.0 mg/L
- > 3.0 mg/L

Se Conc (mg/L)

- <0.001
- 0.001-0.050
- 0.051-0.100
- 0.101-0.500
- 0.501-1.0
- 1.01-3.0
- >3.0

Surficial Geology

- Qac - Alluvium/Colluvium
- Qa - Alluvium
- Qt - Terrace Gravel
- QTg - Older Gravel
- OGts - Tuff and Tuffaceous Sediment
- Ys - Spokane Formation

Groundwater Potentiometric Contours

- 5-foot Contour
- 5-foot Contour (Inferred)

N

0 0.5 1

Scale in Miles

2015-2016 WATER RESOURCES MONITORING REPORT
EAST HELENA FACILITY

2015-2016 GROUNDWATER SELENIUM PLUMES AND POTENTIOMETRIC CONTOURS EAST HELENA FACILITY

FIGURE

3-3

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3.2.2 Groundwater Monitoring Results

Groundwater quality monitoring under the 2015/16 CAMPs included semi-annual and abbreviated supplemental monitoring well sampling events (Table 2-4), and semi-annual residential and public water supply well sampling (Table 2-5). The monitoring results are presented below with the data evaluation and interpretation included in Section 4.

3.2.2.1 Monitoring Well Sampling Results

The groundwater chemistry in the vicinity of the former smelter is influenced by the local geology as well as former smelter operations, and possibly other anthropogenic influences downgradient (north) of the former smelter. Exhibit 2 includes Stiff diagrams summarizing groundwater chemistry throughout the project area for both 2010 and 2016. Stiff diagrams provide a graphical representation of general groundwater chemistry or groundwater type, based on relative concentrations of the major cations sodium, potassium, calcium and magnesium, and anions chloride, carbonate, bicarbonate, and sulfate. Based on groundwater chemistry data upgradient (south) of the Facility and in East Helena east of Prickly Pear Creek, background groundwater in the alluvial/colluvial aquifer underlying the Facility is a calcium bicarbonate type (light green symbols on Exhibit 2), typical of most alluvial groundwater systems in the region. The groundwater chemistry changes beneath the Facility due to impacts from various smelter operations, with the alluvial/colluvial groundwater chemistry transitioning to a calcium-sulfate type with significant chloride contribution (dark green) on the western Plant site portion of the Facility, and a sodium or potassium-sulfate type (blue) in the central and eastern portions beneath the historic Speiss/Dross area and the slag pile. These geochemical fingerprints are useful in helping identify various groundwater contaminant sources in downgradient groundwater. For example, high sodium, potassium, and sulfate concentrations typically indicate a slag pile source, and high calcium, chloride, and sulfate concentrations may indicate a Plant Site source.

West of the Facility in the area referred to as the West Bench (Figure 1-2), groundwater chemistry is variable with a primary calcium-bicarbonate signature and varying concentrations of other major ions. Tan colored Stiff diagrams in this area indicate slightly higher sulfate signatures, and red Stiff diagrams indicate higher sodium and sulfate signatures (Exhibit 2). Groundwater chemistry in the two western-most CAMU wells show strong sodium bicarbonate (MW-7, light blue Stiff diagram) and sodium sulfate (MW-11, darker blue Stiff diagram) signatures, most likely influenced by the Tertiary sediments comprising the foothills around the Helena Valley. In addition to affecting the general chemistry, the Tertiary volcanoclastic sediments are also responsible for the occurrence of a background arsenic signature in the Tertiary sediment groundwater, with background arsenic concentrations west of the Facility ranging from 0.01 to 0.02 mg/L (Hydrometrics, 2014), compared to the human health standard (HHS) of 0.01 mg/L (MDEQ, 2012).

A third general groundwater type in the project area is a magnesium-bicarbonate type detected in a few monitoring wells west and northwest of the Facility (purple Stiff diagrams on Exhibit 2). This groundwater chemistry is attributed to local bedrock influences, specifically groundwater originating from the Spokane Formation argillite. As shown on Exhibit 2, the Spokane Formation outcrops to the west of the Facility and extends northward along the west margin of Lamping Field. The magnesium-

bicarbonate type groundwater follows the trace of the bedrock outcrops northward to monitoring well EH-139 north of Lamping Field. This pattern is consistent with the groundwater potentiometric maps (Figures 3-2 and 3-3) which show groundwater flow from the southwest foothills toward the alluvial/colluvial aquifer north of the Facility. This groundwater flow pattern is important in constraining the western extent of the alluvial/colluvial flow system and the groundwater selenium plume.

Exhibit 2 also shows areas of groundwater chemistry changes from 2010/2011 to 2016, spanning the IM implementation period. Based on the comparison of 2010/2011 (pre-IM) to 2016 (post-IM) Stiff diagrams, the groundwater general chemistry has remained relatively constant throughout much of the project area. The groundwater chemistry has changed, however, at some well locations north of the Facility, such as EH-50 and EH-100 in East Helena, and EH-124 in Lamping Field. These changes generally reflect a westward shift in groundwater flow north of the Facility resulting from the loss of recharge from Wilson Ditch following decommissioning of the ditch. In the case of EH-100 and EH-50, the 2010 to 2016 water chemistry change reflects decreased overall contributions from calcium, chloride, and sulfate, and increased contributions from sodium and bicarbonate, denoting an increasing influence from the central/slag pile portion of the Facility and a decreasing influence from the western Plant Site. At EH-124, the groundwater chemistry transitioned from a West Bench tertiary sediment signature, to that indicative of the western Plant Site portion of the Facility (increasing calcium, chloride, and sulfate signature). Further downgradient, north of Lamping Field, wells EH-138 and EH-139 show slight changes in Stiff diagram patterns from 2010 to 2016, with EH-138 showing a slight decrease in sulfate signature and EH-139 showing a slight increase in sulfate signature. These changes are consistent with the groundwater level and flow pattern changes noted north of the Facility in response to decommissioning of Wilson Ditch.

Groundwater Quality

A statistical summary of the 2015/16 water quality monitoring results by area is provided in Table 3-7, with the complete validated database included in Appendix A. The number of samples analyzed, minimum, maximum and mean values for arsenic, selenium, sulfate, chloride, calcium, and sodium based on the 2015/16 data sets are shown in Table 3-7, along with summary statistics for the post-operational/pre-IM period (2002-2011) for comparison. Monitoring wells are all shown on Exhibit 1 and have been grouped into the following areas for calculation of summary statistics:

- Former Smelter – Plant Site Area (9 wells in the central and western portions of the Facility where smelting and associated operations occurred, along with historic process water releases that introduced contaminants into groundwater);
- Former Smelter – Slag Pile Area (11 wells in the eastern portion of the Facility completed beneath and immediately north of the slag pile);
- West Bench Area (6 wells in Tertiary sediments west of the Facility);
- East Helena Area (23 wells in the City of East Helena);
- Lamping Field (16 wells in Lamping Field);

Table 3-7. Summary of 2015/16 Monitoring Well Water Quality Data for Select Parameters -- East Helena Facility

Area / Time Period	Arsenic (Dissolved)				Selenium (Dissolved)				Sulfate				Chloride				Calcium				Sodium			
	n	**Min**	**Max**	**Mean**	***n***	**Min**	**Max**	**Mean**	***n***	**Min**	**Max**	**Mean**	***n***	**Min**	**Max**	**Mean**	***n***	**Min**	**Max**	**Mean**	***n***	**Min**	**Max**	**Mean**
Former Smelter Site																								
Plant Site Area																								
2002-2011	*190*	<0.002	53.2	**14.4**	*99*	<0.001	7.78	**0.642**	*184*	<1	1900	**657**	*184*	<1	720	**137**	*184*	10	838	**178**	*184*	14	803	**211**
2015	*35*	<0.002	33.1	**9.79**	*35*	<0.001	4.31	**0.615**	*35*	186	1860	**729**	*35*	7	618	**141**	*35*	11	875	**253**	*35*	24	296	**158**
2016	*28*	<0.002	30.4	**9.39**	*28*	<0.001	1.43	**0.299**	*28*	261	1990	**691**	*28*	7	604	**125**	*28*	12	913	**217**	*28*	27	323	**152**
Slag Pile Area																								
2002-2011	*135*	<0.002	4.13	**0.803**	*89*	<0.001	2.02	**0.250**	*131*	<1	2800	**701**	*131*	5	170	**39**	*131*	16	313	**110**	*131*	19	1000	**211**
2015	*23*	<0.002	2.04	**0.699**	*23*	<0.001	0.604	**0.211**	*23*	73	1410	**594**	*23*	4	32	**14**	*23*	17	241	**78**	*23*	39	495	**191**
2016	*25*	<0.002	1.82	**0.626**	*25*	<0.001	0.978	**0.253**	*25*	47	1940	**706**	*25*	3	33	**15**	*25*	19	243	**98**	*25*	39	590	**206**
West Bench Area																								
2002-2011	*22*	0.005	0.020	**0.011**	*21*	0.002	0.006	**0.003**	*18*	55	170	**80**	*18*	12	59	**23**	*18*	40	85	**51**	*18*	23	48	**32**
2015	*ND*	ND	ND	**ND**	*ND*	ND	ND	**ND**	*ND*	ND	ND	**ND**	*ND*	ND	ND	**ND**	*ND*	ND	ND	**ND**	*ND*	ND	ND	**ND**
2016	*6*	0.006	0.019	**0.012**	*6*	0.001	0.003	**0.002**	*6*	76	171	**105**	*6*	13	68	**29**	*6*	43	91	**57**	*6*	27	51	**35**
East Helena Area																								
2002-2011	*641*	<0.002	16.58	**1.29**	*387*	<0.001	1.2	**0.120**	*617*	22	1220	**419**	*617*	<1	169	**53**	*617*	22	277	**107**	*617*	11	375	**123**
2015	*61*	<0.002	19.1	**2.25**	*61*	<0.001	1.04	**0.125**	*61*	17	932	**337**	*61*	2	75	**24**	*61*	17	240	**81**	*61*	10	236	**115**
2016	*48*	<0.002	17.5	**1.83**	*48*	<0.001	0.94	**0.118**	*48*	26	934	**320**	*48*	2	70	**21**	*48*	17	233	**75**	*48*	11	248	**107**
Lamping Field																								
2002-2011	*207*	<0.002	0.030	**0.005**	*178*	<0.001	0.408	**0.072**	*191*	34	850	**256**	*191*	3	119	**36**	*199*	21	268	**84**	*199*	12	198	**66**
2015	*40*	<0.002	0.031	**0.004**	*40*	<0.001	0.977	**0.175**	*40*	43	801	**303**	*40*	4	93	**35**	*40*	31	244	**107**	*40*	14	151	**70**
2016	*33*	<0.002	0.032	**0.005**	*33*	<0.001	0.396	**0.117**	*33*	43	885	**276**	*33*	4	53	**25**	*33*	30	241	**90**	*33*	13	155	**68**
North of Lamping Field																								
2002-2011	*45*	<0.002	0.005	**0.002**	*46*	<0.001	0.082	**0.027**	*44*	41	370	**140**	*44*	4	41	**15**	*45*	28	129	**61**	*45*	17	58	**30**
2015	*32*	<0.002	0.005	**0.002**	*32*	<0.001	0.073	**0.030**	*32*	45	244	**144**	*32*	4	25	**14**	*32*	30	99	**65**	*32*	15	48	**31**
2016	*35*	<0.002	0.005	**0.002**	*35*	<0.001	0.078	**0.032**	*35*	43	244	**147**	*35*	4	24	**14**	*35*	30	98	**66**	*35*	15	48	**31**
CAMU Wells																								
2002-2011	*246*	<0.005	0.200	**0.016**	*186*	<0.001	0.012	**0.003**	*246*	8	210	**72**	*246*	1	80	**12**	*246*	15	142	**62**	*246*	17	60	**27**
2015	*22*	0.003	0.051	**0.012**	*22*	<0.001	0.009	**0.003**	*22*	25	193	**98**	*22*	1	44	**18**	*22*	19	122	**69**	*22*	19	61	**30**
2016	*11*	0.003	0.055	**0.013**	*11*	<0.001	0.012	**0.003**	*11*	30	212	**109**	*11*	1	42	**18**	*11*	20	127	**68**	*11*	19	57	**29**

Plant Site wells include: DH-8, DH-17, DH-20, DH-42, DH-47, DH-59, DH-64, DH-66, SDMW-2

Slag Pile Area wells include: DH-6, DH-15, DH-52, DH-53, DH-55, DH-56, DH-68, DH-69, DH-74, DH-75, DH-76

West Bench wells include: EH-200, EH-201, EH-202, EH-203, EH-208, EH-209

East Helena Area wells include: EH-50, EH-51, EH-52, EH-53, EH-54, EH-58, EH-59, EH-60, EH-61, EH-62, EH-63, EH-65, EH-69, EH-100, EH-101, EH-102, EH-103, EH-104, EH-106, EH-107, EH-110, EH-111, EH-115

Lamping Field wells include: EH-57A, EH-70, EH-114, EH-117, EH-118, EH-119, EH-120, EH-123, EH-124, EH-125, EH-126, EH-129, EH-132, EH-134, EH-135, EH-206

North of Lamping Field wells include: EH-130, EH-138, EH-139, EH-140, EH-141, EH-142, EH-143, EH-144S, EH-144M, EH-144D, 2843 Canyon Ferry, 2853 Canyon Ferry

CAMU Wells include: MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, MW-8, MW-9, MW-10, MW-11

All concentrations in mg/L. Below detect values replaced with 1/2 detection limit for calculation of mean.

n = number of samples; quality control samples (splits and duplicates) not included in statistics.

ND = no data for indicated period.

Well locations shown on Exhibit 1.

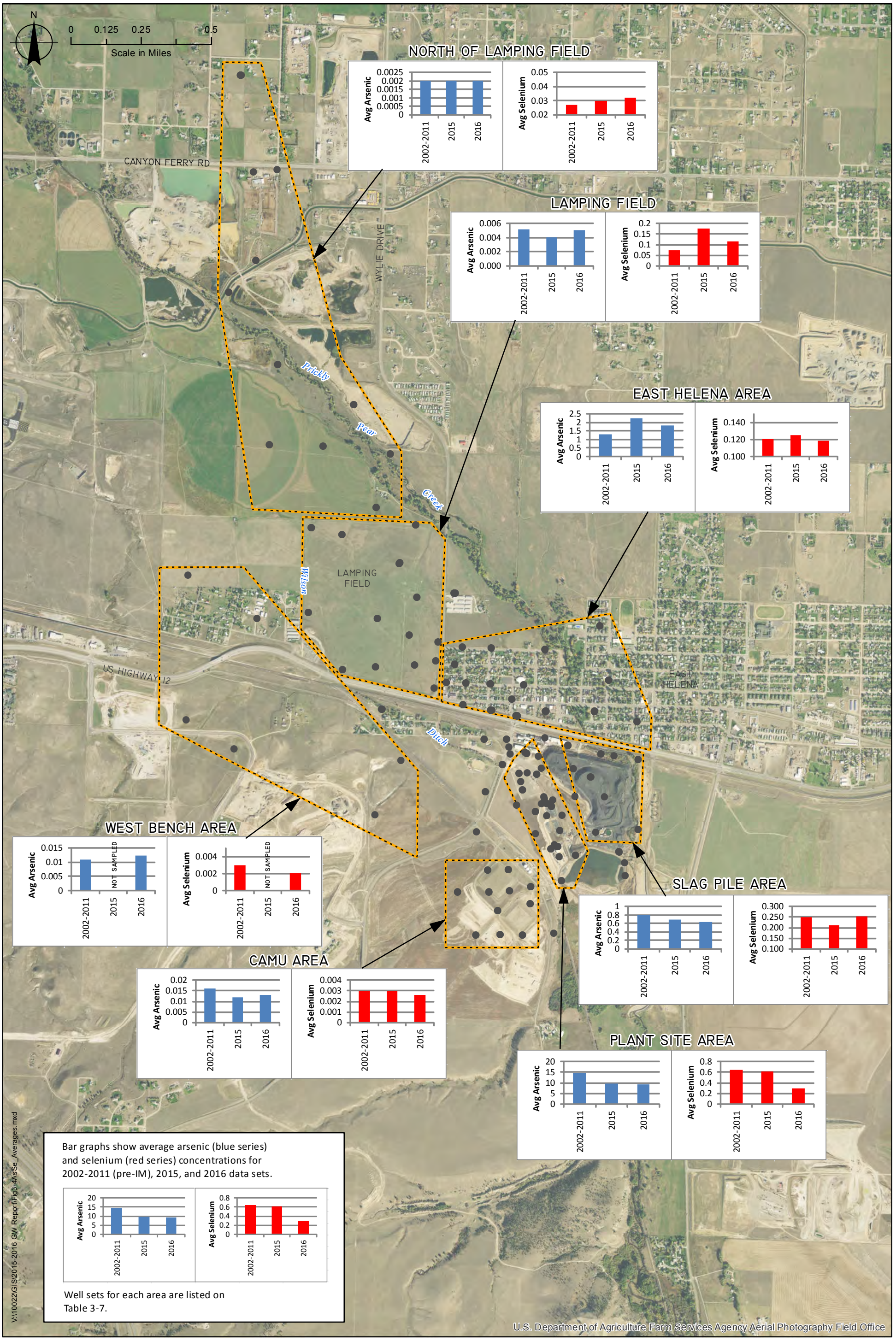
Complete 2015/16 water quality data included in Appendix A.

- North of Lamping Field (10 wells north of Lamping Field, from the irrigated agricultural fields south of Prickly Pear Creek to the furthest northern set of monitoring wells north of Canyon Ferry Road); and
- CAMU Wells (11 wells associated with the Phase I and Phase II CAMUs southwest of the Facility).

The highest average concentrations of the primary constituents of concern (COCs) arsenic and selenium occur on the Facility, reflecting ongoing loading of contaminants to groundwater from historic releases and secondary sources. Average concentrations have decreased over time in these areas, however, with average arsenic concentrations on the Plant Site decreasing from 14.4 mg/L in the 2002-2011 period to 9.79 mg/L in 2015 and 9.39 mg/L in 2016 (Figure 3-4). Average selenium concentrations on the Plant Site have decreased from 0.642 mg/L in the 2002-2011 period to 0.615 mg/L in 2015 and 0.299 mg/L in 2016 (Table 3-7). In the slag pile area, average arsenic concentrations have also decreased from 0.803 mg/L in 2002-2011, to 0.699 mg/L in 2015 and 0.626 mg/L in 2016; at the same time, slag pile area average selenium concentrations have remained relatively stable (0.250 mg/L in 2002-2011, 0.211 mg/L in 2015, 0.253 mg/L in 2016). Maximum observed concentrations of arsenic and selenium on the Plant Site, and arsenic in the slag pile area have also decreased over time (Table 3-7). These results indicate that, although current concentrations remain orders of magnitude above groundwater standards, implementation of IMs beginning in 2011 has reduced overall average groundwater contaminant concentrations beneath the Facility.

Downgradient of the Facility, average arsenic and selenium concentrations in East Helena increased or remained constant from the 2002-2011 period (1.29 mg/L arsenic and 0.120 mg/L selenium), to 2015 (2.25 mg/L arsenic and 0.125 mg/L selenium), then decreased in 2016 (1.83 mg/L arsenic and 0.118 mg/L selenium). In Lamping Field, average arsenic concentrations are low (0.004 to 0.005 mg/L), while average selenium concentrations showed the same pattern as in East Helena, increasing from 2002-2011 (0.072 mg/L) to 2015 (0.175 mg/L), and decreasing in 2016 (0.117 mg/L) (Table 3-7). The variability in average contaminant concentrations in these near downgradient areas is attributable to: (1) changes in seasonal groundwater flow patterns and lack of dilution from ditch leakage associated with the decommissioning of Wilson Ditch, and (2) increasing concentrations of arsenic and selenium at certain wells during the initial IM implementation period, particularly arsenic at East Helena wells EH-50 and EH-100, and selenium at Facility well DH-66. Contaminant trends at individual wells are discussed further in Section 4.2.2.

Average arsenic concentrations in other areas shown in Table 3-7 show the influence of background arsenic concentrations associated with Tertiary sediments in the West Bench area (average arsenic concentrations ranging from 0.011 to 0.012 mg/L) and in the CAMU wells (average arsenic concentrations ranging from 0.012 to 0.016 mg/L, with slightly higher concentrations observed at well MW-6 influenced by the southern portion of the Facility). North of Lamping Field arsenic concentrations are low, with average concentrations of 0.002 mg/L and maximum concentrations of 0.005 mg/L. Average selenium concentrations in the West Bench wells (0.002 to 0.003 mg/L) and the CAMU wells (0.003 mg/L) are also low. Average selenium concentrations in the area north of



2015 - 2016 WATER RESOURCES MONITORING REPORT EAST HELENA FACILITY	**AVERAGE ARSENIC AND SELENIUM CONCENTRATIONS 2002-2011, 2015, AND 2016**	**FIGURE** **3-4**

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Lamping Field at the leading edge of the selenium plume have remained stable from 2002-2011 (0.025 mg/L) to 2015 (0.024 mg/L) and 2016 (0.028 mg/L). In general, the major ion concentrations summarized in Table 3-7 show the same patterns as those exhibited by the primary COCs arsenic and selenium, with the highest average and maximum concentrations observed at wells located in the former plant site and slag pile areas of the Facility, decreasing concentrations in downgradient areas that have been affected by plume migration, and variable concentrations in other areas affected by the local geology (i.e., Tertiary sediments, Spokane formation bedrock, alluvial/colluvial sediments).

3.2.2.2 Residential/Public Water Supply Sampling Results

The 2015/16 residential/public water supply well sampling schedule is included in Table 2-6 with the water quality data summarized in Table 3-8. Complete water supply well results for 2015/16 are included in Appendix A.

Table 3-8 includes a statistical summary of the 2015/16 arsenic and selenium concentrations along with an exceedance summary of State of Montana HHSs for groundwater (MDEQ, 2012). As shown in the table, the vast majority of water supply well samples exhibited no HHS exceedances for arsenic or selenium in 2015/16, consistent with previous results for these wells. For the 2015/16 period, one or more HHS exceedances were recorded at 6 wells (5 for arsenic and 1 for selenium) out of the total of 31 wells included in the residential/public water supply well monitoring program during one or both years. As shown in the complete database in Appendix A, there were no HHS exceedances in any of the water supply wells for any parameters other than arsenic and selenium, and the majority of metals concentrations were below reporting limits. There were no exceedances recorded in 2015/16, or in previous years at the three COEH municipal water supply wells located north of the Facility (Well IDs 27, 28, and 29 in Table 3-8).

All sampling results are provided to well owners following data validation, along with notification of any HHS exceedances. Although the frequency of HHS exceedances is low, the Custodial Trust has implemented a program to assist homeowners in abandoning their private water supply wells and connecting to the COEH municipal water system on a voluntary basis. To date, seven private water supply wells have been abandoned under the Custodial Trust-financed program.

3.2.2.3 2016 Low Flow Purge Method Assessment

Groundwater monitoring activities generate quantities of purge water that must be appropriately managed. Past practice consisted of containing all purge water and discharging it to the Facility high density sludge (HDS) water treatment facility. With the decommissioning of the HDS plant in 2016, however, alternative purge water handling and disposal methods have been explored. The current approach includes: (1) discharge of purge water from wells that do not exceed water quality standards, and are not located within the City of East Helena or on the Facility, onto the ground near the well, where it will not cause a discharge to surface water; and (2) containing purge water from other wells and transferring it to the million-gallon water tanks at the south end of the slag pile, for storage and eventual off-site disposal.

Table 3-8. Summary of 2015/16 Residential/Public Water Supply Well Water Quality Data -- East Helena Facility

Map Key (see Exhibit 1)	Status/Use	# of Samples	Arsenic (mg/L)					Selenium (mg/L)				
			Concentration			HHS Exceedances		Concentration			HHS Exceedances	
			Min	Max	Mean	No.	%	Min	Max	Mean	No.	%
1	Abandoned	2	<0.002	<0.002	<0.002	0	0%	<0.001	<0.001	<0.001	0	0%
2	Abandoned	2	<0.002	<0.002	<0.002	0	0%	0.001	0.002	0.0015	0	0%
3	Abandoned	2	0.031	0.038	0.0345	2	100%	0.008	0.013	0.0105	0	0%
4	Drinking/Irrigation	5	<0.002	<0.002	<0.002	0	0%	<0.001	<0.001	<0.001	0	0%
5	Irrigation	4	<0.002	<0.002	<0.002	0	0%	0.002	0.002	0.002	0	0%
6	Drinking	4	<0.002	<0.002	<0.002	0	0%	0.002	0.006	0.0035	0	0%
7	Abandoned	1	<0.002	<0.002	<0.002	0	0%	<0.001	<0.001	<0.001	0	0%
8	Abandoned	2	<0.002	<0.002	<0.002	0	0%	0.001	0.002	0.0015	0	0%
9	Irrigation	4	<0.002	<0.002	<0.002	0	0%	0.006	0.009	0.0078	0	0%
10	Drinking/Irrigation	4	<0.002	<0.002	<0.002	0	0%	<0.001	<0.001	<0.001	0	0%
11	Drinking/Irrigation	4	<0.002	<0.002	<0.002	0	0%	0.002	0.003	0.0028	0	0%
12A	Drinking/Irrigation	5	<0.002	<0.002	<0.002	0	0%	0.042	0.050	0.045	0	0%
12B	Drinking/Irrigation	3	<0.002	<0.002	<0.002	0	0%	0.004	0.004	0.004	0	0%
13A	Drinking/Irrigation	5	<0.002	<0.002	<0.002	0	0%	0.043	0.052	0.047	2	40%
13B	Drinking/Irrigation	3	<0.002	<0.002	<0.002	0	0%	<0.001	<0.001	<0.001	0	0%
14	Drinking/Irrigation	4	<0.002	<0.002	<0.002	0	0%	<0.001	<0.001	<0.001	0	0%
15	Abandoned	3	<0.002	<0.002	<0.002	0	0%	<0.001	<0.001	<0.001	0	0%
16	Irrigation	2	<0.002	<0.002	<0.002	0	0%	0.002	0.002	0.002	0	0%
17	Unused	1	<0.002	<0.002	<0.002	0	0%	<0.001	<0.001	<0.001	0	0%
18	Drinking/Irrigation	5	<0.002	<0.002	<0.002	0	0%	0.028	0.037	0.0328	0	0%
19	Drinking/Irrigation	4	<0.002	<0.002	<0.002	0	0%	0.002	0.002	0.002	0	0%
20	Unused	1	<0.002	<0.002	<0.002	0	0%	<0.001	<0.001	<0.001	0	0%
21	Drinking/Irrigation	4	0.013	0.014	0.0137	4	100%	<0.001	<0.001	<0.001	0	0%
22	Irrigation	1	<0.002	<0.002	<0.002	0	0%	<0.001	<0.001	<0.001	0	0%
23	Drinking/Irrigation	4	0.015	0.016	0.0157	4	100%	0.002	0.003	0.0022	0	0%
24	Drinking/Irrigation	4	0.016	0.017	0.0165	4	100%	0.002	0.003	0.0022	0	0%
25	Drinking/Irrigation	4	0.017	0.018	0.0175	4	100%	0.002	0.002	0.002	0	0%
26	Abandoned	3	<0.002	<0.002	<0.002	0	0%	<0.001	<0.001	<0.001	0	0%
27	Public Water Supply	4	<0.002	<0.002	<0.002	0	0%	<0.001	<0.001	<0.001	0	0%
28	Public Water Supply	3	<0.002	<0.002	<0.002	0	0%	<0.001	<0.001	<0.001	0	0%
29	Public Water Supply	3	<0.002	<0.002	<0.002	0	0%	<0.001	<0.001	<0.001	0	0%

Well sampled in 2015 only.

All concentrations are dissolved fraction.

HHS - Human Health Standard from MDEQ, 2012: arsenic =0.010 mg/L, selenium 0.050 mg/L

The Custodial Trust is also evaluating the option of minimizing the amount of purge water generated during future sampling by transitioning from standard well purge methods (which typically remove 3 to 5 well volumes of water prior to sampling) to low-flow or low-stress well purge methods (which typically remove 1 to 3 gallons of water prior to sampling, and are based on stabilization of both water level drawdown and field parameter measurements). One of the primary concerns when transitioning from standard purge to low-flow purge groundwater sampling methods is ensuring that the different purge rates and volumes both yield representative groundwater samples, and thus that the data obtained using the two different methods is comparable. As an initial assessment of the applicability of low-flow sampling to the East Helena groundwater monitoring program, three wells were sampled during the August 2016 monitoring event and 12 wells were sampled during the October 2016 monitoring event using both the low-flow and the traditional standard purge methods, to allow comparison of the analytical results obtained. These data provide information to evaluate the merits of transitioning to low flow sampling for all future groundwater sampling.

Groundwater samples were collected using both low-flow and standard purge methods at wells EH-141, DH-15, and DH-17 in August 2016; these three wells were again sampled using both methods in October 2016, with the addition of wells DH-56, DH-80, DH-82, EH-100, EH-111, EH-118, EH-125, EH-144D, and EH-70 (see Exhibit 1). These wells were selected to cover a range of groundwater arsenic and selenium concentrations, as well as a range of standard purge volumes. Low-flow samples were collected first, followed by standard purge samples. The results for samples collected using the two purge methods at each well are summarized in Table 3-9, including total purge volumes, final field parameter measurements, and laboratory analytical results. The results indicate that the low-flow and standard purge methods yielded very similar results for the majority of field and laboratory parameters. The difference in purge volumes between the two methods is considerable, with low-flow purge volumes ranging from 2.0 to 2.2 gallons in August (total 6.2 gallons) and 2 to 8 gallons in October (total 46 gallons), and standard purge volumes ranging from 12 to 60 gallons in August (total 102 gallons) and 6 to 80 gallons in October (total 320 gallons). The low-flow purge methods therefore generated approximately 94% less purge water in August and 86% less purge water in October.

As a quantitative measure of data comparability, relative percent difference (RPD) values were calculated for the field and laboratory results obtained using the two different purge methods. RPD values are typically used as part of data validation procedures to compare replicate samples (sample-duplicate pair results) for evaluating data precision (reproducibility). For low concentration data, when analytical results are within five times the laboratory reporting limit, RPD values are not calculated; instead, the difference between replicate results is compared directly with the reporting limit. USEPA guidelines for comparing replicate samples specify control limits of <20% RPD for sample results greater than five times the laboratory reporting limit, and ± the reporting limit for sample results less than or equal to five times the laboratory reporting limit.

Direct comparison of analytical results, along with the RPD and reporting limit comparisons for the low-flow and standard purge results show generally good comparability between the purge methods for most wells. For general chemistry parameters, 72 out of 75 total comparisons were within the

Table 3-9. 2016 Well Purge Method Comparison Results

			Field Parameters							General Chemistry					Major Ions						
Station ID	**Sample Date**	**Total Purge Volume (gal)**	**pH (s.u.)**	**SC (µmhos/cm)**	**Diss O2 (mg/L)**	**ORP (mV)**	**EH (mV)**	**Turbidity (NTU)**	**Water Temp (°C)**	**Lab pH (s.u.)**	**Lab SC (µmhos/cm)**	**Total Alkalinity as CaCO3**	**Total Suspended Solids**	**Total Dissolved Solids**	**Calcium**	**Magnesium**	**Sodium**	**Potassium**	**Bicarbonate**	**Chloride**	**Sulfate**
DH-15 (Low Flow)	8/30/2016	2	6.84	1945	0.69	138	351	0.5	13	7	2010	170	10 U	1670	243	51	161	8	200	27	887
DH-15 (Standard)	8/30/2016	60	6.76	1925	0.42	138	355	0.3	10.2	7	1960	160	10 U	1620	222	47	170	8	200	25	852
RPD			**1.2%**	**1.0%**	**48.6%**	**0.0%**	**1.1%**	**50.0%**	**24.1%**	**0.0%**	**2.5%**	**6.1%**	**NC**	**3.0%**	**9.0%**	**8.2%**	**5.4%**	**0.0%**	**0.0%**	**7.7%**	**4.0%**
DH-17 (Low Flow)	9/1/2016	2.2	7.27	1501	2.26	-8	202	9.3	16.2	7.4	1500	300	10 U	1010	12	4	316	7	360	21	401
DH-17 (Standard)	9/1/2016	12	7.28	1523	1.05	-14	200	10.3	12.7	7.6	1510	310	10	1030	12	4	317	7	370	22	403
RPD			**0.1%**	**1.5%**	**73.1%**	**54.5%**	**1.0%**	**10.2%**	**24.2%**	**2.7%**	**0.7%**	**3.3%**	**NC**	**2.0%**	**0.0%**	**±RL**	**0.3%**	**0.0%**	**2.7%**	**4.7%**	**0.5%**
EH-141 (Low Flow)	8/30/2016	2	7.11	857	4.99	111	325	0.4	12.2	7.3	842	170	13	601	93	24	46	7	200	24	230
EH-141 (Standard)	8/30/2016	30	6.95	870	5.09	116	332	0.3	10.6	7.3	842	170	10 U	600	93	24	47	7	210	24	230
RPD			**2.3%**	**1.5%**	**2.0%**	**4.4%**	**2.1%**	**28.6%**	**14.0%**	**0.0%**	**0.0%**	**0.0%**	**NC**	**0.2%**	**0.0%**	**0.0%**	**2.2%**	**0.0%**	**4.9%**	**0.0%**	**0.0%**
DH-15 (Low Flow)	10/17/2016	3	7.39	1964	1.2	73	288	0.7	11.1	7	2040	160	13	1670	243	52	156	7	200	26	939
DH-15 (Standard)	10/17/2016	60	7.05	1918	0.63	70	286	0.4	10.4	7	1980	160	10 U	1630	223	48	166	8	200	24	904
RPD			**4.7%**	**2.4%**	**62.3%**	**4.2%**	**0.7%**	**54.5%**	**6.5%**	**0.0%**	**3.0%**	**0.0%**	**NC**	**2.4%**	**8.6%**	**8.0%**	**6.2%**	**13.3%**	**0.0%**	**8.0%**	**3.8%**
DH-17 (Low Flow)	10/13/2016	4	7.27	1513	0.74	-21	192	12.7	13.1	7.5	1520	300	10 U	1000	13	4	302	7	370	22	416
DH-17 (Standard)	10/13/2016	12	7.27	1522	0.41	-54	161	8.6	11.3	7.6	1520	300	10	957	13	4	309	7	370	23	420
RPD			**0.0%**	**0.6%**	**57.4%**	**88.0%**	**17.6%**	**38.5%**	**14.8%**	**1.3%**	**0.0%**	**0.0%**	**NC**	**4.4%**	**0.0%**	**±RL**	**2.3%**	**0.0%**	**0.0%**	**4.4%**	**1.0%**
DH-56 (Low Flow)	10/17/2016	4.4	7.55	3080	2.11	29	245	4.7	10.6	7.7	3080	230	10 U	2230	60	12	414	322	280	17	1180
DH-56 (Standard)	10/17/2016	6	7.51	3059	2.05	35	253	1.5	8.6	7.7	3060	240	10 U	2210	61	12	414	317	290	17	1170
RPD			**0.5%**	**0.7%**	**2.9%**	**18.8%**	**3.2%**	**103.2%**	**20.8%**	**0.0%**	**0.7%**	**4.3%**	**NC**	**0.9%**	**1.7%**	**0.0%**	**0.0%**	**1.6%**	**3.5%**	**0.0%**	**0.9%**
DH-80 (Low Flow)	10/12/2016	2.5	4.48	1380	0.87	117	331	2.6	12.2	4.4	1350	1 UJ	10 U	1130	142	32	50	12	1	13	701
DH-80 (Standard)	10/12/2016	12	4.25	1355	0.57	137	352	4.9	11.7	4.4	1340	1 UJ	38	1100	139	31	49	12	1 U	13	692
RPD			**5.3%**	**1.8%**	**41.7%**	**15.7%**	**6.1%**	**61.3%**	**4.2%**	**0.0%**	**0.7%**	**NC**	**NC**	**2.7%**	**2.1%**	**3.2%**	**2.0%**	**0.0%**	**NC**	**0.0%**	**1.3%**
DH-82 (Low Flow)	10/18/2016	5.5	6.75	2636	4.8	91	307	5	10.6	7	2570	270	14	2020	308	87	155	8	330	161	949
DH-82 (Standard)	10/18/2016	6	6.83	2621	4.8	78	294	4.4	10.5	7	2560	260	10 U	2000	307	88	155	8	320	160	939
RPD			**1.2%**	**0.6%**	**0.0%**	**15.4%**	**4.3%**	**12.8%**	**0.9%**	**0.0%**	**0.4%**	**3.8%**	**NC**	**1.0%**	**0.3%**	**1.1%**	**0.0%**	**0.0%**	**3.1%**	**0.6%**	**1.1%**
EH-100 (Low Flow)	10/18/2016	2	6.47	1138	0.73	104	317	2.3	12.8	6.8	1150	180	10 U	779	36	13	188	8	220	17	327
EH-100 (Standard)	10/18/2016	60	6.43	1129	0.12	97	311	0.9	12.1	6.7	1140	180	10 U	755	39	14	180	7	220	17	327
RPD			**0.6%**	**0.8%**	**143.5%**	**7.0%**	**1.9%**	**87.5%**	**5.6%**	**1.5%**	**0.9%**	**0.0%**	**NC**	**3.1%**	**8.0%**	**7.4%**	**4.3%**	**13.3%**	**0.0%**	**0.0%**	**0.0%**
EH-111 (Low Flow)	10/17/2016	5	6.52	1609	0.99	64	274	7.9	14.8	6.7	1650	150	20	1220	104	28	206	10	190	26	646
EH-111 (Standard)	10/17/2016	10	6.52	1587	0.88	65	279	1.5	12.3	6.6	1600	150	10 U	1170	94	24	219	9	180	26	613
RPD			**0.0%**	**1.4%**	**11.8%**	**1.6%**	**1.8%**	**136.2%**	**18.5%**	**1.5%**	**3.1%**	**0.0%**	**NC**	**4.2%**	**10.1%**	**15.4%**	**6.1%**	**10.5%**	**5.4%**	**0.0%**	**5.2%**
EH-118 (Low Flow)	10/13/2016	2.4	6.86	1235	3.07	58	269	316	14.8	7	1230	220	612	872	131	39	76	6	270	41	365
EH-118 (Standard)	10/13/2016	10	6.84	1227	3.16	60	275	14.1	11.4	7	1260	230	28	880	135	41	77	6	280	43	377
RPD			**0.3%**	**0.6%**	**2.9%**	**3.4%**	**2.2%**	**182.9%**	**26.0%**	**0.0%**	**2.4%**	**4.4%**	**182.5%**	**0.9%**	**3.0%**	**5.0%**	**1.3%**	**0.0%**	**3.6%**	**4.8%**	**3.2%**
EH-125 (Low Flow)	10/12/2016	3.3	6.82	857	4.16	79	293	2.1	12.3	6.9	869	130	51	610	67	18	74	4	160	18	271
EH-125 (Standard)	10/12/2016	20	6.83	628	4.37	81	297	2.5	11	7	625	110	10 U	421	51	13	55	3	140	11	165
RPD			**0.1%**	**30.8%**	**4.9%**	**2.5%**	**1.4%**	**17.4%**	**11.2%**	**1.4%**	**32.7%**	**16.7%**	**NC**	**36.7%**	**27.1%**	**32.3%**	**29.5%**	**±RL**	**13.3%**	**48.3%**	**48.6%**
EH-141 (Low Flow)	10/11/2016	2	7.33	861	6.14	39	257	0.5	8.9	7.4	868	170	10 U	616	95	25	46	7	200	24	231
EH-141 (Standard)	10/11/2016	34	7.25	859	6.04	22	238	1.6	9.9	7.3	867	170	18	614	97	26	48	7	200	24	233
RPD			**1.1%**	**0.2%**	**1.6%**	**55.7%**	**7.7%**	**104.8%**	**10.6%**	**1.4%**	**0.1%**	**0.0%**	**NC**	**0.3%**	**2.1%**	**3.9%**	**4.3%**	**0.0%**	**0.0%**	**0.0%**	**0.9%**
EH-144D (Low Flow)	10/6/2016	8	7.04	619	5.56	42	258	5.6	10.4	7.3	618	120	69	409	72	16	28	4	150	15	149
EH-144D (Standard)	10/6/2016	80	7.02	610	5.57	44	261	1.4	9.9	7.3	615	120	10 U	407	72	16	28	4	150	15	148
RPD			**0.3%**	**1.5%**	**0.2%**	**4.7%**	**1.2%**	**120.0%**	**4.9%**	**0.0%**	**0.5%**	**0.0%**	**NC**	**0.5%**	**0.0%**	**0.0%**	**0.0%**	**±RL**	**0.0%**	**0.0%**	**0.7%**
EH-70 (Low Flow)	10/12/2016	4	6.9	1213	5.08	79	293	2.1	12.2	6.9	1250	160	32	908	106	34	112	5	200	29	436
EH-70 (Standard)	10/12/2016	10	6.87	1211	5.29	80	296	1.8	10.8	6.9	1230	160	10 U	898	104	33	111	5	190	29	430
RPD			**0.4%**	**0.2%**	**4.1%**	**1.3%**	**1.0%**	**15.4%**	**12.2%**	**0.0%**	**1.6%**	**0.0%**	**NC**	**1.1%**	**1.9%**	**3.0%**	**0.9%**	**0.0%**	**5.1%**	**0.0%**	**1.4%**

NOTES: (1) RPD = relative percent difference, calculated as [(|result 1 - result 2|)/(average of result 1 and result 2)] x 100
NC = not calculated - RPD value not calculated when one or both results are less than the reporting limit.
±RL = results agree to within ± the laboratory reporting limit; comparison used when one or both results are less than or equal to 5x the laboratory reporting limit.

Table 3-9. 2016 Well Purge Method Comparison Results

Station ID	Sample Date	Total Purge Volume (gal)	Bromide	Dissolved (D) Metals													
				Sb (D)	As (D)	Be (D)	Cd (D)	Cr (D)	Cu (D)	Fe (D)	Pb (D)	Mn (D)	Hg (D)	Ni (D)	Se (D)	Tl (D)	Zn (D)
DH-15 (Low Flow)	8/30/2016	2	3.1	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.004	0.02 U	0.005 U	0.02	0.001 U	0.01 U	0.338	0.001 U	0.02
DH-15 (Standard)	8/30/2016	60	2.8	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.004	0.02 U	0.005 U	0.01	0.001 U	0.01 U	0.328	0.001 U	0.01 U
RPD			**10.2%**	**NC**	**NC**	**NC**	**NC**	**NC**	**±RL**	**NC**	**NC**	**±RL**	**NC**	**NC**	**3.0%**	**NC**	**NC**
DH-17 (Low Flow)	9/1/2016	2.2	2.17	0.003 U	28.2	0.001 U	0.001 U	0.001 U	0.001 U	0.11	0.005 U	0.46	0.001 U	0.01 U	0.001 U	0.001 U	0.09
DH-17 (Standard)	9/1/2016	12	2.15	0.003 U	29.5	0.001 U	0.001 U	0.001 U	0.001 U	0.09	0.005 U	0.42	0.001 U	0.01 U	0.001 U	0.001 U	0.09
RPD			**0.9%**	**NC**	**4.5%**	**NC**	**NC**	**NC**	**NC**	**20.0%**	**NC**	**9.1%**	**NC**	**NC**	**NC**	**NC**	**±RL**
EH-141 (Low Flow)	8/30/2016	2	1.38	0.003 U	0.002	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.072	0.001 U	0.01 U
EH-141 (Standard)	8/30/2016	30	1.36	0.003 U	0.002	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.073	0.001 U	0.01 U
RPD			**1.5%**	**NC**	**0.0%**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**1.4%**	**NC**	**NC**
DH-15 (Low Flow)	10/17/2016	3	2.9	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.003	0.02 U	0.005 U	0.02	0.001 U	0.01 U	0.404	0.001 U	0.01 U
DH-15 (Standard)	10/17/2016	60	2.8	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.003	0.02 U	0.005 U	0.02	0.001 U	0.01 U	0.379	0.001 U	0.01 U
RPD			**3.5%**	**NC**	**NC**	**NC**	**NC**	**NC**	**±RL**	**NC**	**NC**	**±RL**	**NC**	**NC**	**6.4%**	**NC**	**NC**
DH-17 (Low Flow)	10/13/2016	4	2.56	0.003 U	28.7	0.001 U	0.001 U	0.001 U	0.001 U	0.12	0.005 U	0.48	0.001 U	0.01 U	0.001 U	0.001 U	0.05
DH-17 (Standard)	10/13/2016	12	2.6	0.003 U	29.7	0.001 U	0.001 U	0.001 U	0.001 U	0.1	0.005 U	0.45	0.001 U	0.01 U	0.001 U	0.001 U	0.05
RPD			**1.6%**	**NC**	**3.4%**	**NC**	**NC**	**NC**	**NC**	**18.2%**	**NC**	**6.5%**	**NC**	**NC**	**NC**	**NC**	**±RL**
DH-56 (Low Flow)	10/17/2016	4.4	1	0.028	0.608	0.001 U	0.001 U	0.001 U	0.003	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.434	0.001 U	0.01 U
DH-56 (Standard)	10/17/2016	6	1	0.028	0.598	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.447	0.001 U	0.01 U
RPD			**0.0%**	**0.0%**	**1.7%**	**NC**	**NC**	**NC**	**±RL**	**NC**	**NC**	**NC**	**NC**	**NC**	**3.0%**	**NC**	**NC**
DH-80 (Low Flow)	10/12/2016	2.5	0.76	0.003 U	9.03	0.001	4.91	0.001	0.005	23.9	0.005 U	5.09	0.001 U	0.05	0.009	0.302	10.9
DH-80 (Standard)	10/12/2016	12	0.65	0.003 U	9.72	0.001	4.52	0.001 U	0.002	23.7	0.005 U	5.03	0.001 U	0.04	0.007	0.305	10.7
RPD			**15.6%**	**NC**	**7.4%**	**±RL**	**8.3%**	**NC**	**>±RL**	**0.8%**	**NC**	**1.2%**	**NC**	**±RL**	**25.0%**	**1.0%**	**1.9%**
DH-82 (Low Flow)	10/18/2016	5.5	9.7	0.003 U	0.166	0.001 U	0.001 U	0.002	0.006	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	1.55	0.001 U	0.01 U
DH-82 (Standard)	10/18/2016	6	9.6	0.003 U	0.172	0.001 U	0.001 U	0.002	0.005	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	1.53	0.001 U	0.01 U
RPD			**1.0%**	**NC**	**3.6%**	**NC**	**NC**	**±RL**	**±RL**	**NC**	**NC**	**NC**	**NC**	**NC**	**1.3%**	**NC**	**NC**
EH-100 (Low Flow)	10/18/2016	2	1.85	0.003 U	17.3	0.001 U	0.001	0.001 U	0.003	0.02 U	0.005 U	3.24	0.001 U	0.01 U	0.005	0.001 U	0.17
EH-100 (Standard)	10/18/2016	60	1.91	0.003 U	17.5	0.001 U	0.002	0.001 U	0.003	0.02 U	0.005 U	3.55	0.001 U	0.01 U	0.004	0.001 U	0.18
RPD			**3.2%**	**NC**	**1.1%**	**NC**	**±RL**	**NC**	**0.0%**	**NC**	**NC**	**9.1%**	**NC**	**NC**	**±RL**	**NC**	**5.7%**
EH-111 (Low Flow)	10/17/2016	5	2.5	0.003 U	2.37	0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.005 U	9.75	0.001 U	0.01 U	0.171	0.001 U	0.01 U
EH-111 (Standard)	10/17/2016	10	2.2	0.003 U	1.53	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	5.76	0.001 U	0.01 U	0.155	0.001 U	0.01 U
RPD			**12.8%**	**NC**	**43.1%**	**NC**	**NC**	**NC**	**±RL**	**NC**	**NC**	**51.5%**	**NC**	**NC**	**9.8%**	**NC**	**NC**
EH-118 (Low Flow)	10/13/2016	2.4	1.95	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.05	0.005 U	0.01 U	0.001 U	0.01 U	0.396	0.001 U	0.01 U
EH-118 (Standard)	10/13/2016	10	2.04	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.391	0.001 U	0.01 U
RPD			**4.5%**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**1.3%**	**NC**	**NC**
EH-125 (Low Flow)	10/12/2016	3.3	0.66	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.063	0.001 U	0.01 U
EH-125 (Standard)	10/12/2016	20	0.31	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.038	0.001 U	0.01 U
RPD			**72.2%**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**49.5%**	**NC**	**NC**
EH-141 (Low Flow)	10/11/2016	2	1.22	0.003 U	0.002	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.073	0.001 U	0.01 U
EH-141 (Standard)	10/11/2016	34	1.22	0.003 U	0.002	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.075	0.001 U	0.01 U
RPD			**0.0%**	**NC**	**±RL**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**2.7%**	**NC**	**NC**
EH-144D (Low Flow)	10/6/2016	8	1.14	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.029	0.001 U	0.01 U
EH-144D (Standard)	10/6/2016	80	1.04	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.029	0.001 U	0.01 U
RPD			**9.2%**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**0.0%**	**NC**	**NC**
EH-70 (Low Flow)	10/12/2016	4	1.42	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.124	0.001 U	0.01 U
EH-70 (Standard)	10/12/2016	10	1.44	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.128	0.001 U	0.01 U
RPD			**1.4%**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**3.2%**	**NC**	**NC**

NOTES: (1) RPD = relative percent difference, calculated as [(|result 1 - result 2|)/(average of result 1 and result 2)] x 100
NC = not calculated - RPD value not calculated when one or both results are less than the reporting limit.
±RL = results agree to within ± the laboratory reporting limit; comparison used when one or both results are less than or equal to 5x the laboratory reporting limit.

comparison criteria; for major ions, 114 out of 120 total comparisons were within the criteria; and for dissolved metals, 205 of 210 total comparisons were within criteria (note that most dissolved metals concentrations were below reporting limits). These results indicate that the differences between the low-flow and standard purge groundwater samples in terms of laboratory analytical results were minimal at most wells. For field parameters, comparison of the low-flow and standard purge samples showed a slightly higher degree of variability for some parameters compared with the laboratory results (Table 3-9). Field pH, SC, ORP, and Eh values were similar between the two methods; DO, ORP, turbidity, and water temperature values showed slightly more variation.

Two wells in particular (sampled during October 2016) showed a higher degree of variability between the purge method results: well EH-111 (arsenic RPD of 43.1% and manganese RPD of 51.5%), and well EH-125 (major ion RPDs of 13.3% to 72.2%, selenium RPD of 49.5%). In both cases, lower concentrations were obtained from the standard purge samples compared with the low-flow purge samples (Table 3-9). These differences may be due to drawing in greater volumes of more dilute groundwater under standard purge conditions, suggesting that the wells are screened within the zone of highest concentrations. This effect was not observed at other wells with similar or higher constituent concentrations, suggesting that the observed differences may be attributable to local variability in plume width or thickness, or greater vertical variability in contaminant concentrations at these two wells.

Overall, the 2016 purge method comparison indicated good comparability for most constituents at most wells; however, the differences observed for critical parameters (arsenic and selenium) at two wells during the October 2016 comparison suggest further investigation of method comparability is warranted before transitioning to exclusively low-flow methods for groundwater sampling on the East Helena Project. Additional purge method comparison sampling is recommended for 2017.

4.0 GROUNDWATER DATA ANALYSIS AND PLUME STATUS EVALUATION

This section presents a summary of the current groundwater quality conditions and trends, and the status of the groundwater arsenic and selenium plumes. With completion of the scheduled IMs in 2016, the CAMP program has transitioned from a contaminant source area characterization and plume delineation program, to a remedy performance monitoring program appropriate to the remediation and CMS phase of a RCRA Corrective Action remediation project (Hydrometrics, 2016a). In their *Handbook of Groundwater Protection and Cleanup Policies for RCRA Corrective Action* (USEPA, 2004a), USEPA defines performance monitoring as "the periodic measurement of physical and/or chemical parameters to evaluate whether a remedy is performing as expected." More recently published USEPA guidance on groundwater remediation completion strategies (USEPA, 2013, 2014a, 2014b) includes a discussion of recommended remedy evaluation (performance monitoring) strategies. Based on these guidance documents, and goals and objectives specific to the East Helena Project, the performance monitoring program outlined in 2016 included three components:

(1) Groundwater level and contaminant concentration trend analyses at selected wells in contaminant source areas on the Facility and near the leading edge of the selenium plume;
(2) Contaminant mass flux analysis using the calibrated numerical groundwater flow and fate and transport model; and
(3) Contaminant plume stability analyses.

Following is a summary of current groundwater conditions in the Project area, followed by discussions of the three performance monitoring components.

4.1 GENERAL GROUNDWATER CONDITIONS

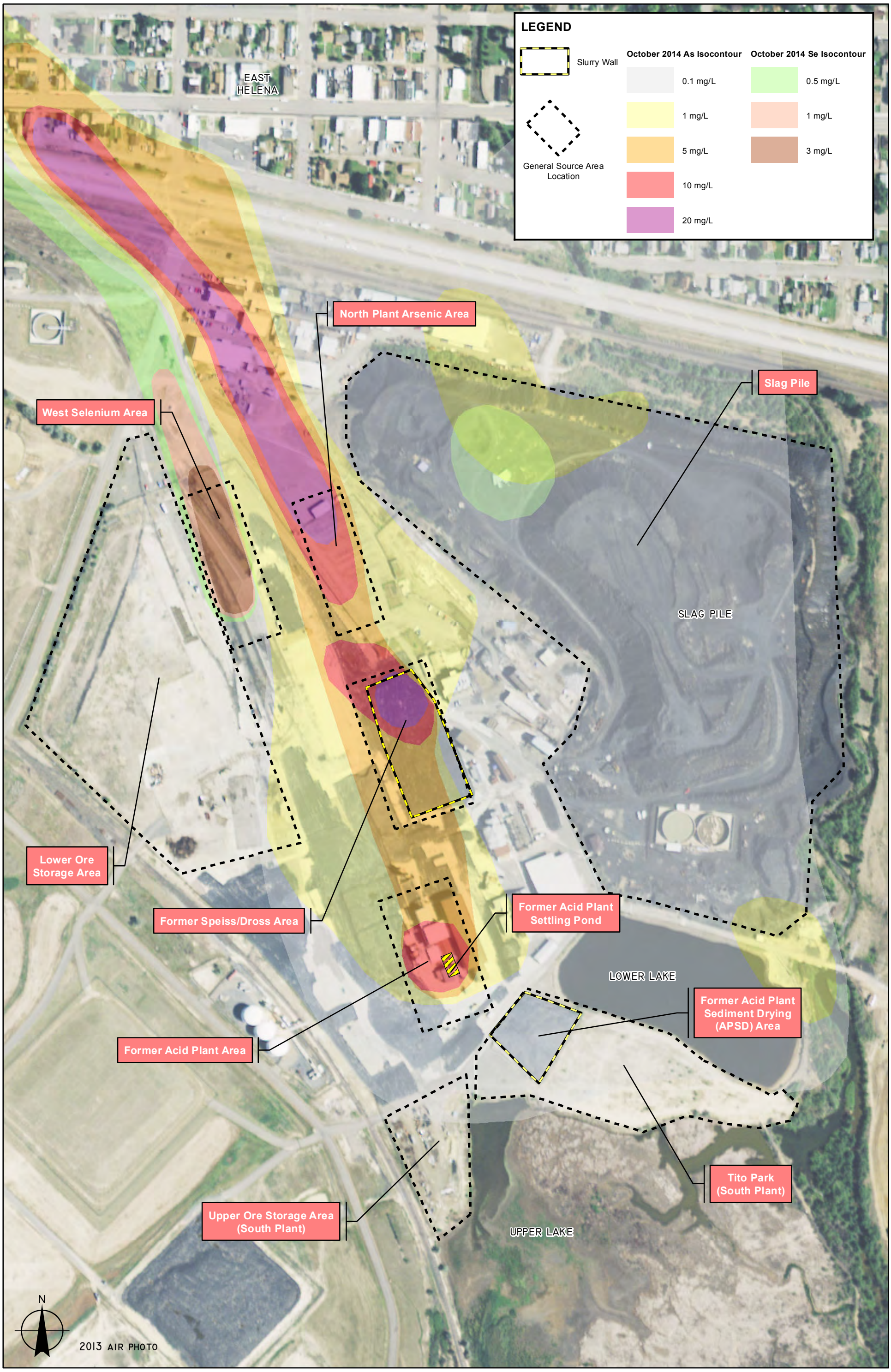
The hydrogeology and geochemistry of the East Helena Facility and Project Area has been described in several documents including Hydrometrics, 2010, 2015a, and 2016b; GSI, 2014; and CH2MHill 2012. The alluvial aquifer on the Facility, referred to as the Upper Aquifer, extends from the top of the saturated zone or water table, downward to a low permeability tertiary ash/clay basal layer. On the Facility, the depth to groundwater varies from less than 10 feet bgs in the south and near Prickly Pear Creek, to about 50 feet bgs in the northwest portion of the Facility. The base of the aquifer (the ash/clay layer) varies in depth from about 20 feet bgs in the southwest portion of the Facility, to more than 70 feet in the northeast portion. As a result, the saturated thickness of the alluvial aquifer ranges from about 10 feet in the south, to about 20 feet in the north of the Facility. A deeper groundwater system also occurs beneath the Facility with the deeper system comprised of isolated to poorly interconnected sandy lenses or zones within the Tertiary ash/clay layer. The contaminated soils and fill and groundwater plumes are restricted to the upper alluvial aquifer.

As previously noted, the primary groundwater COCs are arsenic and selenium, both of which exceed applicable HHSs in groundwater beneath and downgradient of the Facility. Secondary COCs exceeding HHSs in localized portions of the Facility, and rarely if ever in downgradient groundwater, include antimony and cadmium (GSI, 2014). The 2015 and 2016 arsenic and selenium groundwater plumes are shown on Figures 3-2 and 3-3, respectively.

Groundwater contaminant source areas have been delineated through a number of studies dating back more than two decades, with the two most recent investigations presented in Hydrometrics 2015c and 2016b. Based on results of prior investigations, confirmed or suspected historic groundwater contaminant sources include the South Plant Area (Tito Park and Upper Ore Storage Area), the former Acid Plant Area, former Speiss/Dross Area and former Lower Ore Storage Area (Figure 4-1). Some of the historic source areas have been addressed through remedial actions completed by Asarco, such as construction of slurry walls around the Speiss/Dross Area and the Acid Plant sediment drying area. Based on the 2014 and 2015 Source Area Investigations (SAIs), primary contaminant source areas as of 2014 include portions of the South Plant Area, the former Acid Plant settling pond area, the West Selenium Source Area and the North Plant Arsenic Source Area. The West Selenium and North Plant Arsenic source areas are secondary sources, where contaminants have accumulated on the aquifer matrix and are now desorbing or resolubilizing into groundwater, possibly due to post-operational changes in groundwater redox and/or pH conditions. The SPHC and ET Cover IMs are intended to address these source areas. The Acid Plant and South Plant source areas were targeted through the localized source removal IMs. Based on more recent analyses (Hydrometrics, 2016c), portions of the slag pile have also been identified as a current groundwater contaminant source area, particularly for selenium. The relative proportion of groundwater selenium loading attributable to the slag pile has increased over the past few years due solely to the reduction in contaminant loading from other sources achieved through the IM program. Corrective measure alternatives are currently being evaluated for the slag pile.

The configuration and geometry of the current arsenic plume (Figures 3-2 and 3-3) indicates that the primary plant site plume extends approximately 0.5 miles northwest of the Facility into the City of East Helena, with a more diffuse (lower concentration) plume extending north from the slag pile. Maximum concentrations near 100 mg/L arsenic occur isolated within the Speiss/Dross slurry wall, with maximum concentrations outside of the slurry wall in the 30 to 40 mg/L range in the North Plant Site Source Area (Figure 4-1). The downgradient boundary of the arsenic plume as defined by the 0.01 mg/L (HHS) concentration contour is located along the north and west edges of East Helena, and has remained relatively stable since at least 2001 when the Facility was shutdown. An area of groundwater HHS exceedances to the south and west of the former smelter (the "west arsenic area"), typically showing arsenic concentrations in the 0.005 to 0.025 mg/L range, is believed to be derived from groundwater interactions with naturally-occurring arsenic-bearing Tertiary-age volcanoclastic sediments.

The selenium plume (Figures 3-2 and 3-3) extends offsite significantly further than the arsenic plume, due to a lower rate of geochemical attenuation (adsorption or coprecipitation) and relatively conservative transport behavior of selenium. The 0.05 mg/L (HHS) selenium plume extends approximately 2.75 miles northwest of the Facility to Canyon Ferry Road. Lower selenium concentrations (below than the 0.05 mg/L groundwater HHS) extend north of Canyon Ferry Road, with concentrations of 0.023 to 0.029 mg/L observed at one of the northernmost monitoring wells (EH-144D) about three miles north of the Facility. The primary current groundwater selenium sources are the West Selenium Source Area (west lobe), and the slag pile (east lobe) (Figure 4-1).



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Scale in Feet

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CURRENT AND HISTORIC GROUNDWATER CONTAMINANT SOURCE AREAS

FIGURE
4-1

Current information indicates that the primary source of selenium in the slag pile is an area of unfumed slag generated following shutdown of the zinc plant in the early 1980s (Hydrometrics, 2016c). Current maximum selenium concentrations in the project area are 1 to 2 mg/L in the West Selenium Source Area and about 0.5 mg/L immediately downgradient of the slag pile. The plumes emanating from these areas merge in Lamping Field approximately 0.5 miles downgradient (northwest) of the Facility (Figures 3-2 and 3-3).

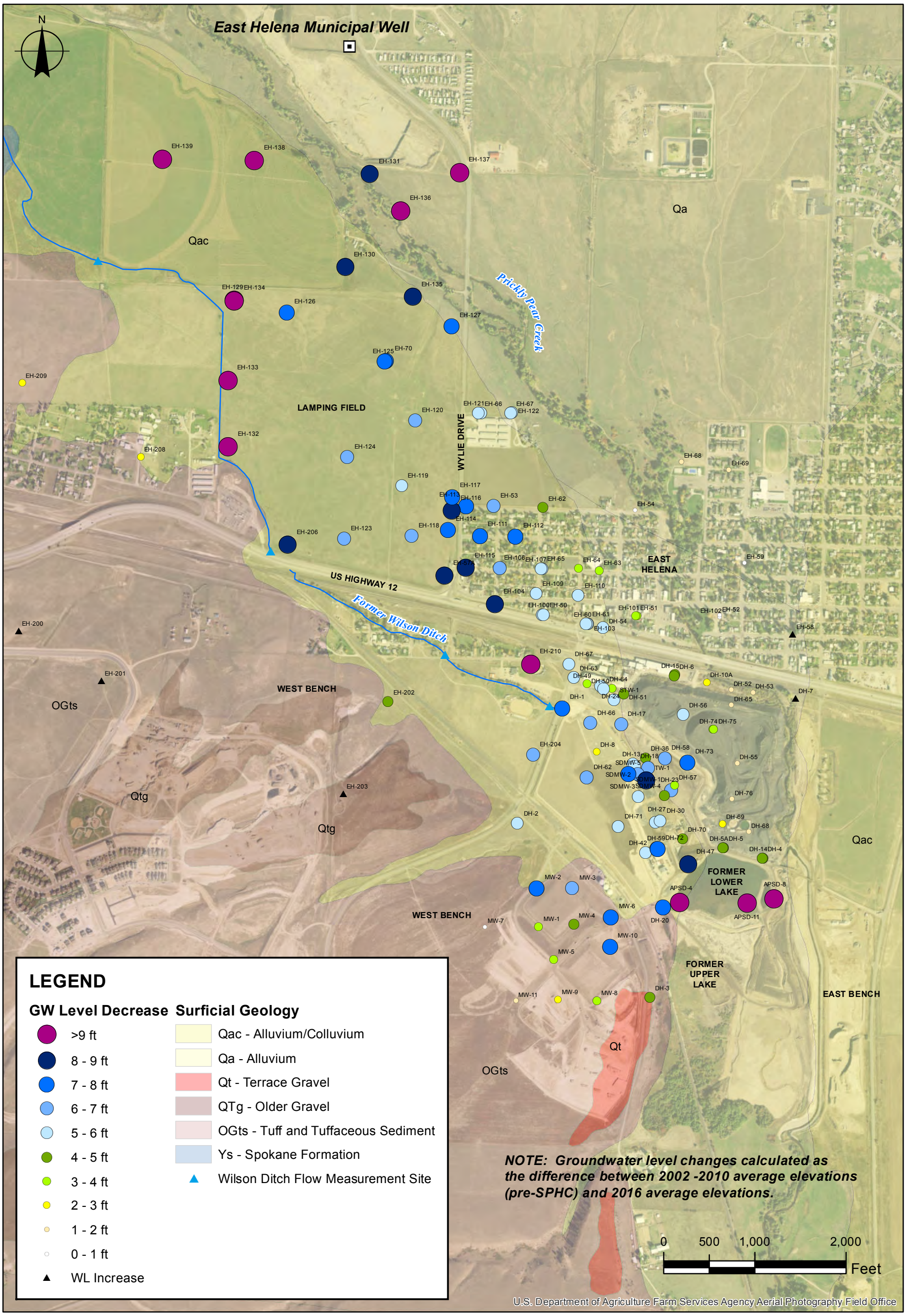
4.2 GROUNDWATER LEVEL AND CONCENTRATION TRENDS

4.2.1 Groundwater Level Trends

Groundwater level trends on the Facility are of particular interest since reducing groundwater levels is a large part of the corrective measures program. As previously noted the main objective of the SPHC IM is to reduce groundwater levels on the Facility, thereby reducing groundwater interaction with contaminated soils and associated contaminant leaching to groundwater. By reducing contaminant leaching to groundwater, groundwater contaminant loads and concentrations are expected to decrease, first in the source areas on the Facility, followed by reductions in downgradient portions of the groundwater plumes.

Figure 4-2 shows the magnitude of groundwater level changes throughout the project area since inception of the SPHC IM in November 2011. As shown in the figure, groundwater levels have declined most in the southern portion of the Facility and northwest of the Facility near Wilson Ditch. Notable water level changes illustrated on Figure 4-2 include:

- Groundwater levels have declined by 12 feet or more in the South Plant Area in response to the SPHC IM. Water levels in the former Lower Lake area have declined from about 3918 feet prior to 2011, to current levels of about 3905 feet.
- Water levels in the central portion of the Plant Site including the former Acid Plant and Speiss/Dross areas have declined by 5 to 7 feet, desaturating some of the most highly contaminated soils on the Facility.
- Groundwater levels beneath the slag pile have declined from 1 to 6 feet with the lower declines occurring beneath the east half of the pile. This illustrates the controlling influence of Prickly Pear Creek on groundwater levels in the far eastern portion of the Facility as compared to the western portion where groundwater levels were more influenced by recharge from former Upper Lake.
- Besides the South Plant Site, groundwater level declines were greatest northwest of the Facility near Highway 12 and Wylie Drive, and along the west side of Lamping Field adjacent to former Wilson Ditch (wells EH-132, EH-133, EH-134, Figure 4-2). The larger water level declines in this area are due to decommissioning of Wilson Ditch in 2012 and elimination of groundwater recharge from ditch leakage. Based on synoptic flow measurements, Wilson Ditch would typically lose about 1.5 cfs (675 gpm) of flow between the Facility and northern Lamping Field (well DH-1 to EH-129/134 on Figure 4-2). Elimination of this recharge source has resulted in a decrease in water levels and westward shift in groundwater flow directions in Lamping Field.



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Hydrometrics, Inc. Consulting Scientists and Engineers Date Saved: 5/31/2017 4:31:08 PM	2015-2016 WATER RESOURCES MONITORING REPORT EAST HELENA FACILITY	**GROUNDWATER LEVEL CHANGES THROUGHOUT PROJECT AREA**	FIGURE **4-2**

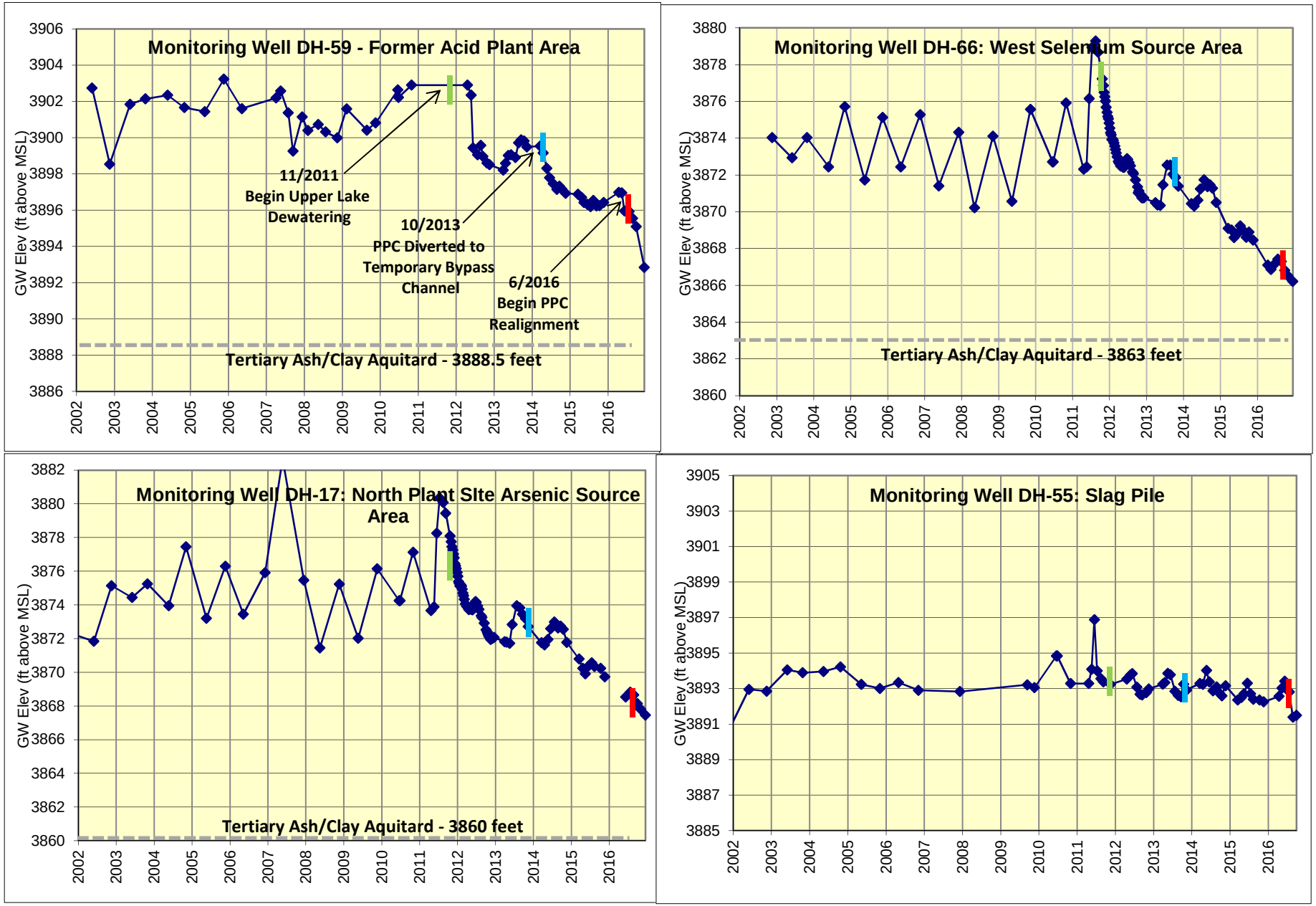
- Also of interest is the increase in water level declines north of Lamping Field (e.g., EH-136, EH-137, EH-138, EH-139, Figure 4-2) as compared to Lamping Field and East Helena. The greater water level declines to the north reflect other (non-SPHC) influences on groundwater levels in the project area such as irrigation and other water use practices, and possibly climate. This is especially evident in wells EH-136 and EH-137 located east of Prickly Pear Creek (and associated groundwater divide) where activities on the Facility are not expected to affect the hydrogeology.

Figure 4-3 includes groundwater level hydrographs further illustrating groundwater level trends for various portions of the Facility. As shown in Figure 4-3, groundwater levels on the Facility have decreased in response to the various SPHC IM components and other IM-related activities. Water levels in the Acid Plant Area, illustrated by the well DH-59 hydrograph, have declined by more than 7 feet through 2016, desaturating some of the highest contaminant concentration soils on the Facility. The saturated thickness of the Upper Aquifer at this site, as measured from the top of the Tertiary ash/clay aquitard, has decreased from about 10 to 15 feet pre-SPHC to about 5 feet. The hydrograph from Well DH-66 shows that water levels in the West Selenium Source Area have declined by 6 to 8 feet since inception of the SPHC IM, reducing the saturated thickness from 10 feet to about 3 feet. Dewatering of the upper aquifer in this primary selenium source area has had a direct positive impact on the local groundwater quality as discussed in Section 4.2.2. In the North Plant Site Arsenic Source Area (well DH-17), water levels have declined 6 to 8 feet reducing the saturated thickness from approximately 15 feet to 8 feet. Groundwater arsenic concentrations at this well have decreased by about 33% since inception of the SPHC IM (Section 4.2.2). Beneath the slag pile (well DH-55), groundwater levels have decreased by about 1.5 to 2.0 feet with the majority of decline occurring since June 2016 in response to the Prickly Pear Creek realignment component of the SPHC IM.

The groundwater level trends documented though the CAMP program are consistent with the SPHC IM objectives and have been accompanied by decreases in groundwater contaminant concentrations on the Facility. As of spring 2017, groundwater levels have continued to decline as the hydrogeologic system on the Facility re-equilibrates with the 2016 Prickly Pear Creek realignment. Groundwater level monitoring will continue in 2017 to further evaluate post-SPHC groundwater levels and flow patterns.

4.2.2 Groundwater Concentration Trends

One of the groundwater performance remedy evaluation components for the East Helena project outlined in the 2016 CAMP as recommended in USEPA guidance (USEPA, 2014a) is trend analysis. The 2016 CAMP specified trend analysis for both the primary COCs at the Facility (arsenic and selenium), as well as the indicator geochemical parameters sulfate and chloride. Remediation phase performance trend analyses currently focus on wells in two primary areas of interest: (1) the Facility source areas, including the Acid Plant area, slag pile area, West Selenium area, and North Plant Site Arsenic area; and (2) wells defining the downgradient extent of the selenium plume where variable concentration trends have recently been observed. Wells selected for remediation phase concentration trend analysis under the performance evaluation program are listed in Table 4-1 and are shown on Figure 4-4.

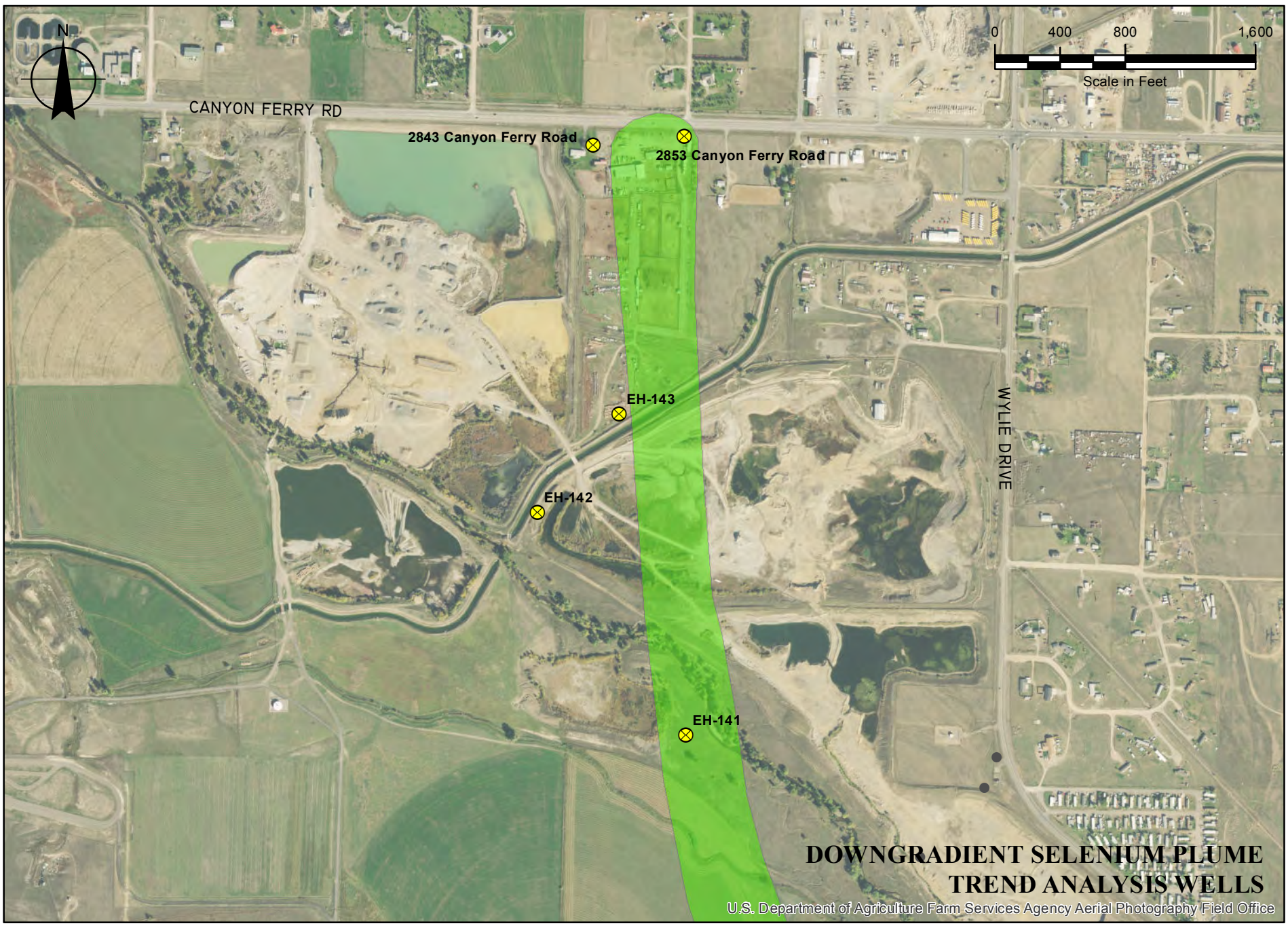


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FIGURE 4-3.GROUNDWATER LEVEL HYDROGRAPHS FROM FACILITY SOURCE AREA MONITORING WELLS

Table 4-1. 2016 Performance Evaluation Trend Analysis Monitoring Wells -- East Helena Facility

Well	Northing	Easting	Target Area
DH-59	859632.08	1360058.60	Acid Plant
DH-42	859587.20	1359938.80	Acid Plant
DH-80	859665.45	1360005.89	Acid Plant
2843 Canyon Ferry Road	872346.42	1354330.00	Downgradient Selenium Plume
2853 Canyon Ferry Road	872391.53	1354773.24	Downgradient Selenium Plume
EH-141	868713.30	1354782.70	Downgradient Selenium Plume
EH-142	870077.47	1353868.60	Downgradient Selenium Plume
EH-143	870683.75	1354372.76	Downgradient Selenium Plume
DH-17	860997.41	1359668.63	North Plant Arsenic
DH-64	861382.75	1359476.26	North Plant Arsenic
SDMW-2	860448.26	1359851.23	North Plant Arsenic
DH-6	861527.08	1360252.42	Slag Pile
DH-15	861541.06	1360257.00	Slag Pile
DH-52	861372.14	1360876.16	Slag Pile
DH-56	861098.43	1360350.74	Slag Pile
DH-66	861005.14	1359333.41	West Selenium
DH-78	860848.96	1359368.22	West Selenium
DH-8	860693.17	1359404.72	West Selenium





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2015 - 2016 WATER RESOURCES MONITORING REPORT EAST HELENA FACILITY	**2016 PERFORMANCE EVALUATION TREND ANALYSIS MONITORING WELLS**	**FIGURE** **4-4**

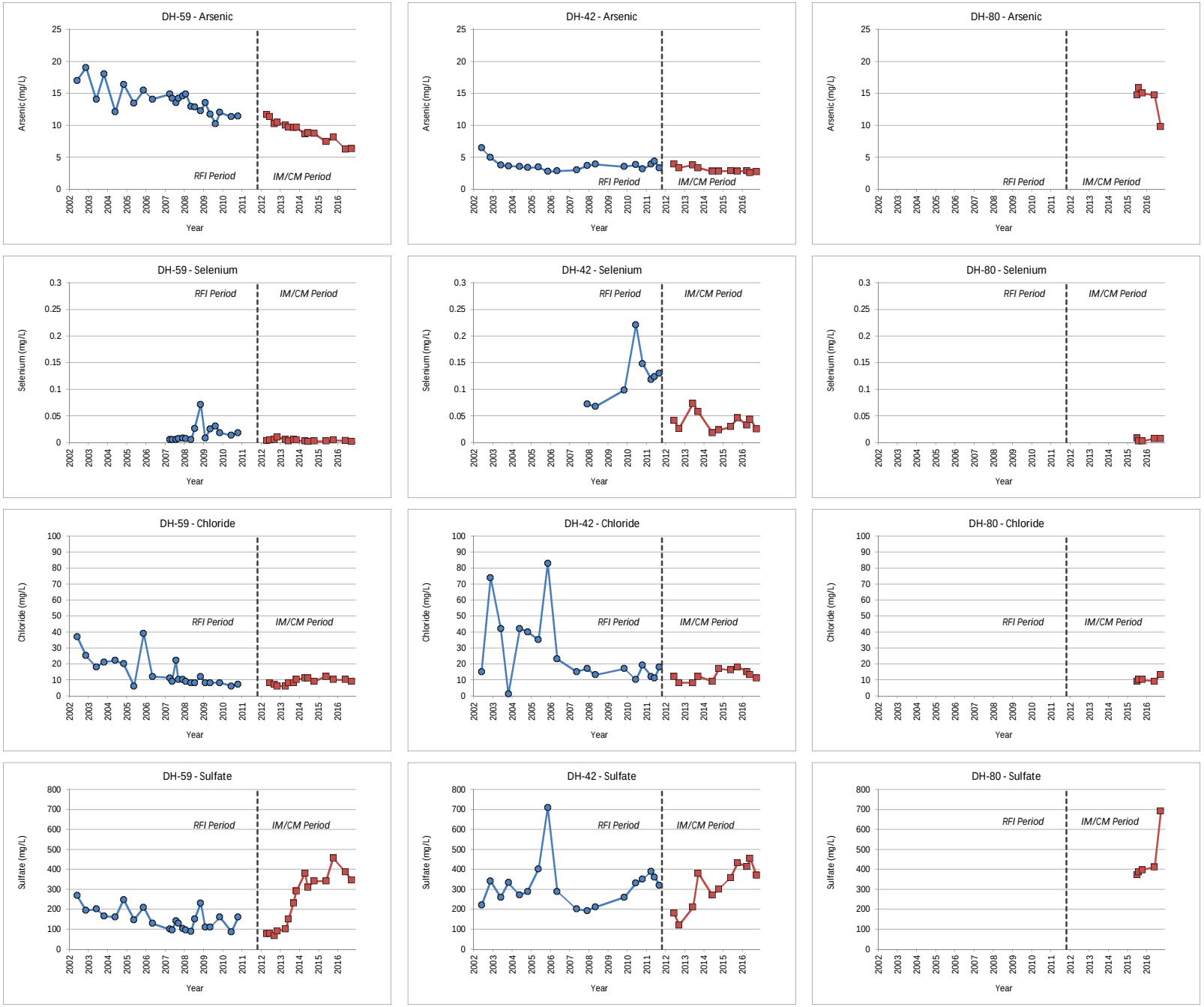
Temporal trend plots of arsenic, selenium, sulfate, and chloride concentrations for the post-operational period of the East Helena Facility (from 2002 through 2016) at individual performance evaluation wells are shown on Figures 4-5 (Acid Plant area), 4-6 (Slag Pile area), 4-7 (West Selenium area), 4-8 (North Plant Arsenic area), and 4-9 (downgradient selenium plume area). The parameter trends shown on the summary figures have been segregated into the two periods prior to and following the initial implementation of IMs in late 2011:

1. RCRA Facility Investigation (RFI) period (2002-October 2011); and
2. RCRA Interim Measure/Corrective Measure (IM/CM) implementation period (November 2011-2016).

The following discussion of parameter trends is based on visual inspection of trend plots. While formal quantitative trend testing techniques such as nonparametric Mann-Kendall or parametric linear regression testing are useful to determine statistically significant trends over time, concentration changes during remediation phase monitoring are typically visually apparent and may be variable as contaminant loading to groundwater from source areas decreases, and hydrologic and geochemical steady-state conditions are reestablished in groundwater. Statistical trend testing (or other statistical tests) may be more explicitly incorporated into the future attainment phase performance monitoring program, in order to determine whether concentrations at individual monitoring wells meet remediation target levels.

Parameter trend plots for Acid Plant area wells DH-42, DH-59, and DH-80 are shown on Figure 4-5. Arsenic concentrations have decreased at all three wells during the IM/CM period, with a greater rate of decrease at DH-59 and a milder decreasing trend at DH-42. The arsenic concentration at well DH-80 decreased by about 35% from 15.1 mg/L to 9.72 mg/L following the 2016 Acid Plant source removal. Selenium concentrations in the Acid Plant area have historically been relatively low at these three wells, with a maximum concentration of 0.22 mg/L at well DH-42 during the RFI period (Figure 4-5). Selenium concentrations observed during the post-2011 IM/CM period have been lower than pre-2011 concentrations at DH-42 and DH-59, and selenium concentrations at all three wells are currently less than the 0.05 mg/L groundwater standard. Trends for the geochemical indicator parameters chloride and sulfate at the Acid Plant area wells exhibit contrasting behavior.

Chloride concentrations at all three wells have remained stable at about 10 mg/L during the IM/CM period, near the low end of the pre-2011 RFI period concentration range (Figure 4-5); sulfate concentrations, however, have increased at all three wells during the IM/CM period, although concentrations appear to have stabilized recently at about 400 mg/L at wells DH-42 and DH-59. Implementation of IMs has involved a number of disturbances to the aquifer in close proximity to the Acid Plant area, including removal of contaminated unsaturated and saturated zone soils in the former Tito Park area upgradient of the Acid Plant (including within the former APSD slurry wall), removal of contaminated soils within and around the former footprint of the Acid Plant settling pond, and reduction of groundwater levels through the SPHC IM, including draining of both Upper and Lower Lakes. The observed sulfate trends may be related to the combined effects of these disturbances; despite these sulfate increases, current trends for the primary COCs in the Acid Plant area show decreasing trends for arsenic and consistently low (<0.05 mg/L) concentrations of selenium.

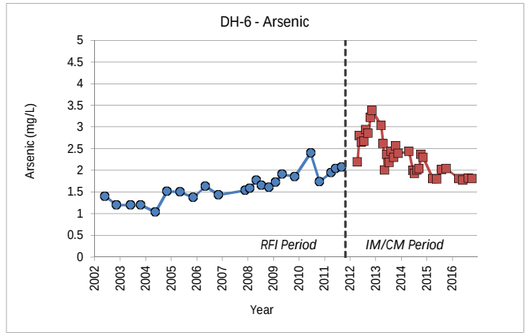


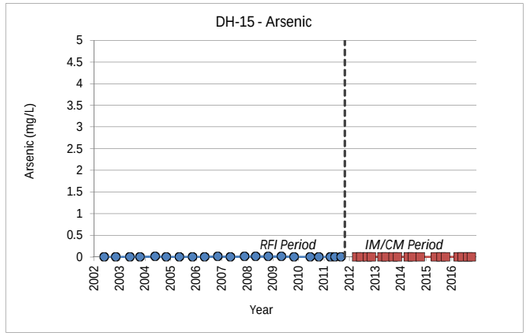
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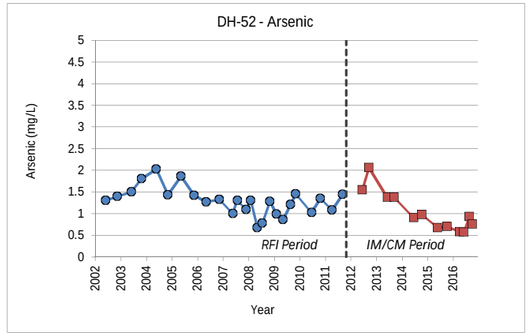
ACID PLANT AREA
GROUNDWATER QUALITY TRENDS

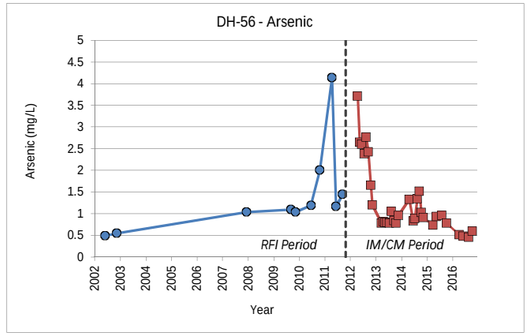
FIGURE
4-5

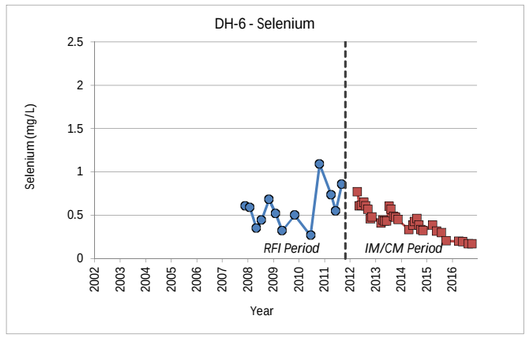
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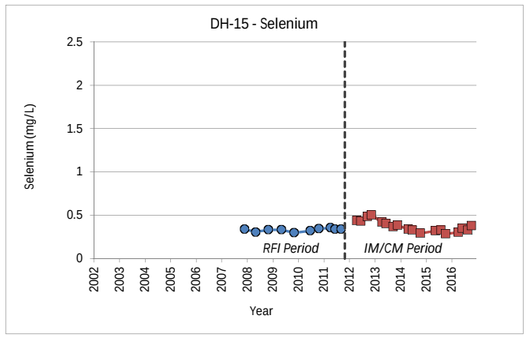


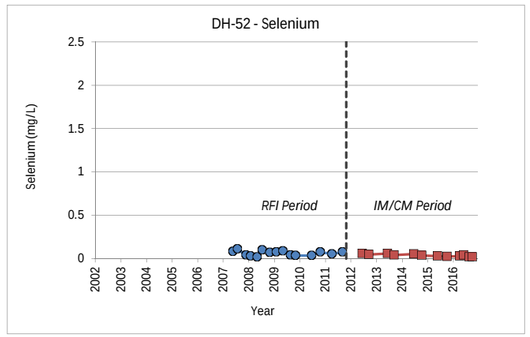


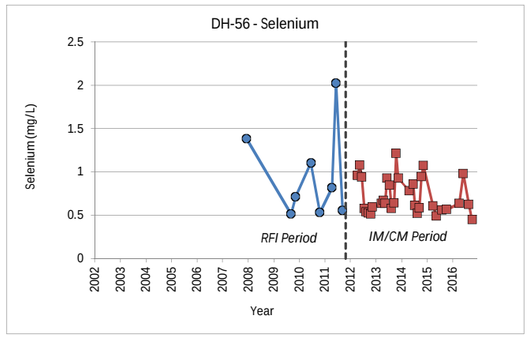


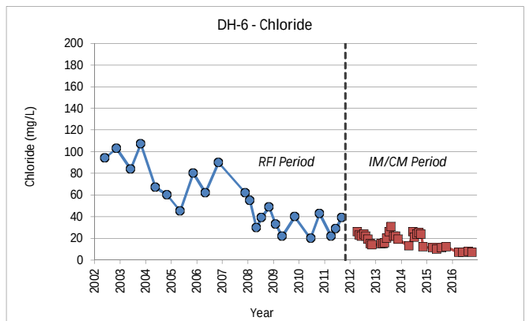


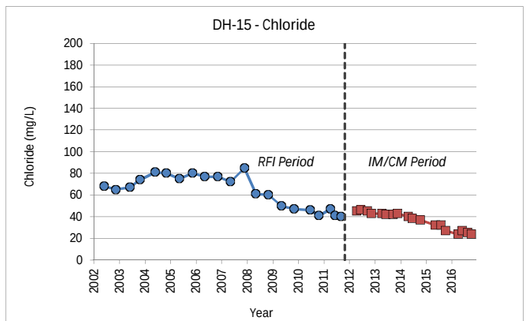


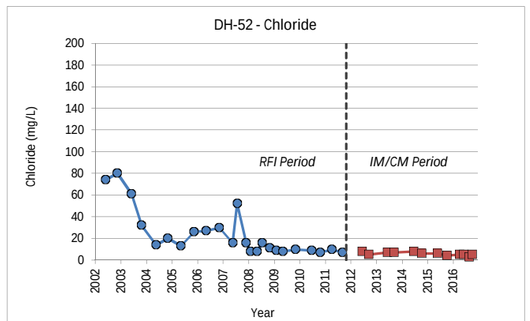


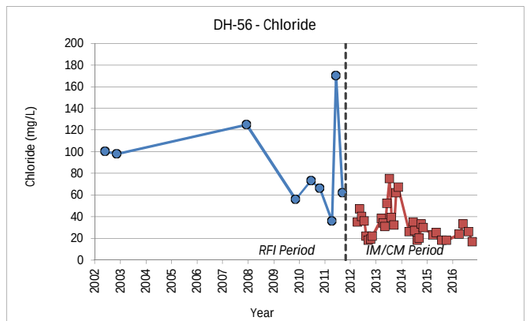


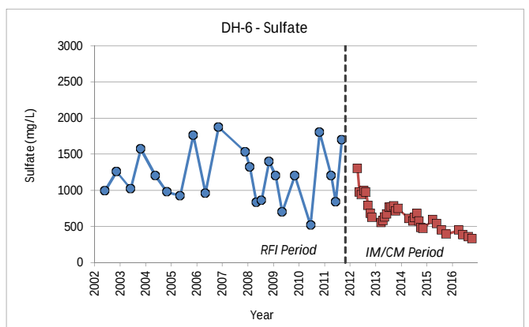


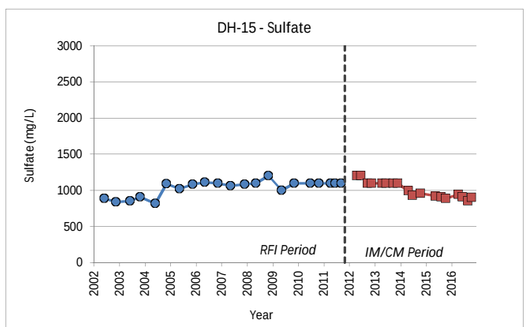


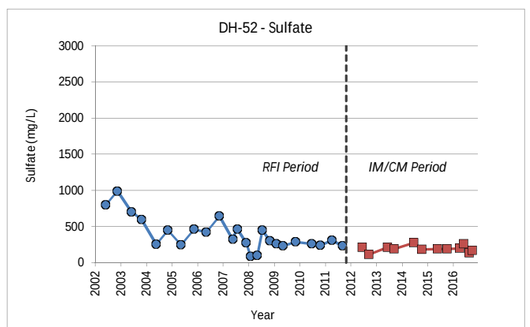


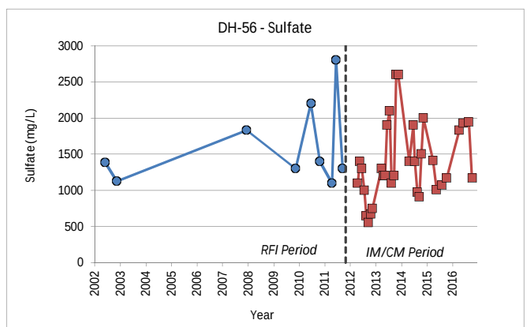












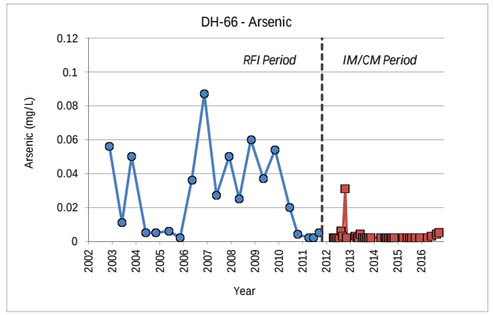
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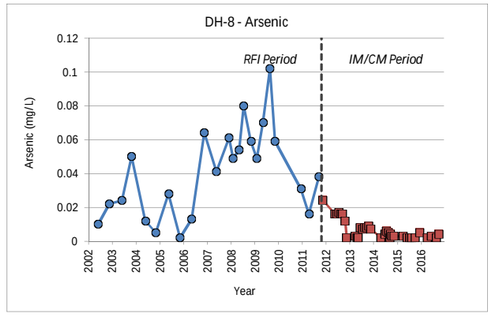
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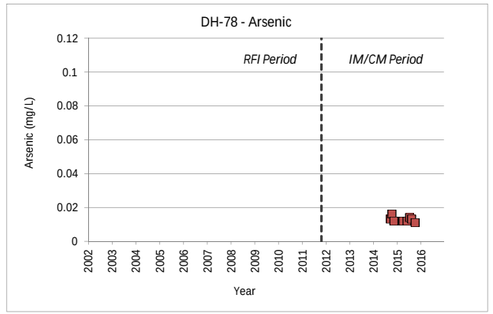
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GROUNDWATER QUALITY TRENDS

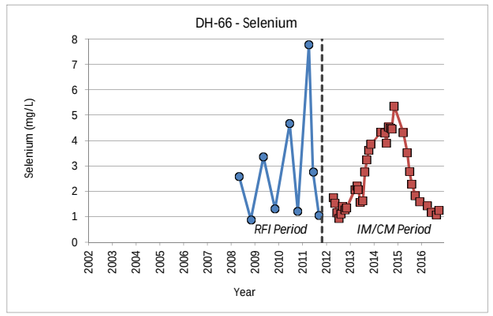
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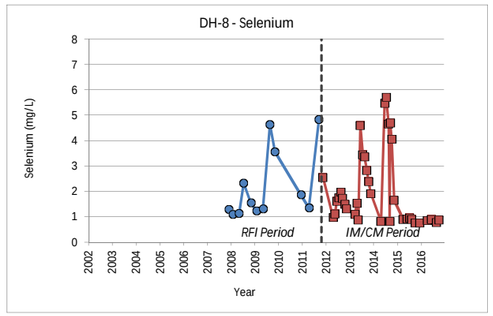
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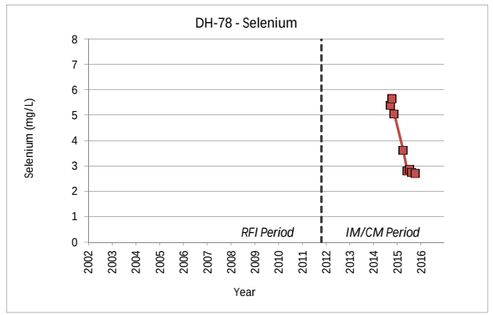


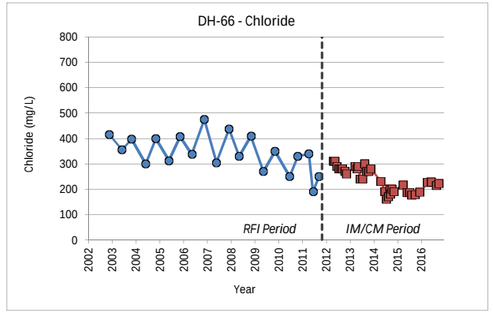


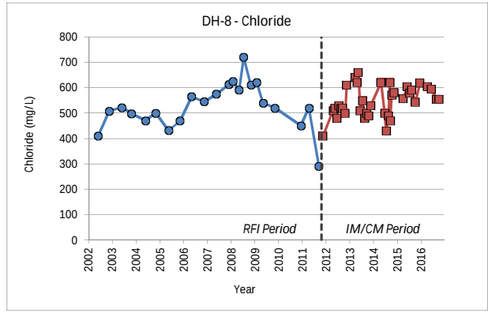


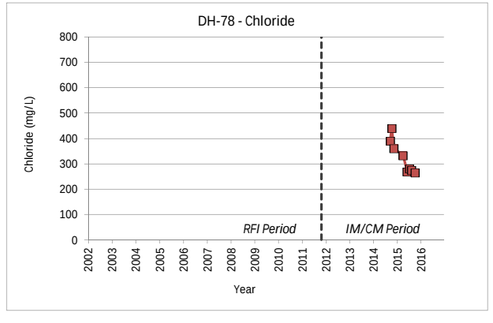


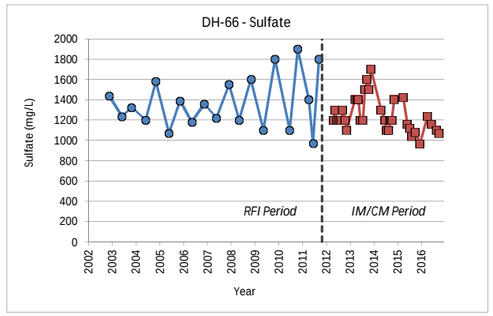


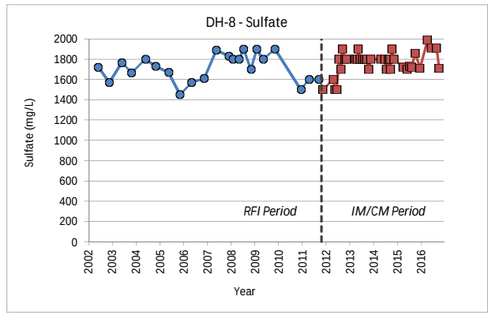


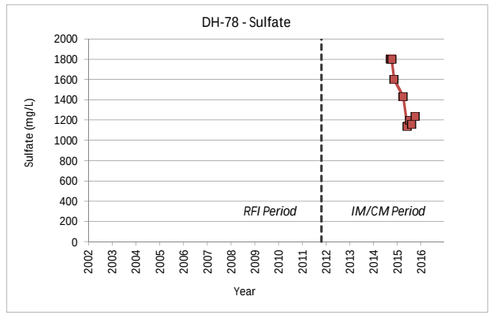










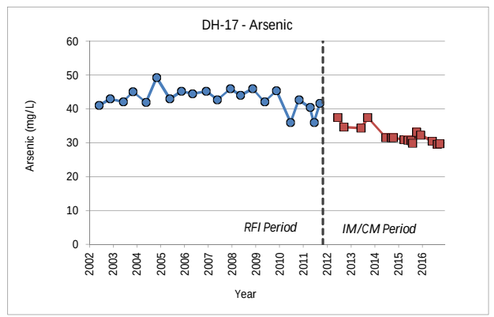


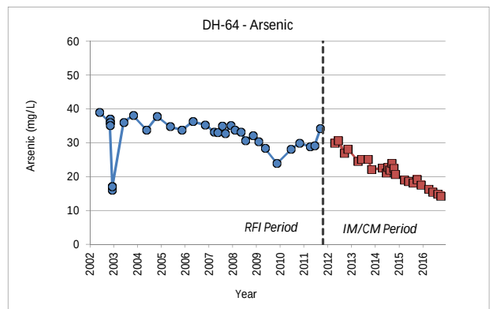
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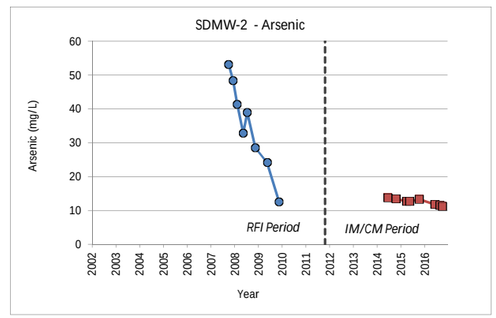
WEST SELENIUM AREA
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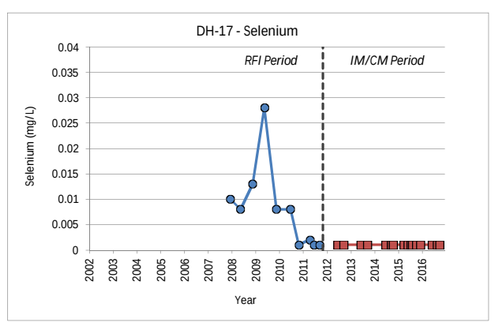
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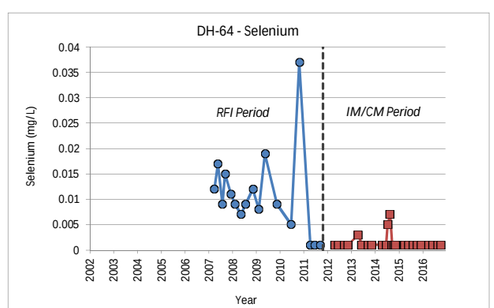
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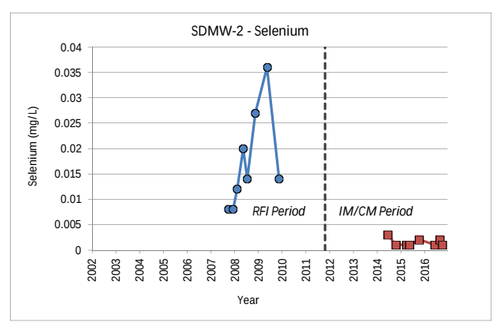


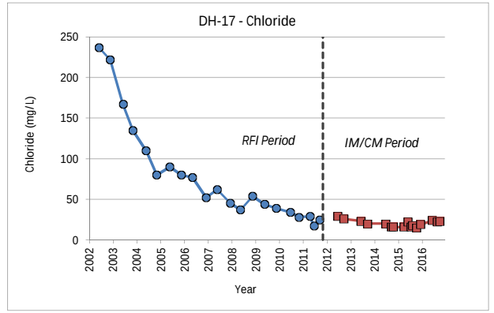


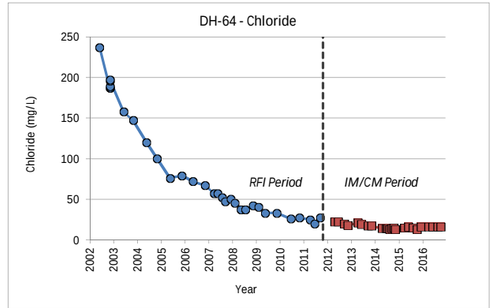


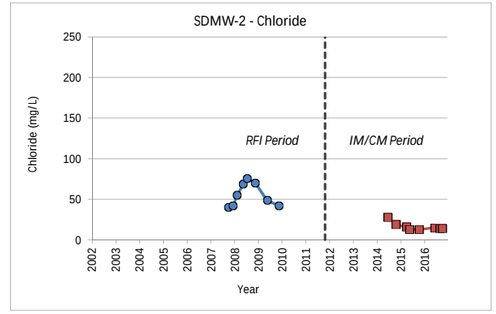


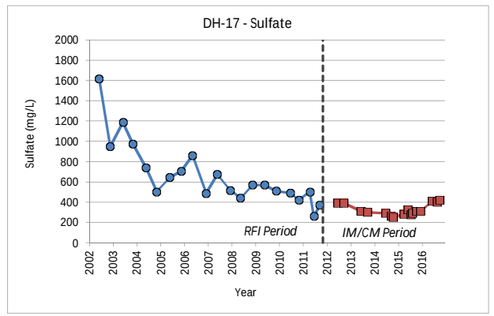


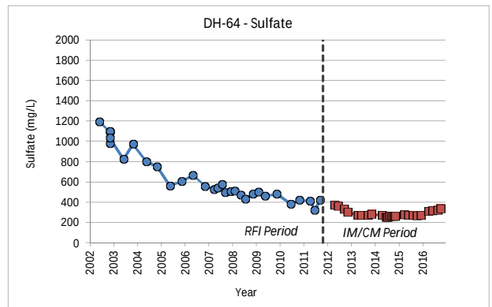


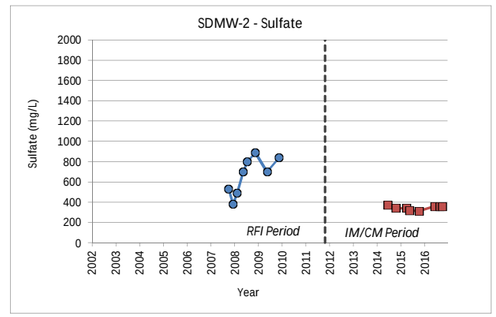












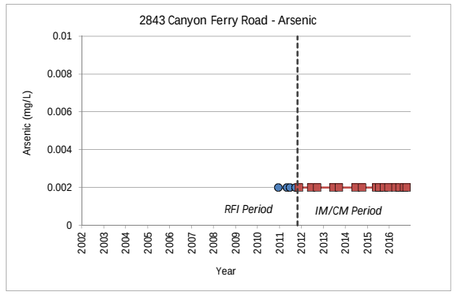
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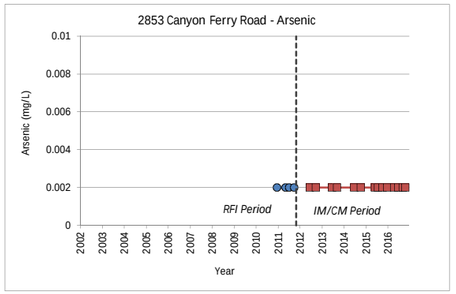
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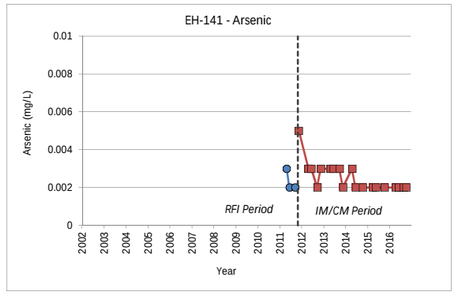
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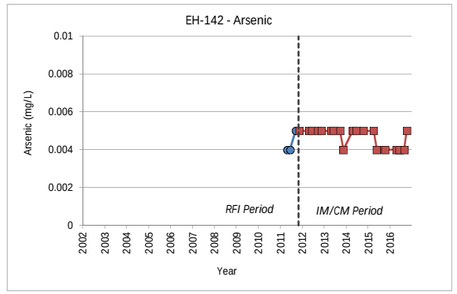
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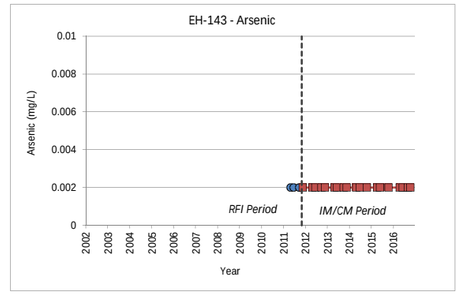
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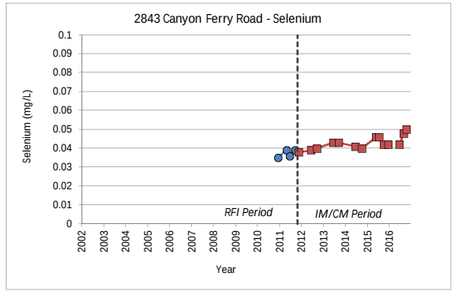


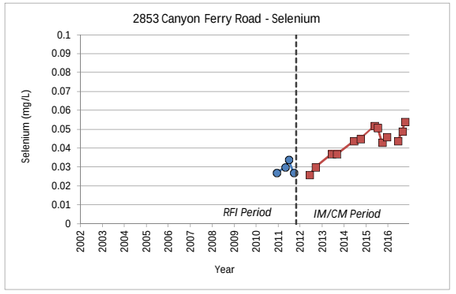


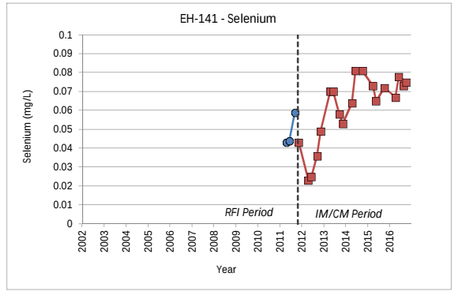


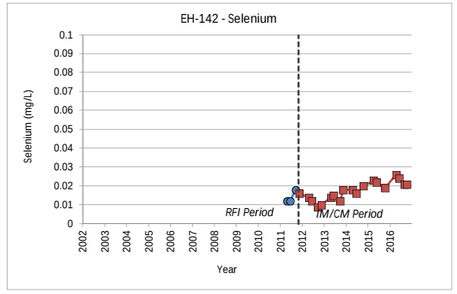


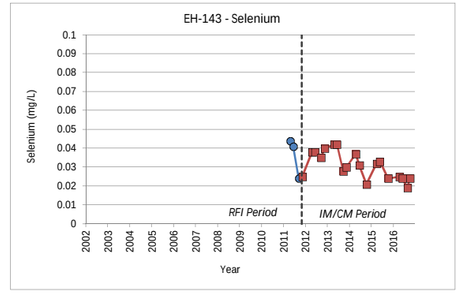


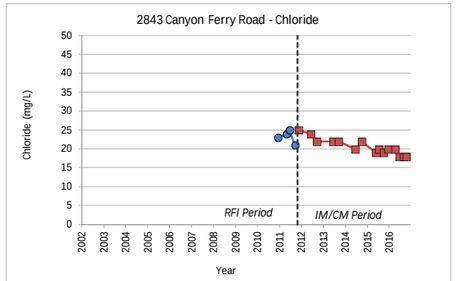


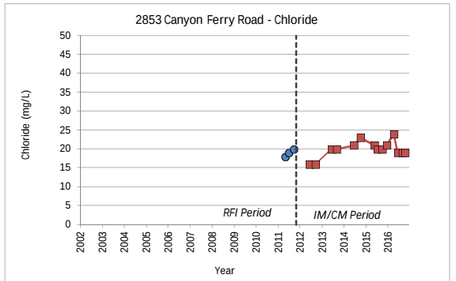


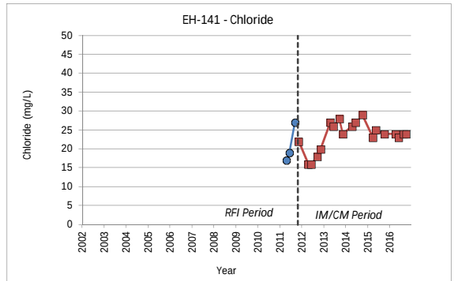


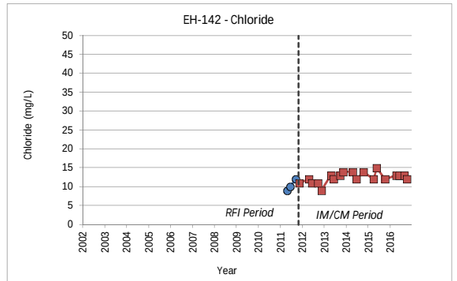


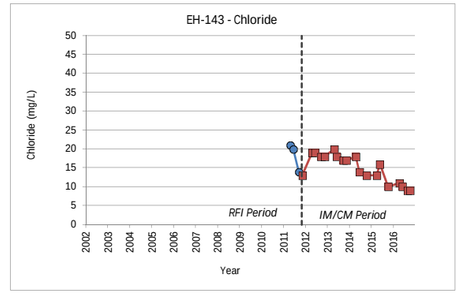


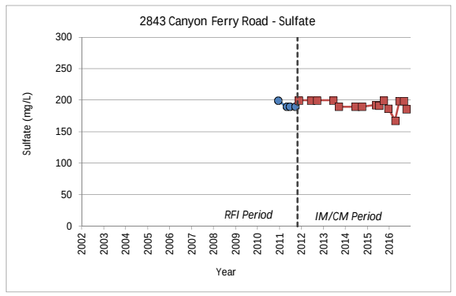


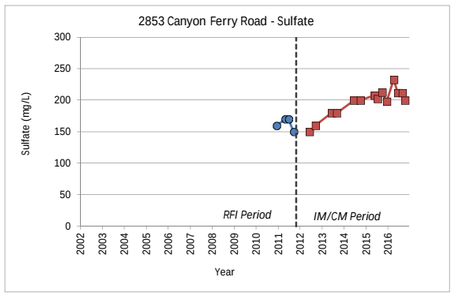


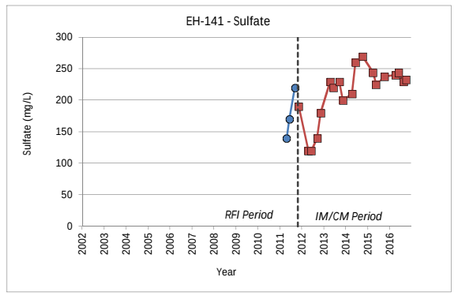


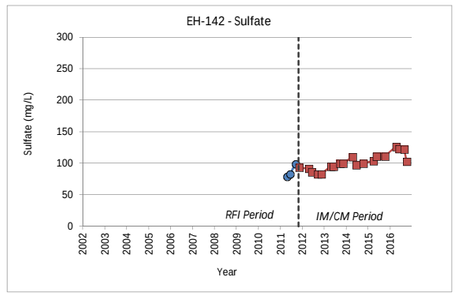


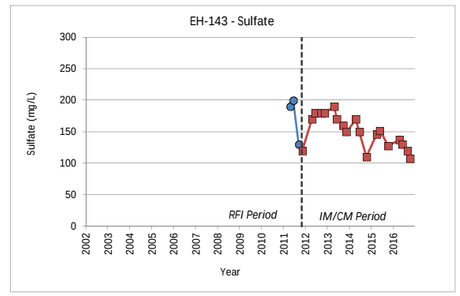












	2015-2016 WATER RESOURCES MONITORING REPORT EAST HELENA FACILITY	**DOWNGRADIENT SELENIUM PLUME AREA GROUNDWATER QUALITY TRENDS**

FIGURE
4-9

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Concentration trends for slag pile area wells DH-6, DH-15, DH-52, and DH-56 are shown on Figure 4-6. Concentrations for the slag pile area wells during the IM/CM period show generally decreasing trends for the performance evaluation constituents at well DH-6; decreasing or stable trends at wells DH-15 and DH-52; and variable trends at well DH-56, although overall concentrations of arsenic, selenium, and chloride have been lower in the IM/CM period compared with the RFI period at well DH-56. Current arsenic concentrations in these slag pile wells as of October 2016 range from <0.002 mg/L at DH-15 to 1.8 mg/L at DH-6, and selenium concentrations range from 0.018 mg/L at DH-52 to 0.447 mg/L at DH-56. Well DH-56 has historically shown the highest concentrations within the slag pile, with arsenic concentrations as high as 4 mg/L and selenium concentrations as high as 2 mg/L (Figure 4-6). As discussed previously, a recently conducted data compilation and evaluation for the slag pile (Hydrometrics, 2016c) suggested that portions of the slag pile may be acting as an ongoing source of contaminant loading to groundwater, and potential corrective measures are currently being evaluated for the slag pile.

West Selenium area concentration trends for wells DH-66, DH-8, and DH-78 are shown on Figure 4-7. Note that well DH-78 went dry after the October 2015 monitoring event (did not make sufficient water to obtain a sample during 2016), so the trends shown for well DH-78 are through 2015. Arsenic concentrations in the West Selenium area have historically been relatively low (0.1 mg/L or lower), and have decreased to near or below the groundwater standard of 0.01 mg/L since 2011. Selenium concentrations at wells DH-8 and DH-66 were highly variable historically, ranging from about 1 to nearly 8 mg/L. After IM implementation began in 2011, selenium concentrations increased consistently at DH-66 through 2014, and have since decreased to near historic minimum levels. At DH-8, seasonally variable selenium concentrations continued to be observed through 2014, but have remained at the low end of the historic range throughout 2015 and 2016. Chloride and sulfate concentrations are also currently near the lower end of the historically observed range at DH-66, but have shown no decreasing trend at DH-8. Well DH-78 was installed between wells DH-8 and DH-66 during the 2014 SAI in the West Selenium area. Before going dry after 2015, selenium, sulfate, and chloride concentrations at this well all showed continuous decreasing trends (Figure 4-7).

The SAIs conducted in 2014 and 2015 in the West Selenium area suggested that selenium mobilized from saturated soils in this area was the most likely source of ongoing selenium loading to groundwater. The SPHC IM has resulted in water level decreases of more than 6 feet at DH-66, as well as causing well DH-78 to go dry. SPHC-driven decreasing water levels in the West Selenium area are intended to reduce contaminant loading by desaturating contaminated soils (reducing leaching of soluble contaminants) and by decreasing the groundwater flux through the area (reducing the mass transport of selenium to downgradient areas). If the primary selenium source in this area is soluble selenium on saturated soils (as indicated by current information), concentrations at source area wells DH-66 and DH-8 and further downgradient should also continue to decrease as groundwater levels stabilize, and the mass of leachable selenium in the saturated zone continues to decrease.

Arsenic, selenium, sulfate, and chloride concentrations trends for North Plant area wells DH-17, DH-64, and SDMW-2 are shown on Figure 4-8. Decreasing post-2011 arsenic trends are apparent at all three wells, most notably at DH-17 and DH-64. At SDMW-2, the rapid decrease in arsenic in

2008 and 2009 from over 50 mg/L to about 10 mg/L corresponds to the installation of the Speiss/Dross slurry wall in late 2007 and the isolation of high arsenic concentration soils within the wall; since 2011, arsenic concentrations at this well have shown a slight decreasing trend, but remain near 10 mg/L. Arsenic concentrations at wells DH-17 and DH-64 have also decreased significantly (Figure 4-8), from pre-IM average concentrations of 42.9 mg/L at DH-17 and 32.6 mg/L at DH-64, to post-IM averages of 32.3 mg/L at DH-17 (a 24% decrease) and 21.6 mg/L at DH-64 (a 34% decrease). Arsenic concentrations at both of these wells are currently at the lowest levels observed in the post-operational period.

Selenium concentrations in North Plant area wells have been below the 0.05 mg/L groundwater standard throughout the post operational period, and currently remain at or below the 0.001 mg/L selenium reporting limit (Figure 4-8). Concentrations of the indicator parameters sulfate and chloride decreased significantly at DH-17 and DH-64 during the RFI period (prior to IM implementation). Sulfate and chloride concentrations have remained relatively stable in the post-2011 period at about 400 mg/L sulfate and 15 to 20 mg/L chloride, although slight increases in sulfate concentration were observed at DH-17 and DH-64 in 2016 (Figure 4-8).

Concentration trends for wells near the downgradient end of the selenium plume (including former residential wells 2843 and 2853 Canyon Ferry Road, EH-141, EH-142, and EH-143) are shown on Figure 4-9. Available data for the pre-IM period before 2011 is limited to three to four samples for this well set, so trends prior to 2011 are not discernable. The downgradient well trend plots in Figure 4-9 show the following:

- Arsenic – concentrations in the downgradient area are low, ranging from <0.001 to 0.005 mg/L, and showing no trends over time.
- Selenium – concentrations show slightly increasing trends at all wells except EH-143, where concentrations have shown a decreasing trend. As of October 2016, the selenium concentration exceeded the 0.05 mg/L groundwater standard in downgradient wells at 2853 Canyon Ferry Road (0.054 mg/L) and at monitoring well EH-141 (0.075 mg/L), and was equivalent to the 0.05 mg/L standard at 2843 Canyon Ferry Road. The increasing selenium trend at well EH-141 appears to have stabilized over the last several years, with concentrations ranging from 0.065 to 0.078 mg/L observed in 2015 and 2016.
- Chloride – concentrations show decreasing trends at 2843 Canyon Ferry Road and EH-143 during the post-IM period, and slight increases followed by stable concentrations at other downgradient wells.
- Sulfate – similar to selenium, former residential well 2853 Canyon Ferry Road and monitoring well EH-141 showed initial increases in the post-IM period, followed by stable concentrations over the last several years. Sulfate concentrations have decreased over time at well EH-143, and have remained stable at 2843 Canyon Ferry Road.

Downgradient wells currently exhibit a mixture of increasing, decreasing, and stable water quality trends for selenium, sulfate, and chloride. The relationship of these trends to pre-IM trends is unclear, due to a lack of pre-IM data at these wells. Given the estimated groundwater travel time from the Facility to the downgradient end of the selenium plume (approximately four to five years), additional

time will be required to evaluate the groundwater quality effects of the IMs implemented from 2011 through 2016 on groundwater at these monitoring wells.

In addition to the wells selected for remediation phase performance monitoring trend analysis discussed above, temporal trends for the primary groundwater COCs arsenic and selenium are also tracked at monitoring wells throughout the complete spatial extent of the contaminant plumes. Figures 4-10 through 4-13 show concentration trends for selenium near the plant site (Figure 4-10) and in the downgradient area (Figure 4-11), and arsenic trends near the plant site (Figure 4-12) and in the downgradient area (Figure 4-13). These plots show trends for the same periods as shown on the performance evaluation Figures 4-5 through 4-9: the pre-IM period from 2002 through October 2011, and the post-IM period from November 2011 through 2016. Note that linear trend lines have been fitted through the pre-IM and post-IM data sets for each well, in order to emphasize the general concentration trends observed during the pre-IM and post-IM periods, and to highlight any significant changes in trend. Observations to date are summarized below.

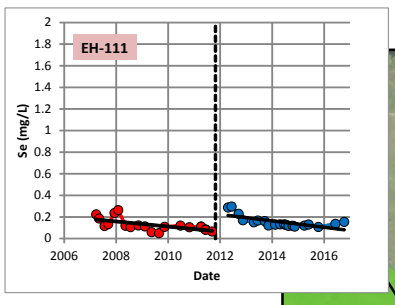
Selenium Trends

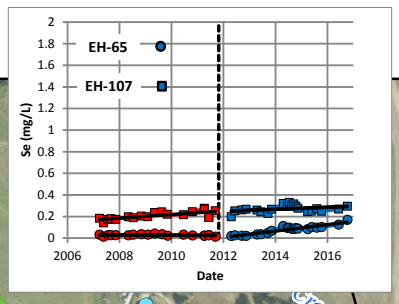
Plant site source area wells have generally shown overall decreases in selenium concentration since IM implementation (Figure 4-10). Selenium concentrations at both DH-66 and DH-8 are currently at or near historic minimum values of about 1 mg/L. Wells DH-82 and DH-67, downgradient of DH-66, also show decreasing selenium concentration trends, particularly over the last two years (Figure 4-10). Wells in the south plant area (DH-42 and DH-30 on Figure 4-10) have shown decreasing concentrations following implementation of IMs in late 2011. Comparing the pre-IM and post-IM periods, average concentrations of selenium have decreased from 0.44 to 0.16 mg/L at well DH-30, and from 0.12 to 0.037 mg/L at DH-42. Slag pile area well DH-56 does not show a strong decreasing selenium trend (Figure 4-10), but has shown slightly lower peak selenium concentrations since 2011 (1 to 1.5 mg/L, compared to 1.5 to 2 mg/L prior to 2011).

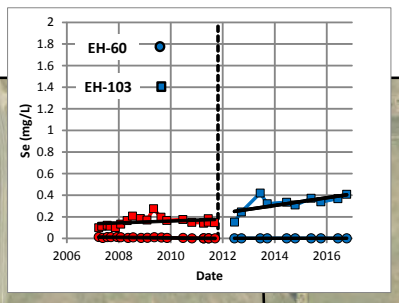
Downgradient of the former smelter in the City of East Helena, selenium concentration trends are variable (Figure 4-11). The selenium plumes (both west and east lobe) emanating from the west selenium area on the west plant site and from the northern part of the slag pile on the east plant site have shown a westward shift following implementation of the SPHC IM. The shift has resulted in increasing selenium concentration trends at some wells, and decreasing concentrations at other wells. For example, selenium concentrations at paired wells EH-50 and EH-100, which ranged from 0.1 to 1.2 mg/L prior to IM implementation, have decreased to concentrations near or just above the selenium reporting limit of 0.001 mg/L in the post-IM period. West of EH-50 and EH-100, selenium concentrations at well EH-104 have increased in the post-IM period (Figure 4-11) as a result of this plume shift to the west. On the east side of the selenium plume, a similar shift has occurred. Well pairs EH-51/EH-101 and EH-52/EH-102 have both shown decreasing trends in the post-IM period, and selenium concentrations in all four wells were in the 0.004 to 0.010 mg/L range in October 2016. The eastern boundary of the 0.05 mg/L (groundwater HHS) selenium plume is now located west of Prickly Pear Creek, whereas previously concentrations exceeding 0.05 mg/L were routinely observed at well EH-102 and occasionally at well EH-52 east of the creek.

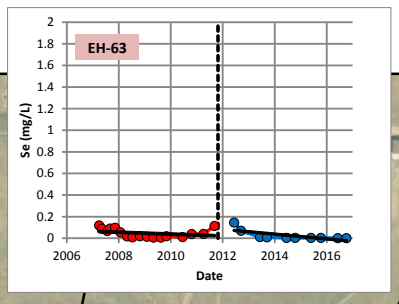
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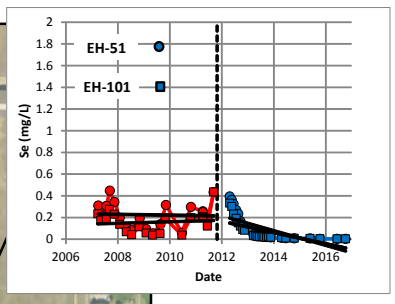
0 0.25 0.5 Miles

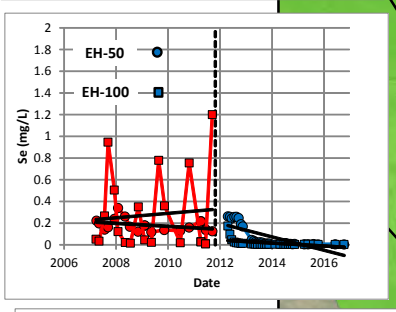


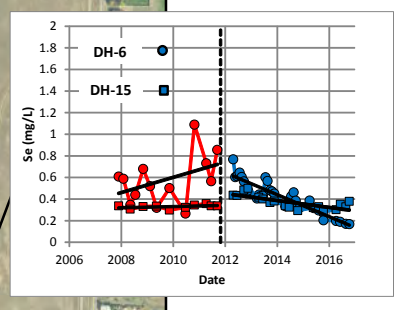


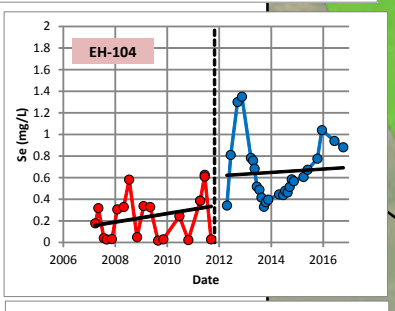


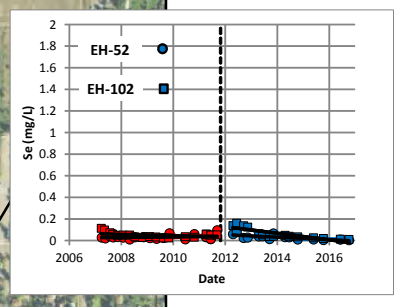


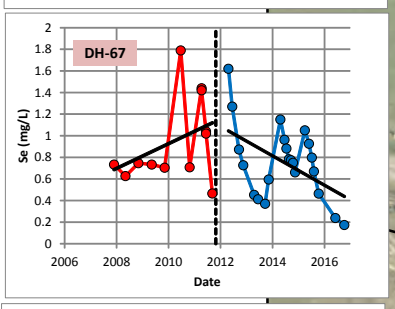


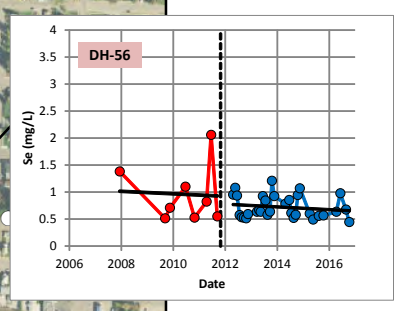


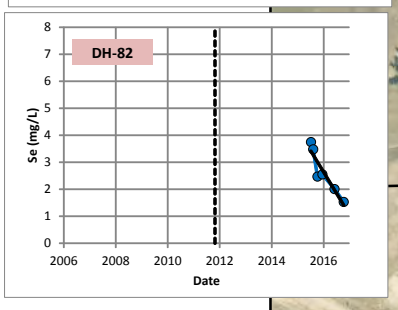


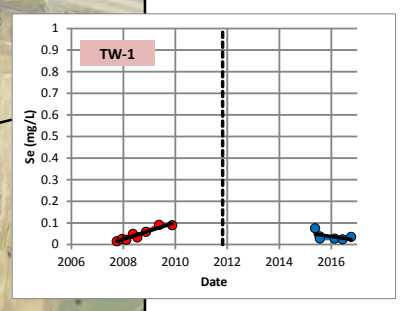


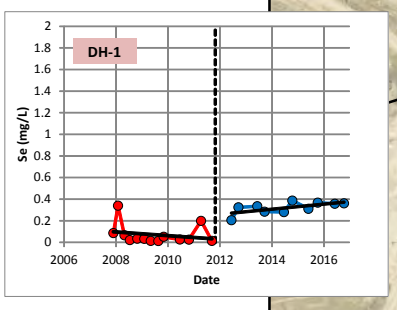


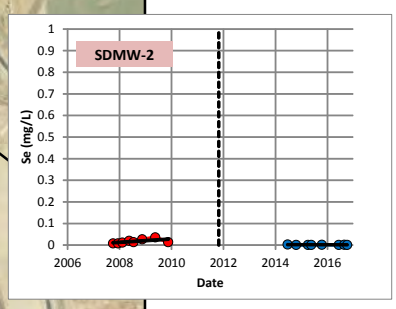


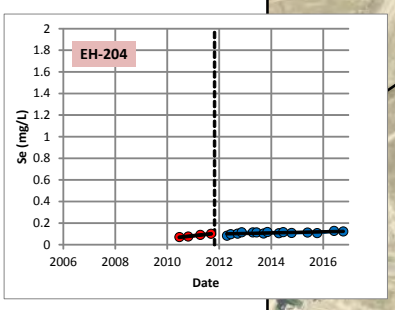


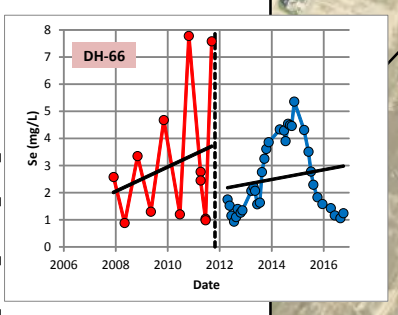


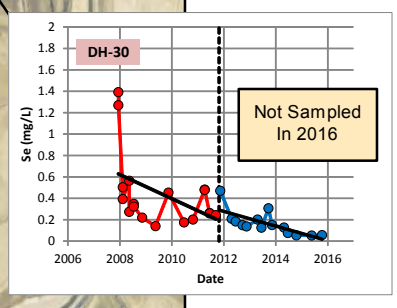


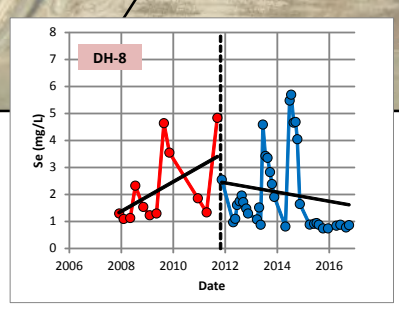


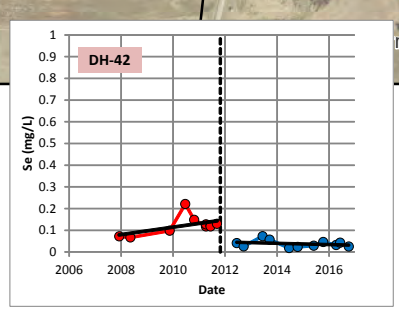












FORMER EAST HELENA SMELTER

Creek

Ditch

m Services Agency Aerial Photography

Legend

October 2016 Se (mg/L)
- <0.001
- 0.001-0.050
- 0.051-0.100
- 0.101-0.500
- 0.501-1.0
- 1.01-3.0
- >3.0

Se Contours
- 0.050 mg/L
- 1.0 mg/L

Hydrometrics, Inc.
Consulting Scientists and Engineers

V:\10022\GIS\2015-2016 GW Report\Fig4-10Plant_Area_Se_Plume_Trends_CMS_Oct16.mxd

2015-2016 WATER RESOURCES MONITORING REPORT
EAST HELENA FACILITY

SELENIUM TRENDS THROUGH OCTOBER 2016
FACILITY AREA WELLS

FIGURE

4-10

Hydrometrics, Inc.
Consulting Scientists and Engineers

Legend

October 2016 Se (mg/L)
- <0.001
- 0.001-0.050
- 0.051-0.100
- 0.101-0.500
- 0.501-1.0
- 1.01-3.0
- >3.0

Se Contours
- 0.050 mg/L
- 1.0 mg/L

0 0.25 0.5 Miles

N

CANYON FERRY RD

WYLIE DRIVE

LAMPING FIELD

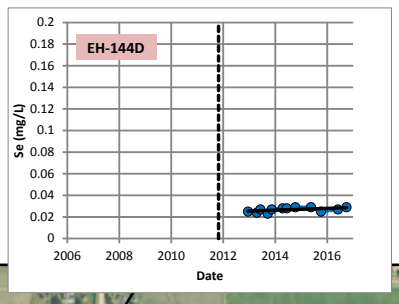
Prickly Pear Creek

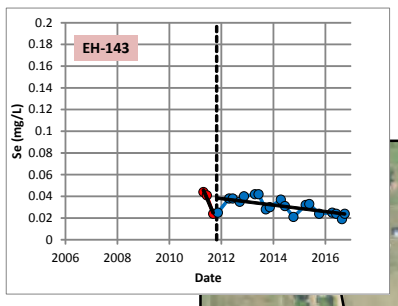
Wilson

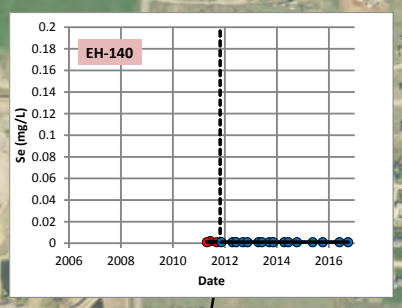
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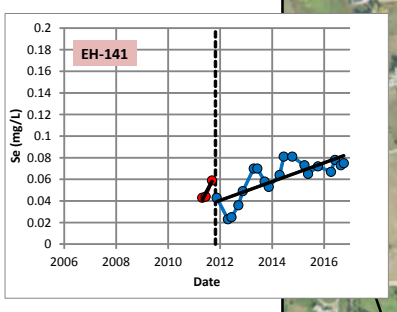
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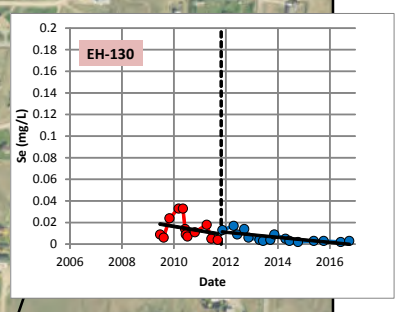
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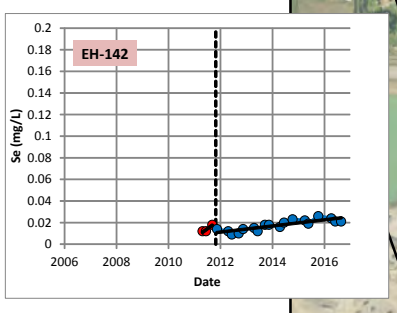


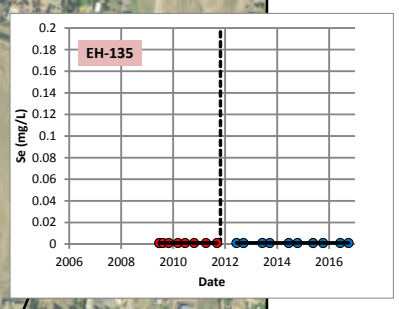


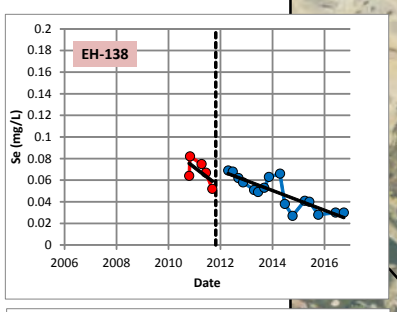


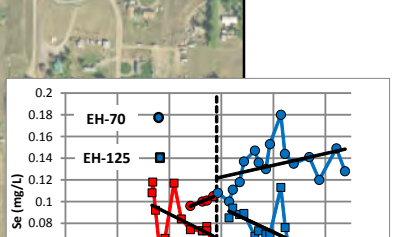


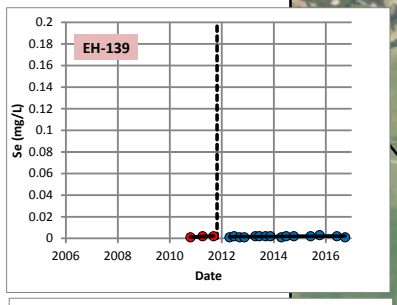


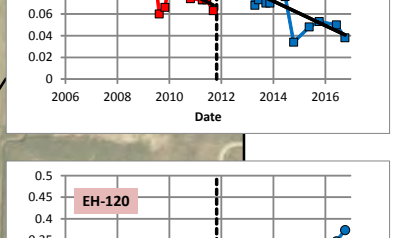


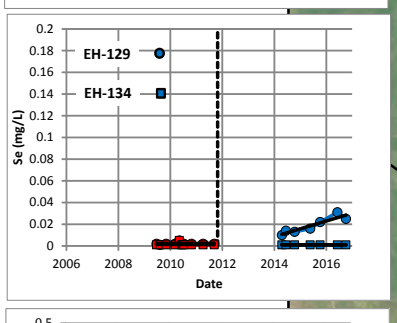


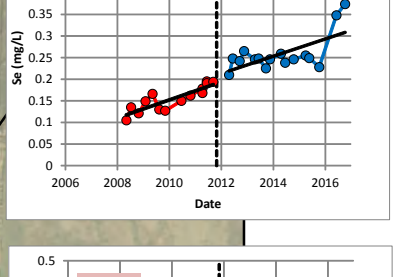


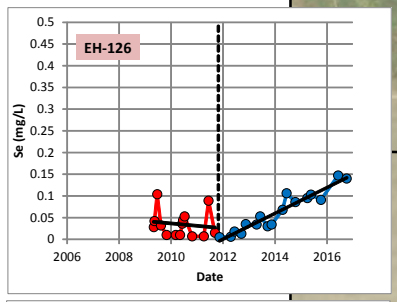


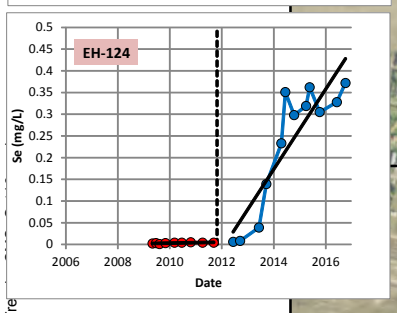


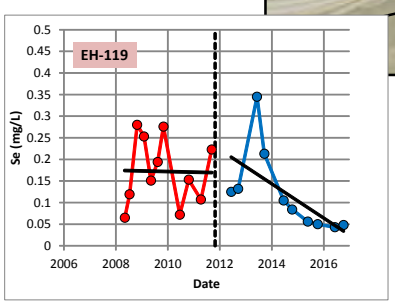


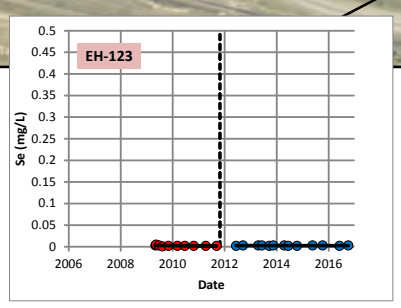


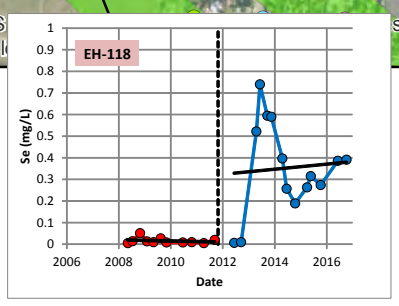


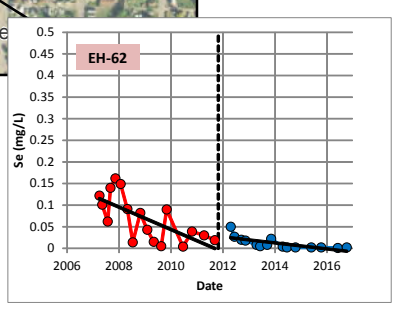












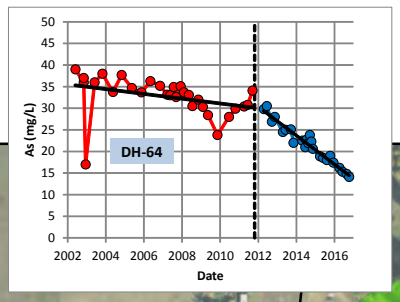
2015-2016 WATER RESOURCES MONITORING REPORT EAST HELENA FACILITY	**SELENIUM TRENDS THROUGH OCTOBER 2016 DOWNGRADIENT AREA WELLS**	**FIGURE** **4-11**

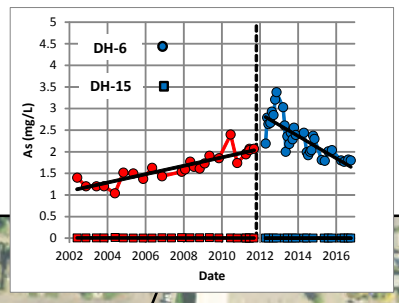
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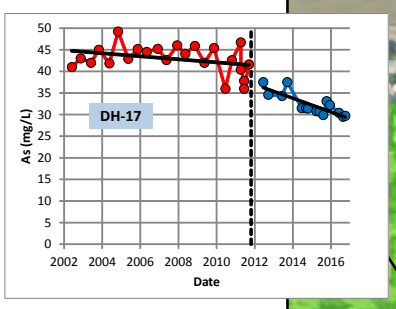
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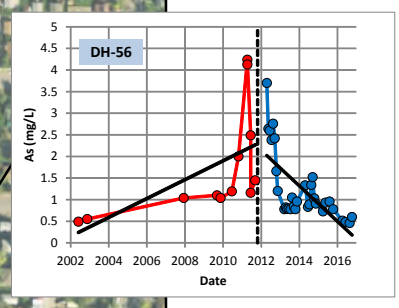
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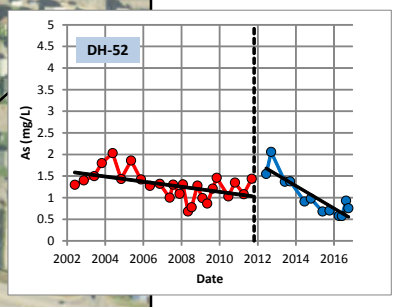
Hydrometrics, Inc.
Consulting Scientists and Engineers

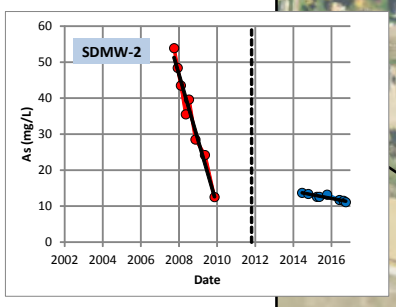


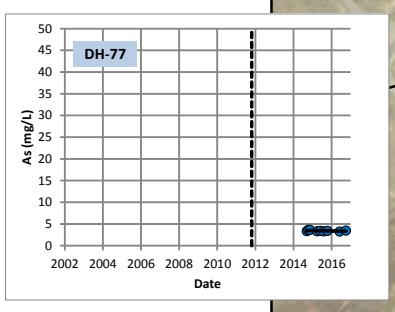


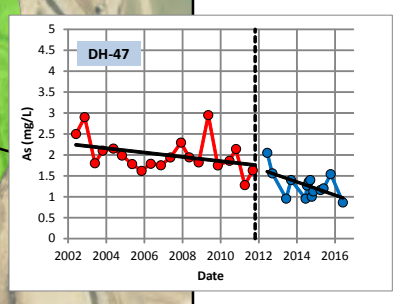


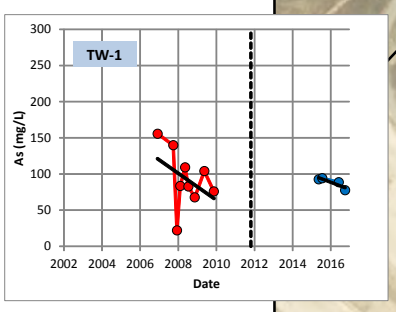


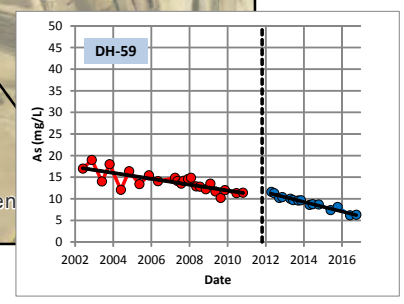


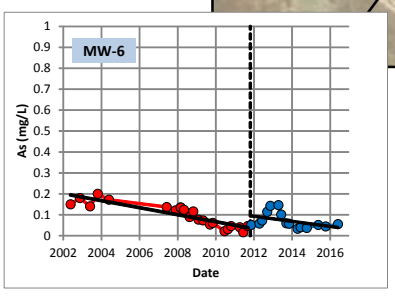


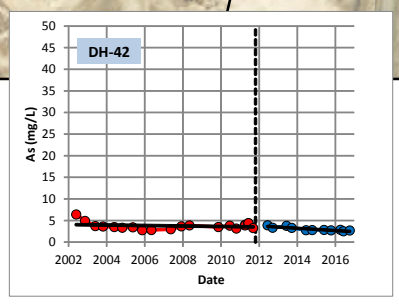


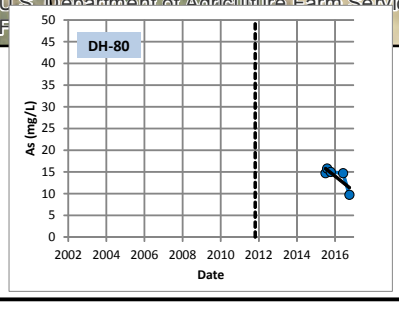












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EAST HELENA
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October 2016 As (mg/L)
- <0.002
- 0.002 - 0.010
- 0.011 - 0.100
- 0.101 - 1.0
- 1.01 - 5.0
- 5.01 - 10.0
- 10.01 - 20.0
- > 20.0

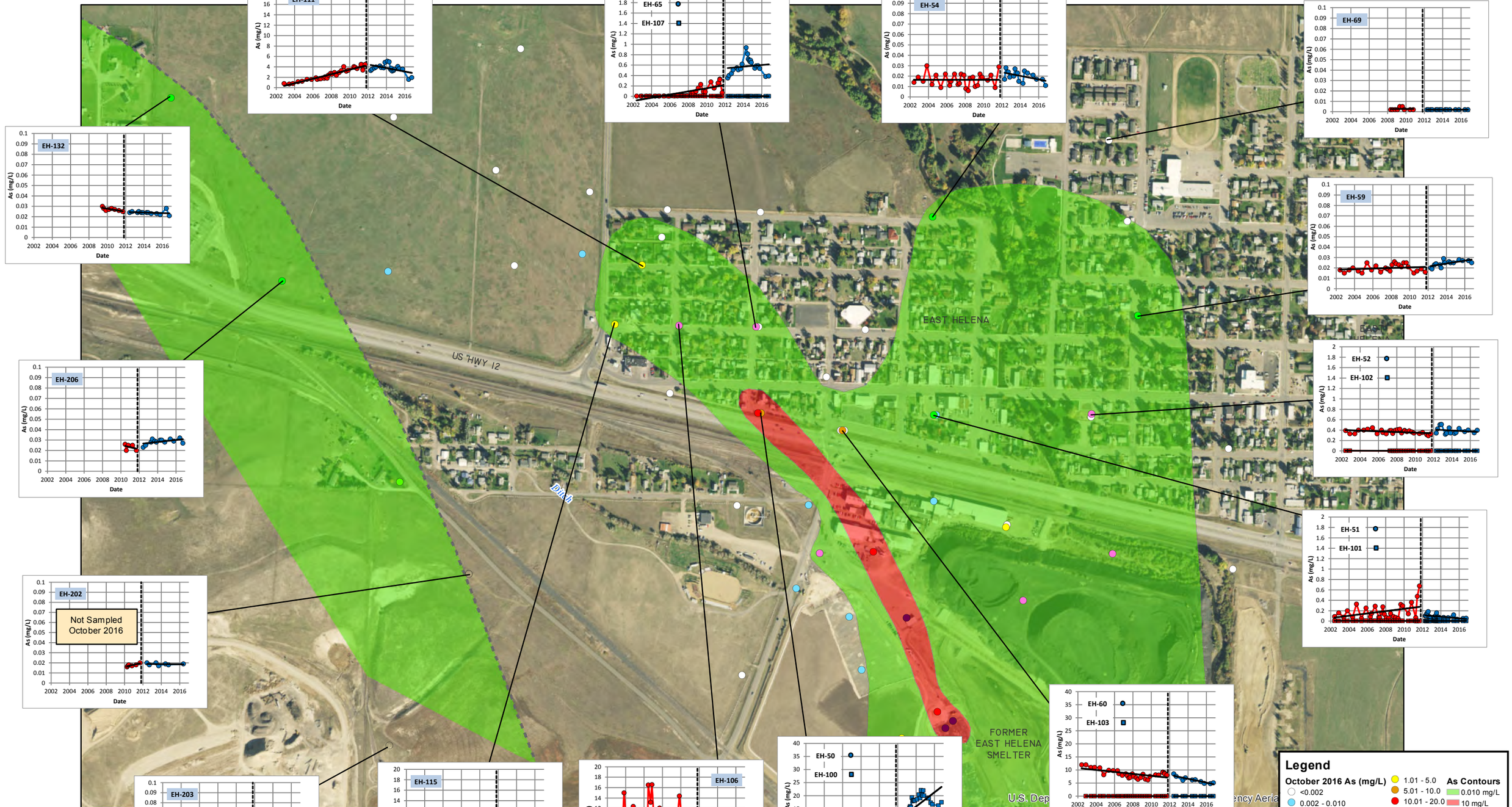
As Contours
- 0.010 mg/L
- 10 mg/L

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2015-2016 WATER RESOURCES
MONITORING REPORT
EAST HELENA FACILITY

ARSENIC TRENDS THROUGH OCTOBER 2016
FACILITY AREA WELLS

FIGURE
4-12



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2015-2016 WATER RESOURCES MONITORING REPORT
EAST HELENA FACILITY

ARSENIC TRENDS THROUGH OCTOBER 2016 EAST HELENA AREA WELLS

FIGURE 4-13

Further downgradient, the two lobes of the selenium plume merge into a single plume in Lamping Field. Similar to the wells in the East Helena area, selenium concentrations in monitoring wells in Lamping Field and further downgradient (Figure 4-11) have shown variable trends in the post-IM period, due largely to the differing effects of the westward selenium plume shift on wells in different areas. On the east side of the plume, decreasing trends have been observed at wells including EH-62, EH-130, and EH-138. On the west side of the plume, increasing selenium concentrations have been noted, most notably at wells EH-118, EH-124, and EH-126 in Lamping Field (Figure 4-11). A mixture of slightly increasing (EH-141), slightly decreasing (EH-143), and relatively stable (EH-144D) selenium concentration trends are present in the furthest downgradient monitoring wells (Figure 4-11). Wells on the east side of the selenium plume both north and south of Prickly Pear Creek such as EH-135 and EH-140 continue to show selenium concentrations of <0.001 mg/L. These wells were installed to monitor groundwater conditions between the selenium plume and the City of East Helena water supply wells located north of Prickly Pear Creek along Wylie Drive (EHPW-3, EHC-2, and EHC-1 on Figure 4-11). Comparison of pre-IM and post-IM selenium trends in the far downgradient selenium plume area is impractical due to the limited pre-IM data set for these wells, most of which were installed in 2011 and 2012. As noted above, additional monitoring data will be required to fully quantify the effects of Facility remedial activities in downgradient areas.

Arsenic

Groundwater arsenic concentration trends in plant site source area wells (Figure 4-12) nearly all show decreases during the post-IM period; exceptions include wells DH-42 near the former Acid Plant, well DH-77 downgradient of the former Acid Plant, and well TW-1 inside the Speiss/Dross slurry wall where concentrations have remained relatively stable. Other wells show moderate to strong decreasing arsenic trends. In some cases, decreasing trends were also apparent during the pre-IM period (e.g., wells DH-47 in DH-59 in the south plant/Acid Plant area, DH-52 in the slag pile area, DH-64 in the North Plant arsenic area, and SDMW-2 in the former Speiss/Dross area). However, in many cases the post-IM rate of arsenic concentration decrease is greater than the pre-IM rate of decrease; this trend is most apparent at wells DH-47 and DH-59 in the south plant area, along with wells DH-17 and DH-64 in the North Plant arsenic area (Figure 4-12). As noted above, well DH-80 downgradient of the former Acid Plant (Figure 4-12), installed in 2015 as part of SAI activities, showed 35% decrease in arsenic concentration during the most recent (October 2016) monitoring event (9.72 mg/L), compared with the average concentration observed from July 2015 through June 2016 (15.1 mg/L).

Similar to selenium, variable arsenic concentration trends are observed in monitoring wells downgradient of the Facility in the City of East Helena (Figure 4-13). Wells in the eastern, more diffuse part of the arsenic plume have showed relatively little change in concentration during the post-IM period compared with the pre-IM period, with the exception of well EH-51, where the average arsenic concentration has decreased from about 0.18 to 0.09 mg/L. To the west, in the higher concentration portion of the arsenic plume, the pre-IM decreasing trend at well EH-60 has continued at approximately the same rate during the post-IM period, and increasing arsenic trends at wells EH-111 and EH-65 that began during the pre-IM period have recently shifted to decreasing trends (Figure 4-13).

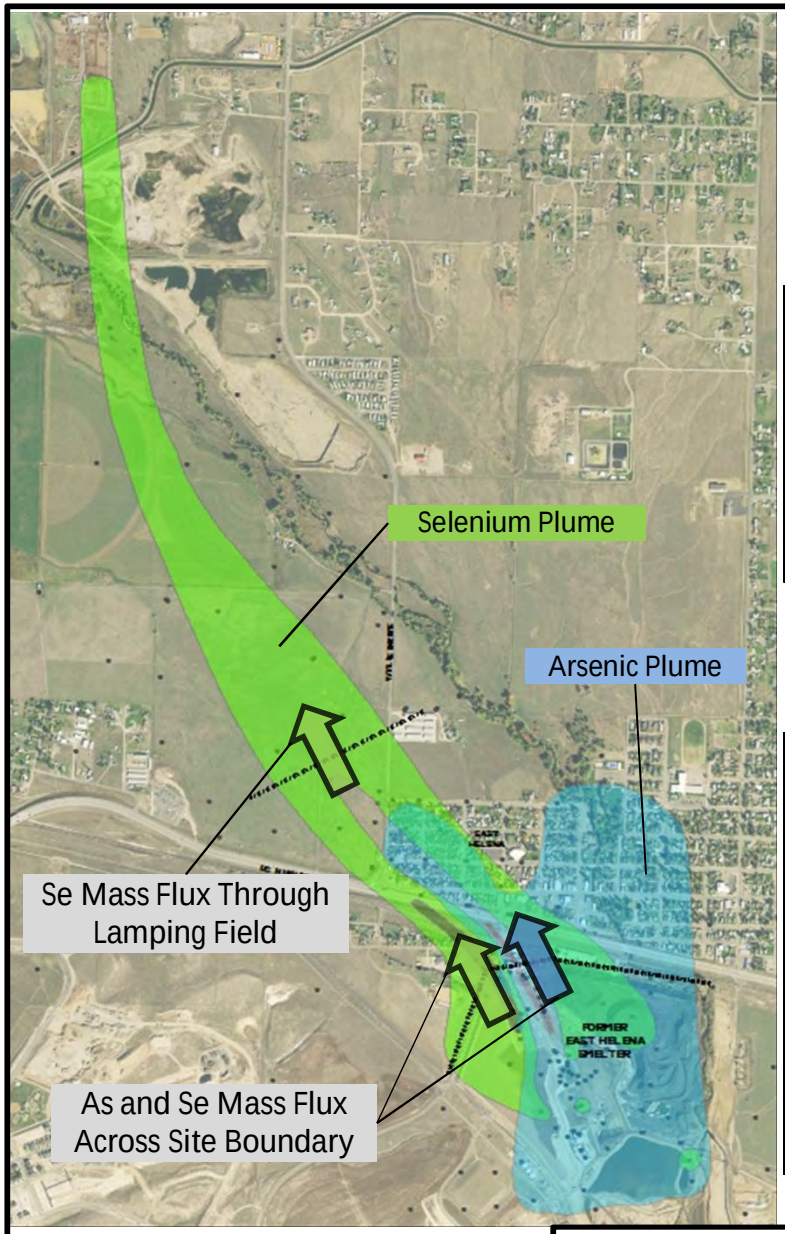
Arsenic concentrations at paired wells EH-50 and EH-100 have increased during the post-IM period, although they have recently begun to stabilize (Figure 4-13). This trend is likely due to a consistent flow direction from upgradient arsenic source areas toward these wells. Well EH-100 previously received seasonal influxes of water from the West Selenium source area, with low arsenic concentrations and elevated selenium concentrations. With a lack of seasonal flow direction change and a more permanent flow direction to the northwest due to the decommissioning of Wilson Ditch, arsenic loading from upgradient sources (the North Plant arsenic area) to the EH-50 and EH-100 well pair occurs steadily rather than seasonally, resulting in the trends observed to date. Finally, the contrasting arsenic trends at well EH-106 and EH-115, located one block west of EH-106 (Figure 4-13), also reflect the influence of the flow direction and plume shifting to the west. At well EH-106, the pre-IM average arsenic concentration 7.8 mg/L, with a maximum as high as 16 mg/L, has decreased to a post-IM average of 1.0 mg/L; to the west, however, the arsenic concentration at EH-115 has increased from typical values <0.005 mg/L to the most recent concentration of 1.13 mg/L over the last two years, as the direction of groundwater flow has shifted to the west (Figure 4-13). Although recent changes in concentration have been observed within the interior of the arsenic plume (both increasing and decreasing concentrations), the overall extent of the arsenic plume based on the 0.010 mg/L contour has remained stable to date as discussed in Section 4.1. Groundwater monitoring data continue to show a high degree of attenuation at the leading edge of the arsenic plume, with groundwater concentrations decreasing by several orders of magnitude over distances of a few hundred feet. As with selenium, additional data will be required to evaluate the downgradient effects of generally decreasing arsenic trends currently observed in Facility source area wells.

4.3 GROUNDWATER CONTAMINANT MASS FLUX

Mass flux can be defined as the mass discharge rate of a contaminant in a groundwater plume in units of mass per time passing across a plume transect. Contaminant concentration trends at individual wells may vary (increasing or decreasing) during the remediation phase of remedy monitoring, and are also affected by changes in groundwater recharge (dilution) and flux rates. Evaluations of contaminant mass flux changes over time are intended to complement the plume stability analysis and assessment of contaminant concentration trends at individual monitoring wells.

Mass fluxes of arsenic and selenium across selected groundwater plume transects have been calculated using the calibrated numerical groundwater flow and contaminant fate and transport model for the East Helena Facility (Newfields, 2016). The model incorporates detailed information on groundwater flow properties (hydraulic gradients, hydraulic conductivities, groundwater seepage velocities) and groundwater concentration distribution (based on calibration of the fate and transport model to empirical data sets), thus allowing calculation of the mass of contaminant migrating through a given transect over a given time period.

Model-derived mass fluxes for arsenic and selenium migrating across the plant site boundary, and for selenium migrating through Lamping Field for 2011 and 2014 are summarized on Figure 4-14. The calculations are based on the 2011 and 2014 calibrated transient groundwater flow and transport models, and represent pre-IM conditions (2011) and conditions during implementation of IMs (2014). These two models represent the currently available models that have been calibrated to observed



Calibrated GW Model Year	Parameter	Mass Flux Through Lamping Field (lb/day)	% Reduction (2011 to 2014)
2011	Se	0.53	30%
2014	Se	0.37	

Calibrated GW Model Year	Parameter	Mass Flux Across Site Boundary (lb/day)	% Reduction (2011 to 2014)
2011	Se	1.3	39%
2014	Se	0.8	
2011	As	25	46%
2014	As	13	

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2015-2016 WATER RESOURCES MONITORING REPORT
EAST HELENA FACILITY

Calibrated Groundwater Model Contaminant Mass Flux Evaluation Results

FIGURE

4-14

groundwater elevations and contaminant concentrations. Due to a significant geochemical attenuation effect, arsenic migrating off the plant site in groundwater does not travel through Lamping Field; therefore, while mass fluxes have been calculated for both selenium and arsenic migrating across the plant site boundary, only selenium mass flux has been calculated through Lamping Field.

As shown on Figure 4-14, groundwater model calculations show that mass fluxes of both selenium and arsenic migrating across the plant site boundary decreased from 2011 to 2014, with a 39% decrease indicated for selenium (1.3 to 0.8 lb/day) and a 46% decrease indicated for arsenic (25 to 13 lb/day). Similarly, the selenium mass flux through Lamping Field also decreased from 0.53 to 0.37 lb/day, a 30% decrease, based on calibrated groundwater model results. These results suggest that IMs implemented at East Helena after 2011 have been effective in reducing contaminant loads leaving the plant site. The reduction in contaminant mass flux is attributable to reductions in both groundwater flux (due to the SPHC IM) and in plant site groundwater concentrations in source areas (as described in Section 4.2.2). Additional reductions in plant site and downgradient groundwater mass flux may be expected as the full effects of the IMs implemented through 2016 are attained; additional mass flux determinations using the groundwater model would require additional calibration efforts in future years.

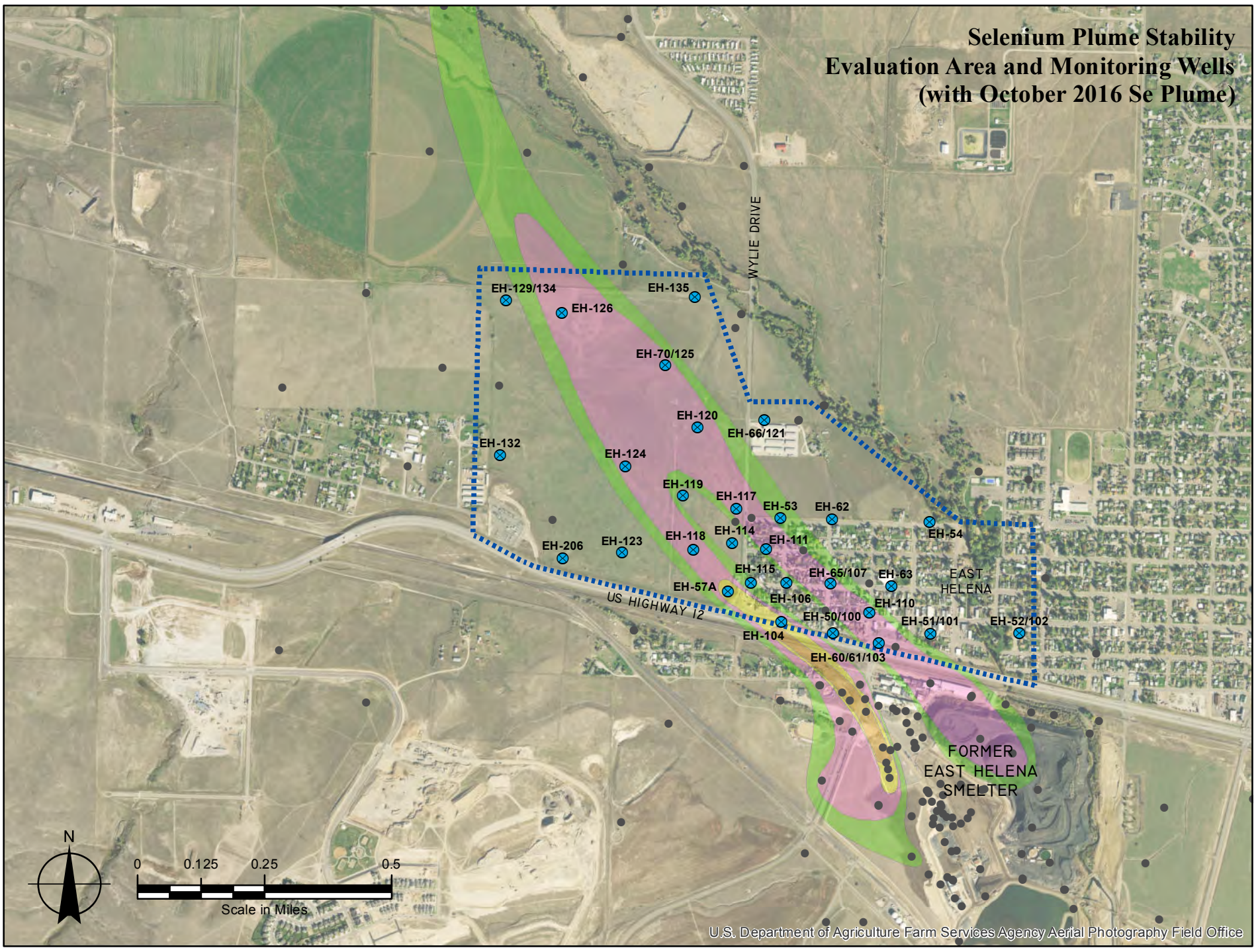
4.4 CONTAMINANT PLUME STABILITY

A final component of the East Helena groundwater remedy performance evaluation described in the 2016 CAMP (Hydrometrics, 2016a) is a plume stability analysis for the primary groundwater COCs, arsenic and selenium. While contaminant concentration trends at individual wells within and downgradient of the primary source areas on the Facility may show varying trends (increasing or decreasing), particularly during the remediation phase of remedy monitoring, evaluation of plume stability allows an additional comprehensive assessment of plume characteristics in the area directly downgradient of the Facility, including any changes over time in metrics such as plume area, average plume concentration, and plume concentration centroid location.

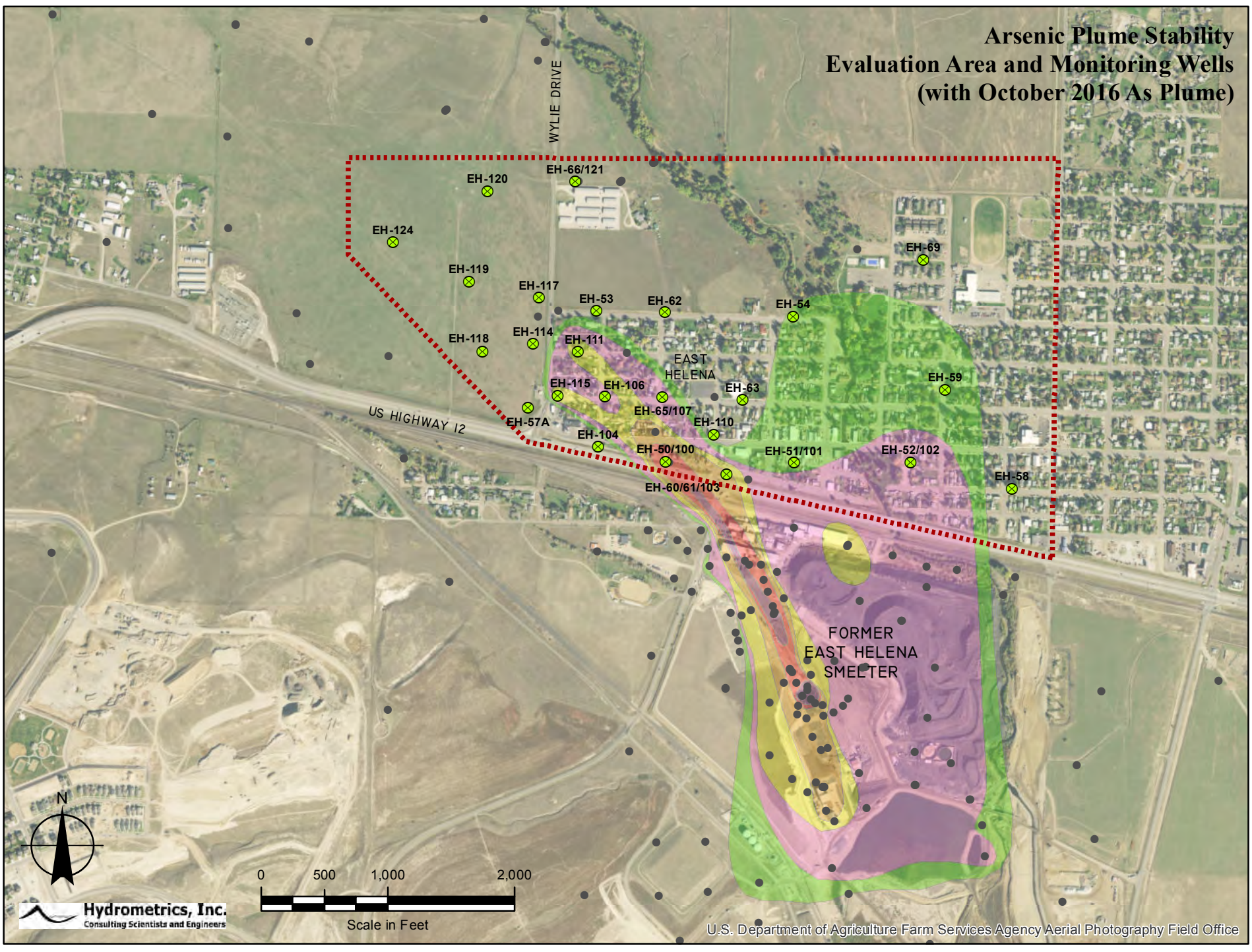
The calculation methods for arsenic and selenium plume stability are based on methods outlined in Ricker (2008). The method demonstrated in Ricker (2008) was originally developed as a tool to evaluate the stabilization of contaminated groundwater migration, in accordance with the requirements of Government Performance and Results Act Environmental Indicator (EI) RCRIS Code CA 750 (Migration of Contaminated Groundwater Under Control). The evaluation procedure involves the following steps:

1. Define the areas for which plume characteristics will be calculated. For the purposes of remediation phase performance evaluation monitoring described in the 2016 CAMP, arsenic and selenium plume areas in the near downgradient area in the City of East Helena and in Lamping Field were selected, to allow integration of results from multiple monitoring points into a single analytically-derived measure of plume characteristics. The arsenic and selenium plume stability evaluation areas are shown on Figure 4-15.

Selenium Plume Stability Evaluation Area and Monitoring Wells (with October 2016 Se Plume)



Arsenic Plume Stability Evaluation Area and Monitoring Wells (with October 2016 As Plume)



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2015 - 2016 WATER RESOURCES MONITORING REPORT EAST HELENA FACILITY	**2016 PERFORMANCE EVALUATION PLUME STABILITY EVALUATION MONITORING WELLS**	**FIGURE** **4-15**

2. Select a representative set of monitoring wells from the monitoring well network with sufficient spatial distribution to define the extent of the contaminant plume within the plume stability evaluation area over multiple years. The selected well sets for the arsenic and selenium plume stability analysis are shown on Figure 4-15 and are summarized in Table 4-2. Note that the selected well set for selenium covers a greater area than the well set for arsenic, since the plume configurations are different.
3. For each well, calculate an annual average concentration of the COC. A single average concentration was calculated for paired or nested wells (see Table 4-2), in order to associate one average concentration with a given location. Below detect values were replaced with the detection limit for calculation of averages.
4. Generate a grid file of interpolated concentration values within the given plume stability area for an individual monitoring year and contaminant, using spatial analysis software such as Surfer® by Golden Software. As suggested in Ricker (2008), grid files were generated on log-transformed concentration data (for smoother interpolation), then transformed back to original concentration units prior to further calculations.
5. Use the grid file to calculate various average plume metrics for the monitoring year, including:
    a. Plume area;
    b. Average plume concentration; and
    c. Plume centroid of concentration.

As described in Ricker (2008), calculated values may then be compared over time to determine any trends in total plume area or average plume concentration. In addition, Ricker (2008) notes that for shrinking plumes, the plume centroid of concentration (or mass) should recede toward the source over time; if the plume is transient (migrating away from the source) or expanding, the centroid of concentration will show migration downgradient away from the source. Therefore, by calculating and plotting centroids of concentration over a number of years, plume stability (expanding, stable, shrinking, or transient) can be further evaluated.

Based on the available groundwater data for the arsenic and selenium plume stability well sets shown in Table 4-2, plume stability metrics (area, average concentration, and location of plume centroid) were calculated for monitoring years 2010 (representing conditions prior to implementation of IMs), 2014, 2015, and 2016 (representing conditions during ongoing implementation of IMs). In addition, although not proposed as part of remediation phase performance evaluation in the 2016 CAMP, the stability of arsenic and selenium plumes on the Facility has been assessed by calculating plume stability metrics for 2010 and 2016 using the following plant site source area wells:

DH-6	DH-15	DH-52	DH-66	EH-204
DH-7	DH-17	DH-55	DH-67	
DH-8	DH-42	DH-56	DH-69	

Table 4-2. 2016 Performance Evaluation Plume Stability Analysis Monitoring Wells -- East Helena Facility

Arsenic Plume Stability Analysis Wells

Well/Well Set*	X	Y
EH-104	1358282.522	862312.6614
EH-106	1358337.119	862709.9336
EH-110	1359199.735	862408.9392
EH-111	1358121.671	863063.8249
EH-114	1357769.757	863127.7487
EH-115	1357963.035	862717.8146
EH-117	1357815.102	863491.194
EH-118	1357370.97	863059.9069
EH-119	1357263.087	863617.6238
EH-120	1357409.933	864330.2403
EH-124	1356666.492	863928.3931
EH-50/100	1358817.999	862195.6926
EH-51/101	1359828.415	862186.9796
EH-52/102	1360752.337	862191.6556
EH-53	1358268.831	863387.4722
EH-54	1359822.332	863345.3893
EH-57A	1357731.038	862625.8977
EH-58	1361553.2	861985.385
EH-59	1361023.244	862766.0055
EH-60/61/103	1359295.783	862093.3668
EH-62	1358812.977	863373.6172
EH-63	1359427.431	862682.4886
EH-65/107	1358789.927	862702.9806
EH-66/121	1358105.331	864406.8992
EH-69	1360852.608	863791.1154

Selenium Plume Stability Analysis Wells

Well/Well Set*	X	Y
EH-104	1358282.522	862312.6614
EH-106	1358337.119	862709.9336
EH-110	1359199.735	862408.9392
EH-111	1358121.671	863063.8249
EH-114	1357769.757	863127.7487
EH-115	1357963.035	862717.8146
EH-117	1357815.102	863491.194
EH-118	1357370.97	863059.9069
EH-119	1357263.087	863617.6238
EH-120	1357409.933	864330.2403
EH-123	1356631.306	863027.3459
EH-124	1356666.492	863928.3931
EH-126	1356002.798	865515.797
EH-129/134	1355425.088	865649.6907
EH-132	1355360.408	864040.3529
EH-135	1357384.976	865688.5946
EH-206	1356012.784	862969.4011
EH-50/100	1358817.999	862195.6926
EH-51/101	1359828.415	862186.9796
EH-52/102	1360752.337	862191.6556
EH-53	1358268.831	863387.4722
EH-54	1359822.332	863345.3893
EH-57A	1357731.038	862625.8977
EH-60/61/103	1359295.783	862093.3668
EH-62	1358812.977	863373.6172
EH-63	1359427.431	862682.4886
EH-65/107	1358789.927	862702.9806
EH-66/121	1358105.331	864406.8992
EH-70/125	1357077.783	864971.9141

*NOTE: Data from well sets (paired wells) will be combined to yield a single overall average concentration for a given monitoring year.

4.4.1 Arsenic Plume Stability Results

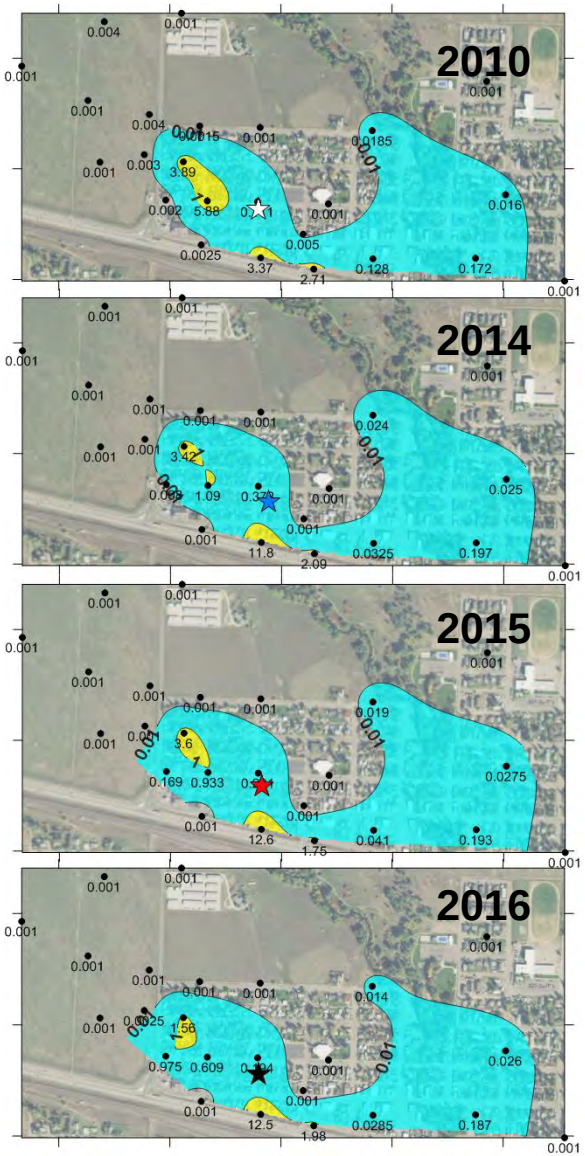
The results of the Ricker (2008) plume stability analysis for arsenic are summarized on Figure 4-16, including software-generated arsenic contours, a table summarizing plume areas and average concentrations, and a map showing the locations of the calculated plume centroids for 2010, 2014, 2015, and 2016. The overall plume area with arsenic concentrations above the 0.01 mg/L groundwater standard did not change appreciably from 2010 (66 acres) to 2014 (68 acres), 2015 (68 acres), and 2016 (64 acres). Average arsenic concentrations within the 0.01 mg/L contour area were also stable, ranging from 0.20 mg/L in 2010 to 0.17 mg/L in 2014, 0.18 mg/L in 2015, and 0.17 mg/L in 2016. In addition, the locations of the calculated plume centroids for 2010, 2014, 2015, and 2016 are in approximately the same location (Figure 4-16). Thus, the plume stability metrics all suggest that the arsenic plume is currently stable, as the plume footprint and average concentration within the plume (represented by the area within the 0.01 mg/L contour) has not increased or decreased, and the plume centroid shows no indication of a change in position. The plume stability calculation results are consistent with observations based on preparation of hand-drawn arsenic isocontour maps, which have shown some variability in arsenic concentrations at wells within the plume, but negligible change in total arsenic plume area over the last several years. The Fall 2011 and Fall 2016 0.01 mg/L hand-drawn arsenic contours shown on Figure 4-16 illustrate the stability in overall arsenic plume footprint. Recent arsenic concentration increases at a monitoring well on the western margin of the arsenic plume (well EH-115; see Figure 4-13) indicate a potential slight shift to the west of the western portion of the arsenic plume, similar to the more substantial shift shown by the selenium plume discussed below.

4.4.2 Selenium Plume Stability Results

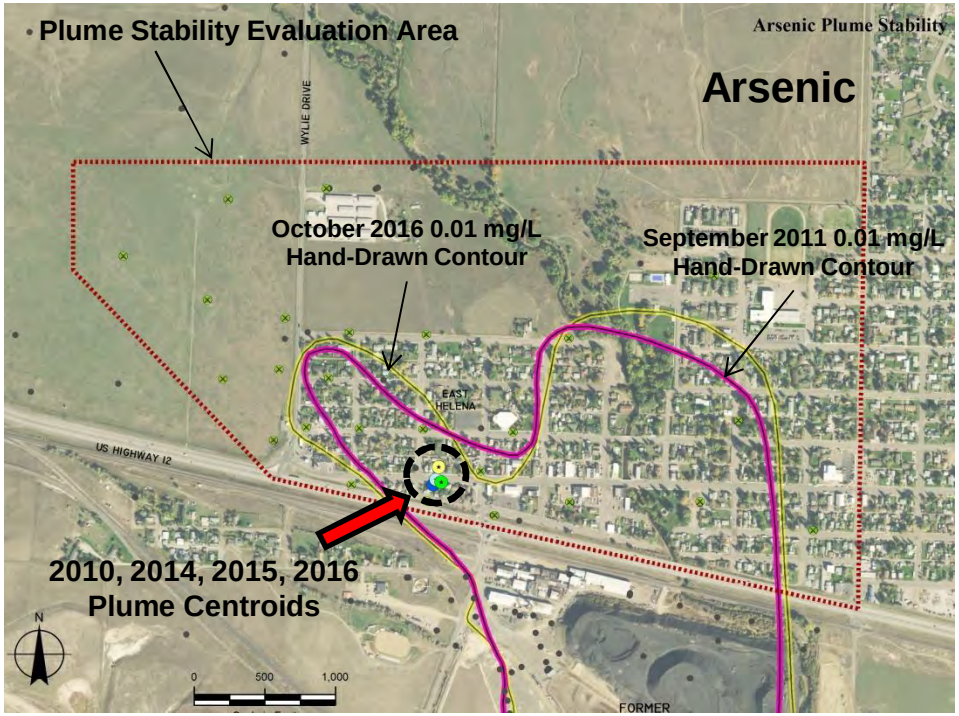
Selenium plume stability analysis results are summarized on Figure 4-17, which presents the same plume stability metrics and software-generated selenium contours as shown for arsenic. In contrast to arsenic, the overall plume area with selenium concentration above the 0.05 mg/L groundwater standard increased from 2010 (74 acres) to 2014 (111 acres); this total area remained stable in 2015 (112 acres) and 2016 (114 acres). Average concentrations within the selenium plume evaluation area were relatively unchanged from 2010 (0.11 mg/L) to 2014 (0.12 mg/L), 2015 (0.12 mg/L), and 2016 (0.14 mg/L) (Figure 4-17). Finally, the plume centroid location for selenium shifted to the west and north between 2010 and 2014, but has since remained in approximately the same position (Figure 4-17).

The shift in the selenium plume centroid, as well as the increase in overall selenium plume area from 2010 to 2014 indicated by the plume stability analysis is corroborated by selenium concentration trends at individual wells, and by hand-contoured selenium plume maps, which have shown an overall shift in the selenium plume to the west since 2010. Wells on the western side of the selenium plume in the plume stability evaluation area have generally shown increasing concentrations, while wells on the eastern side of the plume have shown decreasing concentrations, leading to a westward shift (see 0.05 mg/L plume outlines for 2011 and 2016 on Figure 4-17). The selenium plume shift is likely attributable to two primary factors: (1) a steady increase in West Selenium source area groundwater selenium concentrations from 2010 through 2014 (represented by the trend at

Software-Generated As Isocontours



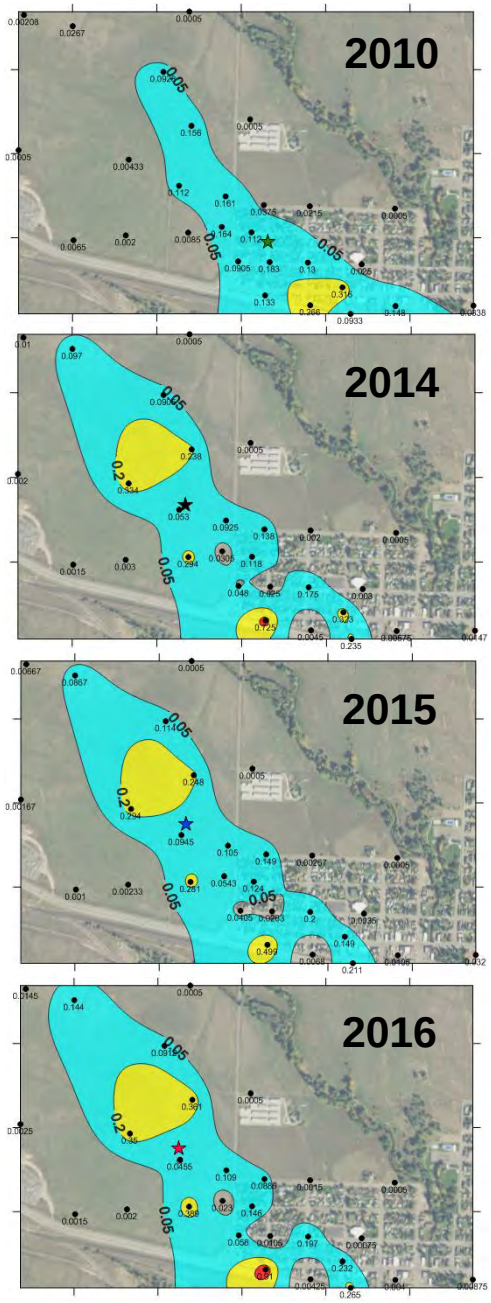
Year	Planar Area (acres)	Avg Conc (mg/L)
2010	66	0.20
2014	68	0.17
2015	68	0.18
2016	64	0.17



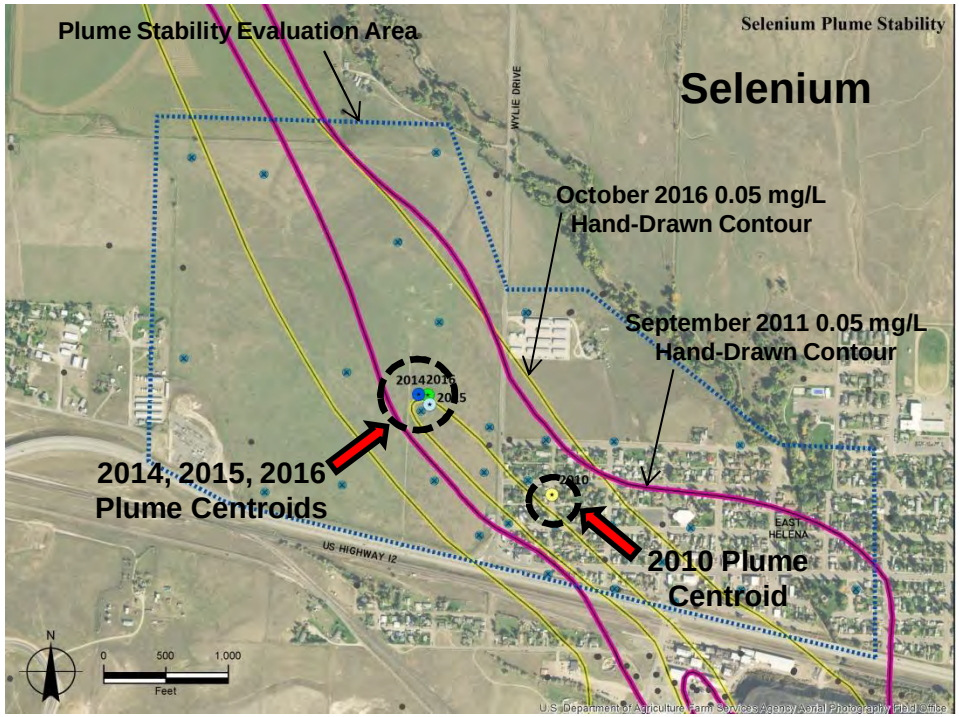
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2015-2016 WATER RESOURCES MONITORING REPORT EAST HELENA FACILITY	**Arsenic Plume Stability Evaluation Results**	**FIGURE** **4-16**

Software-Generated Se Isocontours



Year	Planar Area (acres)	Avg Conc (mg/L)
2010	74	0.11
2014	111	0.12
2015	112	0.12
2016	114	0.14



K:\PROJECT\10022\2015-2016 GW REPORT\FIGURES\FIG4-17SEPLUMESTABILITY.PPTX

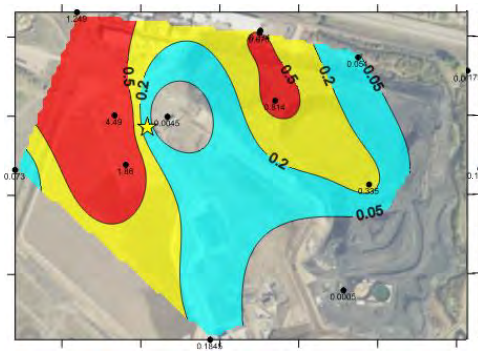
2015-2016 WATER RESOURCES MONITORING REPORT EAST HELENA FACILITY	**Selenium Plume Stability Evaluation Results**	**FIGURE** **4-17**

monitoring well DH-66; Figure 4-17), and (2) the absence of seasonal groundwater flow direction changes and/or local dilution driven by leakage from Wilson Ditch. Wilson Ditch is an irrigation ditch that formerly routed water from Prickly Pear Creek via Upper Lake along the south and west sides of the former smelter to irrigated fields north of Lamping Field (Figure 4-2). Prior to implementation of the SPHC IM, and the permanent cessation of flow in Wilson Ditch during the irrigation months, leakage of up to 400 gpm from the ditch resulted in a seasonal shift in groundwater flow direction to the north, preventing further westward migration of the selenium plume, and potentially diluting selenium concentrations on the western side of the plume. Combined with the increasing upgradient selenium concentrations, the lack of both dilution and seasonal groundwater flow direction changes resulting from the decommissioning of Wilson Ditch is believed to be the source of the westward shift in the selenium plume.

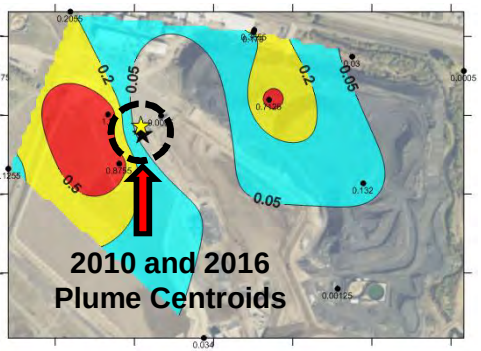
4.4.3 Plant Site Arsenic and Selenium Plume Stability Results

Plume stability metrics for pre-IM (2010) and post-IM (2016) conditions were also calculated for arsenic and selenium, based on data from 13 Facility (source area) wells. The plant site plume stability results are summarized on Figure 4-18. Plume stability results for 2010 and 2016 show a reduction in overall selenium plume area from 67 to 48 acres, and a relatively stable arsenic plume area (75 and 70 acres). Average plume concentrations decreased from 2010 to 2016 for both selenium (from 0.45 to 0.26 mg/L) and arsenic (from 1.91 to 1.11 mg/L), reflecting the generally decreasing concentration trends for arsenic and selenium observed in the plant site source areas (Section 4.2.2). The locations of the calculated arsenic and selenium plume centroids showed no changes from 2010 to 2016. As source area contaminant concentrations of both arsenic and selenium continue to decrease over time, average plant site plume concentrations should also continue to decrease.

Selenium - 2010

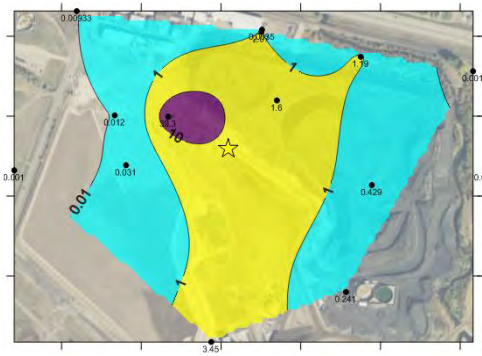


Selenium - 2016

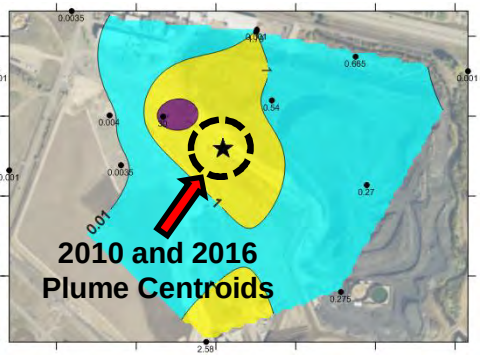


Year	Parameter	Planar Area (acres)	Avg Conc (mg/L)
2010	Se	67	0.45
2016	Se	48	0.26
2010	As	75	1.91
2016	As	70	1.11

Arsenic - 2010



Arsenic - 2016



K:\PROJECT\10022\2015-2016 GW REPORT\FIGURES\FIG4-18PLANTSITEPLUMESTABILITY.PPTX

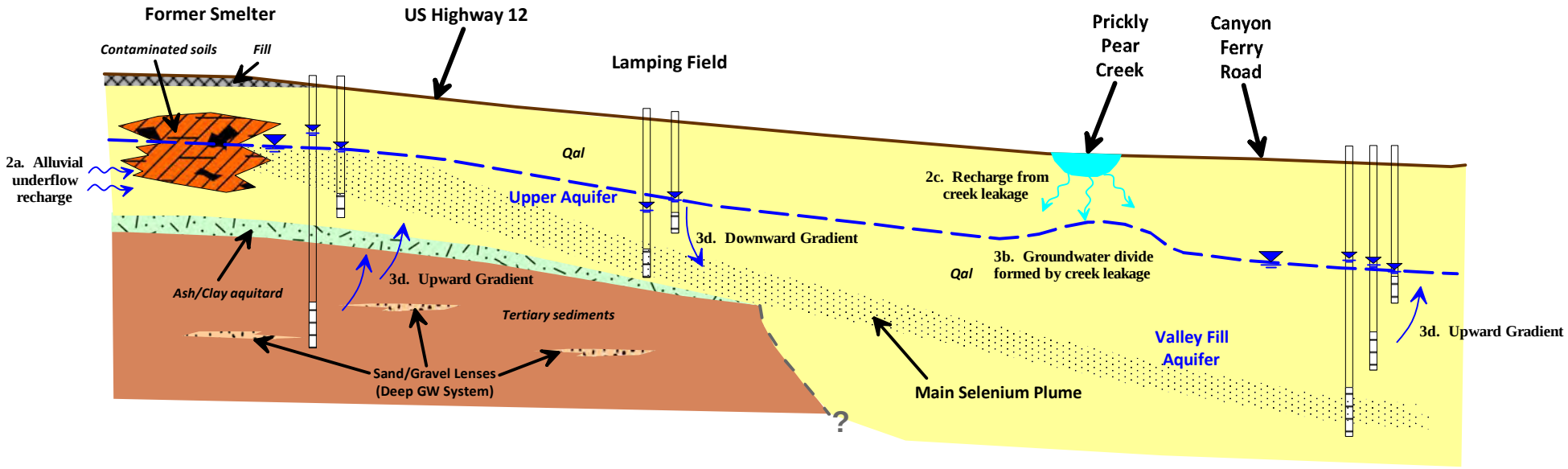
2015-2016 WATER RESOURCES MONITORING REPORT EAST HELENA FACILITY	**Plant Site Plume Stability Evaluation Results**	**FIGURE** **4-18**

5.0 CONCEPTUAL SITE MODEL

A hydrologic conceptual site model (CSM) is a visual representation and narrative description of the physical and chemical processes responsible for current, past and future hydrologic conditions for a site. A CSM is one of the primary tools used for planning and decision making in groundwater remediation projects. The CSM organizes available Site information in as clear and concise a fashion as possible and helps in identification of any remaining data gaps. Once a CSM is developed, data gaps can be addressed and the CSM updated as appropriate. Thus, development of a CSM is an iterative process.

Information gained through the 2015/16 CAMP programs has been used to update the East Helena Project hydrogeologic CSM. The CSM area extends from upgradient (south) of the Facility, northward beyond the leading edge of the selenium plume. Following is a summary of key CSM components including the project area hydrostratigraphy, groundwater occurrence and flow, and groundwater contaminant sources and fate and transport. All components are listed below in bulleted format, with components shown and referenced by bullet number on Exhibit 3 and figures as referenced.

1. **Hydrostratigraphy**: Hydrostratigraphy refers to the grouping of geologic or sedimentary units within an area with similar hydrologic properties that determine, in part, groundwater flow and behavior. Following is a summary of hydrostratigraphic units on the Facility and throughout the Project area.
    a. On the Facility and northward through Lamping Field, the hydrostratigraphy includes, from shallow to deep:
        - Unconsolidated granular sediments/fill comprised of sand, gravel and silt. This upper zone includes Quaternary alluvium and older Tertiary alluvium, with granular fill covering most of the ground surface on the Facility. The unconsolidated granular sediments/fill unit extends from ground surface to depths of about 15 feet in the southwest portion of the Facility and more than 50 feet in the northeast portion of the Facility, and over 90 feet northeast of Lamping Field. Where saturated, the unconsolidated granular sediment/fill unit forms the upper aquifer on and north of the Facility (Figure 5-1, Exhibit 3).
        - Beneath the unconsolidated granular sediments/fill unit is an altered Tertiary volcanic ash layer with varying amounts of fine grained sediments. The low permeability Tertiary ash/clay unit acts as an aquitard or restriction to groundwater flow and forms the base of the upper aquifer. The ash/clay unit has been identified in drill logs throughout the Facility except beneath the slag pile where drilling has not extended to adequate depths to confirm its presence. The ash/clay unit outcrops just west of the Facility where the upper hydrostratigraphic unit and upper aquifer pinch out, and dips to the north/northeast. The ash/clay unit surface contours are shown in Figure 5-2.



2015-2016 WATER RESOURCES MONITORING REPORT EAST HELENA FACILITY	NORTH-SOUTH SCHEMATIC CROSS SECTION OF HYDROSTRATIGRAPHY	FIGURE 5-1

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EH-111 52 3825
EH-112 42 3834
I2 61 3814
EH-115 50 3834
EH-106 47 3835
EH-107 78 3802
EH-109 66 3820
EH-110 57 3827
EH-104 50 3838
SC-1 61 3828
EH-103 76 3812
SC-2 68 3813
EH-210 34 3865
EH-205 34 3864
DH-67 48 3850
DH-15 <3893
DH-48 33 3871
DH-64 55 3847
PBTW-2 54 3850
DH-1 28 3881
PRB-2 53 3850
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DH-56 48 3863
PRB-3 51 3859
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RFI2SB-16 46 3859
RFI2SB-13 56.5 3843
SC-3 25 3892
EH-204 32 3891
RFI2SB-8 44 3867
RFI2SB-17 40 3866
DH-73 48 3850
DH-55 <3877
DH-13 44 3866
DH-18 45 3866
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RFI2SB-14 45 3854
SDMW-5 48 3871
SDMW-2 42 3873
RFI2SB-20 43.5 3869
TW-1 40 3872
DH-62 30 3887
RFI2SB-9 33 3884
RFI2SB-15 62.5 3852
SDMW-3 38 3877
DH-28 36 3877
SDMW-4 42 3873
DH-76 <3568
SC-4 24 3898
DH-38 31 3881
DH-27 29 3883
DH-69 <3892
RFI2SB-7 28.5 3884
DH-68 <3890
DH-22 35 3896
DH-72 27.5 3889
DH-19 29 3891
RFI2SB-1 31.5 3889
RFI2SB-18 25 3893
RFI2SB-4 29 3890
DH-39 35 3895
DH-44 30 3899
RFI2SB-5 25 3900
RFI2SB-2 33 3891
MW-2 34 3910
MW-3 30 3909
RFI2SB-6 24 3908
DH-20 29 3901
RFI2SB-3 40 3886
RFI2SB-22 28 3895
MW-6 20 3916
MW-7 14 3947
MW-1 40 3912
MW-4 31 3914
SC-5 20 3911
MW-10 24 3919
MW-5 31 3922
MW-11 15 3955
MW-9 34 3929
MW-8 33 3923

3810 3820 3830 3840 3850 3860 3870 3880 3890 3900 3910 3920 3930 3940 3950

NORTH

SCALE
(In Feet)
0 350

LEGEND

× DH-62
30 - DEPTH TO ASH/CLAY (ft)
3887 - ELEVATION OF ASH/CLAY SURFACE

ASH/CLAY SURFACE CONTOUR

× DH-56 <3871 ASH/CLAY SURFACE NOT ENCOUNTERED. ELEVATION IS LESS THAN SHOWN IF PRESENT.

Hydrometrics, Inc.
Consulting Scientists and Engineers

CONTOUR MAP OF THE ASH/CLAY UNIT SURFACE ON FACILITY

FIGURE
5-2

- Beneath the Tertiary ash/clay unit is a thick package of primarily fine grained (silt) Tertiary sediments with intermittent zones of sand and fine gravel. The Tertiary sediment unit extends to depths of at least 200 feet around the Facility and probably much deeper; the valley fill sediments reportedly reach thicknesses of up to 6,000 feet near Lake Helena (Briar and Madison, 1992). The coarser sand/gravel zones produce small amounts of water and collectively are referred to on and around the Facility as the deeper groundwater system (Figure 5-1, Exhibit 3). The majority of project monitoring wells are completed in the upper aquifer, where the arsenic and selenium plumes occur, with a smaller number of wells completed in the deep system.

b. Approximately one mile north of the Facility the ash/clay aquitard unit has not been identified in drilling logs to depths of 300 feet or more. North of this point the upper aquifer and deep groundwater systems merge into one valley fill aquifer (Figure 5-1).

2. **Groundwater Recharge**: Besides precipitation recharge, primary groundwater recharge sources in the Project Area include:

   a. Groundwater inflow to the Facility from the south through the unconsolidated Prickly Pear Creek drainage alluvium. This alluvial underflow is the main source of recharge to the upper aquifer on the Facility.

   b. Lateral groundwater inflow from west of the Facility. Although small relative to other recharge sources, recharge from the bordering Tertiary sediment foothills plays an important role in downgradient contaminant migration by buttressing the valley fill aquifer on and north of the Facility thus limiting lateral migration of the groundwater plumes.

   c. Leakage from Prickly Pear Creek to shallow groundwater between the Facility and Canyon Ferry Road. Leakage from the creek along this approximately three mile reach has been measured at 10 to 20 cfs (4500 to 9000 gpm), representing a significant source of recharge to the shallow groundwater system and influence on groundwater flow and plume migration.

   d. Historically, leakage from Wilson Ditch during the April through September period provided approximately 3 cfs recharge to the upper aquifer south and west of Lamping Field. With decommissioning of Wilson Ditch in 2012 and loss of associated recharge, groundwater levels south and west of Lamping Field have declined by up to 10 feet, resulting in a westward shift in groundwater flow through Lamping Field. Decommissioning of Wilson Ditch has also eliminated a source of clean recharge (dilution) to the selenium plume in Lamping Field, which may counter some of the downgradient water quality improvements resulting from the Facility IMs.

3. **Groundwater Flow Patterns**: Groundwater generally flows from south to north/northwest through the Facility and Project area as shown by the potentiometric contours on Exhibit 3.

    a. The former East Helena Smelter is located on the historic Prickly Creek riparian zone and floodplain. Prior to development of the Facility in the 1880s, the main channel of Prickly Pear Creek was located west of its current location, extending from the south end of the former Upper Lake marsh complex through the west plant site and Speiss/Dross area (Exhibit 3). Following infilling of the former channel and floodplain, forcing the creek eastward to its current location, the coarse gravel and cobbles within the former channel created a higher permeability preferential groundwater flowpath through the west side of the Facility. The preferential flowpath extends through some of the more highly contaminated soils on the Facility, increasing contaminant leaching and downgradient migration. The primary source of recharge to the former channel and preferential flowpath was leakage from former Upper Lake. As a result, water levels and groundwater flux rates have decreased most along this more highly contaminated area as compared to other portions of the Facility (Figure 4-2), maximizing the water quality effects of the SPHC IM.

    b. North of the Facility, groundwater flow patterns are heavily influenced by leakage from Prickly Pear Creek. Leakage from the creek forms a highpoint or ridge in the shallow water table beneath the creek which acts as a groundwater divide. As a result, groundwater flow (and the selenium plume) parallels the creek in a northwesterly direction for approximately two miles downgradient from the Facility (Exhibit 3).

    c. Approximately 1.75 miles northwest of the Facility, a groundwater drain within the floor of a gravel pit lowers the groundwater levels and reduces the height of groundwater mound beneath the creek (Exhibit 3). This causes the groundwater divide beneath the creek to dissipate, allowing groundwater flow (and the selenium plume) to follow a more northerly direction and cross from the west to the east beneath the creek.

    d. Vertical hydraulic gradients and flow directions vary through the project area with upward gradients between the deep groundwater system and Upper Aquifer on the Facility, and variable gradients north of the Facility (Figure 5-1, Exhibit 3). In Lamping Field, vertical hydraulic gradients are primarily downward which causes the selenium plume to deepen within the upper aquifer north of the Facility. Further north, vertical gradients in the valley fill aquifer near Canyon Ferry Road are upward as documented in monitoring well sets EH-144 and EH-145 (Exhibit 3).

4. **Contaminant Sources on Facility**: A number of historic groundwater contaminant sources have been identified on the Facility over the past two decades (Figure 4-1). Some of these sources have been targeted through various remedial programs over the years, including the CMS IM program. Current groundwater contaminant sources were further evaluated through the 2014 and 2015 Source Area Investigations (Hydrometrics, 2015c and 2016b) and other CMS activities, and are described below.

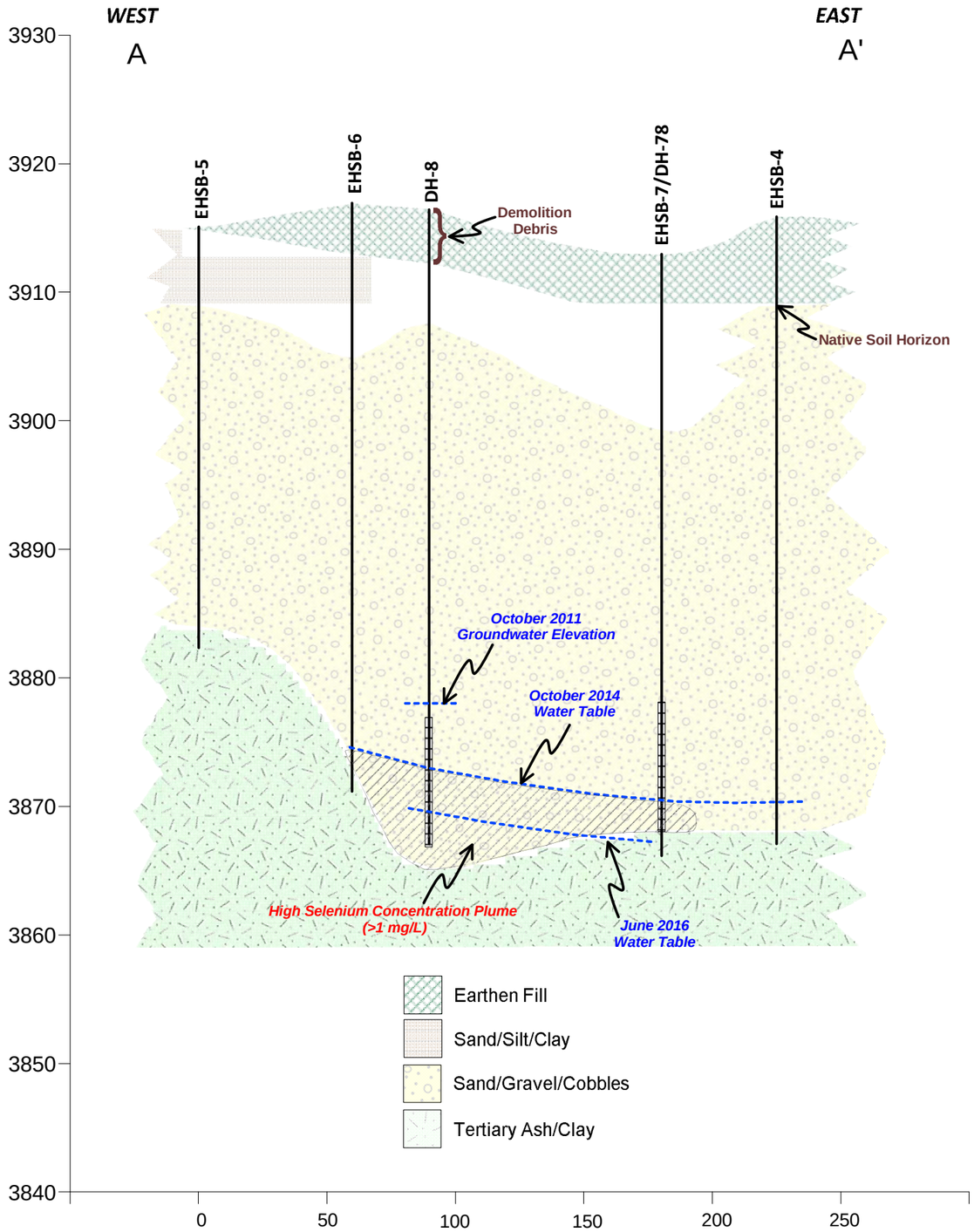
    a. Former Acid Plant: The former Acid Plant has long been identified as a major groundwater contaminant source for arsenic and selenium, with periodic process water

releases contributing to groundwater contamination during the smelter operational phase, and contaminated soils within the saturated and unsaturated zones continuing to leach contaminants to groundwater following the 2001 smelter shutdown. Asarco conducted various remedial activities at the Acid Plant in the 1990s, and the Custodial Trust completed a source removal IM in 2016. The SPHC and ET Cap IMs have also had positive impacts on contaminant loading from the Acid Plant area by reducing contaminant leaching from saturated and unsaturated soils, respectively. Groundwater levels have declined by 5 to 7 feet in response to the SPHC IM and arsenic concentrations have declined by 90% in the Upper Aquifer in response to the CMS IMs and previous remedial actions.

b. Speiss/Dross Area: The Speiss/Dross Area has long been identified as a major contributor of contaminants to the Upper Aquifer. This area has also been the focus of numerous remedial projects since the 1990s, including construction of a low permeability slurry wall to isolate the most highly contaminated soils from groundwater. Groundwater arsenic concentrations inside the slurry wall are the highest in the project area (approximately 90 mg/L), with concentrations of about 35 mg/L immediately downgradient of the wall. Results of a pumping test conducted inside the slurry wall indicate that the slurry wall is effective at controlling groundwater flow through the more highly contaminated soils inside the slurry wall, with groundwater flow or flux rates through the slurry wall estimated to be less than one gpm (Hydrometrics, 2016d).

c. South Plant Area: The South Plant Area, including the former Upper Ore Storage Area, Acid Plant Sediment Drying Area and Tito Park stockpile was a source of contaminants to the upper aquifer at the upgradient Facility boundary. The Custodial Trust implemented a source removal IM in the South Plant area in 2014/15, removing the vast majority of contaminated soils including the former Acid Plant sediment drying area. The South Plant source removal, along with the SPHC IM has reduced contaminant loading rates and concentrations throughout the Facility upper aquifer.

d. West Selenium Source Area: Site investigations completed in the last five years have identified the West Selenium area as the primary source of selenium loading to the upper aquifer. The West Selenium Source Area is believed to be a secondary contaminant source, meaning the source is selenium-bearing material either coprecipitated or adsorbed onto the aquifer matrix, with the original source being historic process water releases and contaminated soils in the upgradient Acid Plant Area. Due to the changing geochemical conditions within the upper aquifer in response to the 2001 smelter shutdown, the secondary source material is believed to be dissolving or resolubilizing from the aquifer matrix into the groundwater. Based on the 2014/2015 investigations (Hydrometrics 2015c and 2016b), there appears to be a limited source mass within the saturated zone (Figure 5-3) which may be depleted within 10 years or less (Hydrometrics, 2016b). The saturated thickness of the Upper Aquifer in the West Selenium Area as measured at well DH-66 has been reduced from over 10 feet to about 3 feet (Figure 4-3) and selenium concentrations reduced by more than 66% since inception of the SPHC IM. The 2017



Cross-Section Location



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FIGURE 5-3
SCHEMATIC WEST-EAST CROSS-SECTION THROUGH WEST SELENIUM AREA

and future CAMP monitoring programs will provide data on future water level and contaminant concentration trends to determine if the current source area CSM is valid, or if further corrective actions may be warranted in the West Selenium Area.

e. North Plant Arsenic Source Area: Similar to the West Selenium Source Area, the North Plant Site Source Area has been identified through recent investigations as the primary current source of arsenic loading to groundwater. The North Plant Site Source Area is also considered to be a secondary source, with the original source of arsenic being the upgradient Speiss/Dross Area. Geochemical fate and transport modeling (Newfields, 2016) has shown that elimination of the North Plant Arsenic Source would reduce downgradient groundwater arsenic concentrations within the higher concentration portion of the plume, but would not reduce the overall size of the 0.01 mg/L arsenic plume. Due to prior remedial activities in the Speiss/Dross Area, and groundwater level reductions from the SPHC IM (which has reduced the saturated thickness at well DH-17 from 15 feet to about 7 feet), arsenic concentrations in the North Plant Site have decreased by about one third (45 to 30 mg/L) since 2014. Future monitoring under the CAMP program will continue to evaluate arsenic concentration trends and conditions within the North Plant Site Source Area.

f. Slag Pile: The slag pile was long thought to be a relatively minor contributor to groundwater contaminant loading, due largely to the sheer magnitude of other historic sources such as the Acid Plant and Speiss/Dross Areas. As the Facility groundwater quality improves in response to the recent IMs and earlier remedial activities, the groundwater contaminant loading from the slag pile becomes more evident and a larger proportion of the remaining groundwater contaminant loads. A recent data compilation and evaluation of the Slag Pile Source Area (Hydrometrics, 2016c) identified an upper lift of unfumed slag as the primary source of selenium loading to groundwater from the slag pile, with deep percolation of incident precipitation and snowmelt being the mechanism for leaching and transport of contaminants to the underlying water table. As of 2016, the slag pile is estimated to contribute 60% of the current groundwater selenium load leaving the Facility.

5. **Arsenic Groundwater Plume**:

a. The historic arsenic plume originated from the South Plant, Acid Plant, and Speiss/Dross Source Areas and extended north/northwesterly through the central portion of the Facility into the City of East Helena. During the smelter operational period, groundwater arsenic concentrations exceeded 600 mg/L in some places, with current maximum concentrations outside of the Speiss/Dross slurry wall (35 mg/L) about 95% lower than the historic highs. The main arsenic plume is confined to an area of lower groundwater redox where arsenic mobility is increased, with the lower redox associated with a historic hydrocarbon plume. The long, narrow configuration of the main arsenic plume is also coincident with the former Prickly Pear Creek channel preferential groundwater flow path.

b. Arsenic concentrations decrease rapidly downgradient of the Facility due to attenuation via adsorption onto the aquifer matrix soils and coprecipitation with iron/manganese

oxides. Soil adsorption studies conducted in 2015 (Hydrometrics, 2016b) indicate that the downgradient saturated soils have ample remaining adsorptive capacity to continue attenuating arsenic into the future, consistent with the contaminant fate and transport modeling results (Newfields, 2016). As a result of the arsenic attenuation, the downgradient arsenic plume boundary, defined by the 0.01 mg/L (HHS) isoconcentration contour, has remained stable for at least the past two decades.

6. **West Arsenic Plume**:
    a. A separate area of slightly elevated groundwater arsenic concentrations has been identified southwest/west of the Facility on the West Bench, including the CAMU area. The "west arsenic plume" (Exhibit 3) represents a naturally occurring background arsenic signature derived from leaching of arsenic from the Tertiary volcanoclastic sediments bordering the Helena Valley (Hydrometrics, 2014). Background arsenic concentrations range from about 0.005 to 0.025 mg/L, with many wells in the area exceeding the 0.01 mg/L HHS. The west arsenic plume migrates northeastward following the general direction of groundwater flow through the Tertiary sediment foothills, and merges with the upper aquifer adjacent to and north of the Facility.

7. **Selenium Groundwater Plume**:
    a. The selenium plume extends further downgradient than the arsenic plume (about three miles) due to the much greater mobility of selenium in groundwater as compared to arsenic under oxidizing conditions. The plume parallels Prickly Pear Creek for most of its length, then veers north and crosses beneath the creek where a groundwater drain eliminates the groundwater divide beneath the creek (see bullet 2b). The selenium plume, defined by the 0.05 mg/L (HHS) isoconcentration contour, continues northward about 2.5 miles north of the Facility, to near Canyon Ferry Road, before dispersion and dilution reduce concentrations below the HHS.

    b. Due to the loss of seasonal recharge from decommissioning of Wilson Ditch the selenium plume has shifted westward north of the Facility. To date, the plume has shifted approximately 300 feet westward in Lamping Field. The higher groundwater levels in the Tertiary sediments and Spokane formation bedrock west of Lamping Field buttress the valley fill aquifer providing some constraint on future further westward migration of the plume.

    c. Downward vertical hydraulic gradients in the Lamping Field area north of the Facility cause the main selenium plume to follow a deeper flowpath, leading to vertical stratification and increases in selenium concentrations with depth.

    d. Water quality trends at paired wells EH-125/EH-70 in Lamping Field show that portions of the aquifer with higher silt content and lower hydraulic conductivity (EH-70) are slower to exhibit reductions in selenium concentrations compared to more permeable zones (EH-125). As a result, these lower hydraulic conductivity zones may release higher concentration groundwater to the main flow paths over time through matrix diffusion (Exhibit 3), thereby delaying reductions in groundwater concentrations.

e. North of Prickly Pear Creek near Canyon Ferry Road, the selenium plume shows continued vertical stratification with increasing concentrations with depth. For example, complimentary well set EH-144S (103 feet deep), EH-144M (128 feet), and EH-144D (168 feet) exhibit selenium concentrations of about 0.07, 0.015, and 0.025 mg/L, respectively, all less than the 0.05 mg/L HHS (Exhibit 3). Based on groundwater modeling (Newfields, 2014), and completion and sampling of well pair EH-145S (187 feet deep) and 145D (241 feet deep) north of Canyon Ferry Road, maximum selenium concentrations are believed to occur within the 150 to 175 feet depth interval, with the main plume centered on the EH-144 well cluster (Exhibit 3).

The CSM presented above represents the most current understanding of groundwater flow and contaminant fate and transport for the East Helena Facility project area. The CSM will be updated periodically as additional information is collected through the ongoing CAMP program.

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APPENDIX A

2015-2016 SURFACE WATER AND GROUNDWATER DATABASE

APPENDIX A1

2015/16 MONITORING WELL WATER QUALITY DATABASE

			Field Parameters							General Chemistry					Major Ions						
Station ID	Sample Date	Depth To Water (ft)	pH (s.u.)	SC (µmhos/cm)	Diss O_2 (mg/L)	ORP (mV)	E_H (mV)	Turbidity (NTU)	Water Temp (°C)	Lab pH (s.u.)	Lab SC (µmhos/cm)	Total Alkalinity as CaCO3	Total Suspended Solids	Total Dissolved Solids	Calcium	Magnesium	Sodium	Potassium	Bicarbonate	Chloride	Sulfate
APSD-7	6/5/2015	15.36	7.4	1284	1.74	-102	114	173	10.6	7.14	1350	260	183	857	36	5	235	9	320	13	356
APSD-7	10/20/2015	14.58	6.6	1286	5.62	67	280	97.2	12.9	6.08	1250	34	166	931	128	26	75	12	41	7	595
APSD-8	6/5/2015	13.83	7	1415	0.43	-92	122	0.6	12.2	6.88	1450	87	15	1050	138	38	114	15	110	12	639
APSD-8	10/20/2015	13.5	6.9	1414	0.09	-97	116	0.7	13.2	6.87	1460	96	10 U	1020	92	20	176	10	120	30	588
DH-1	6/4/2015	43.93	7.5	1965	6.96	92	306	0.3	11.9	7.23	2040	240	10 U	1570	208	49	155	12	290	59	762
DH-1	10/14/2015	44.26	7.4	2136	6.38	256	471	2.4	11.3	6.97	2240	240	230	1790	270	63	168	14	300	66	870
DH-11	5/29/2015	13.14	7.3	441	0.43	65	282	0.7	10	6.81	446	110	10 U	281	34	8	48	3	130	7	87
DH-13	5/27/2015	41.67	6	850	0.53	109	324	1.5	11.7	5.55	864	76	10 U	518	23	7	118	16	92	15	292
DH-13	10/21/2015	41.37	6	910	0.54	103	317	0.6	12.2	5.76	954	83	10 U	559	26	8	127	16	100	13	314
DH-14	6/4/2015	10.57	6.8	911	0.65	42	257	0.3	11.3	6.47	942	250	10 U	627	126	28	26	6	300	30	197
DH-14	10/21/2015	10.88	6.8	901	0.57	103	319	1.4	10.8	6.41	944	250	10 U	605	129	28	26	6	310	28	195
DH-15	5/29/2015	17.99	7	2017	0.34	172	388	0.7	10.8	6.92	2030	170	10 U	1640	241	49	178	8	200	32	919
DH-15	8/13/2015	18.01	7	1969	0.17	210	426	0.5	10.8	6.77	2020	170	10 U	1630	230	50	167	7	200	32	911
DH-15	10/20/2015	18.43	7.1	1977	0.36	177	393	0.6	10.6	6.79	2020	170	10 U	1510	216	46	174	8	210	27	886
DH-17	4/8/2015	34.41	7.6	1355	0.21	-34	180	3.1	12.5	7.25	1350	350	10 U	897	12	4	281	6	430	16	283
DH-17	6/8/2015	34.62	7.6	1384	0.15	-63	151	6.2	12.9	7.28	1370	340	10 U	937	12	4	294	6	410	22	326
DH-17	8/17/2015	34.56	7.6	1341	0.15	-68	146	5.3	12.4	7.16	1360	330	12 UJ	853	11	3	290	6	400	18	294
DH-17	10/21/2015	34.77	7.6	1366	0.22	-19	194	3.2	12.9	7.2	1420	350	10 U	874	12	3	293	6	420	15	311
DH-17 (Dup)	10/21/2015	34.77	7.6	1367	0.22	-19	194	3.2	12.9	7.21	1420	350	10 U	860	12	4	297	6	430	15	295
DH-17	12/22/2015	35.41	7.6	1476	0.03	-96	118	2.2	12.7	7.53	1460	370	10 U	962	12	4	296	6	450	19	313
DH-18	5/26/2015	39.78	7.2	338	0.15	-3	210	3.5	13.3	6.62	371	150	10 U	249	41	9	19	6	180	3	27
DH-18	10/21/2015	40.11	7.1	355	0.32	76	290	36	12.2	6.72	374	150	57	245	43	10	18	6	180	3	32
DH-19R	4/8/2015	19.61	5.7	743	0.69	103	320	0.6	10.5	5.39	740	31	10	534	57	15	36	7	37	8	307
DH-19R	6/8/2015	19.35	5.7	740	0.34	98	313	0.8	11.3	5.3	764	18	14	552	56	15	37	7	21	8	315
DH-19R	10/21/2015	18.77	5.7	885	0.22	86	300	0.5	12.1	5.74	933	24	18	643	82	21	44	9	29	8	378
DH-2	6/1/2015	62.81	7.4	596	5.21	56	271	14	11.6	6.82	615	250	54 J	388	71	16	27	6	300	18	35
DH-2	10/15/2015	63.14	7.3	590	6.29	247	462	1.5	11.2	7.28	618	250	10 U	393	71	16	27	6	300	18	42
DH-20	6/4/2015	9.56	7.1	823	0.77	-129	86	1.8	11.9	7.05	825	240	27	570	106	21	24	5	290	7	186
DH-20	10/21/2015	8.38	7	1016	0.3	-91	120	0.6	14.6	6.8	1050	110	18	728	139	28	28	6	140	8	408
DH-24	6/8/2015	32.31	6.7	1195	0.28	-7	206	23.8	13.1	6.38	1220	250	25	803	27	12	215	10	300	17	306
DH-24	10/21/2015	32.43	6.6	1171	0.58	89	300	6.4	14.4	6.3	1220	240	10 U	709	26	11	209	11	290	14	287
DH-3	6/1/2015	30.78	7.2	535	2.63	82	300	0.2	9.4	6.51	554	180	10 U UJ	366	63	14	23	6	210	12	69
DH-3	10/16/2015	32.59	7.2	536	2.7	182	398	0.4	10.2	6.71	545	180	10 U	335	60	15	25	6	220	14	75
DH-30	5/27/2015	19.3	7.3	1146	0.61	15	227	9.8	14.3	6.83	1070	170	10	677	41	7	143	55	210	12	299
DH-30 (Dup)	5/27/2015	19.3	7.3	1138	0.57	14	226	9.8	14.5	6.83	1080	170	15	668	41	7	144	55	210	12	301
DH-30	10/20/2015	18.77	7.3	1130	0.15	-10	202	1.1	13.4	7.17	1200	180	10 U	795	57	10	155	62	220	15	357
DH-30 (Dup)	10/20/2015	18.77	7.3	1131	0.14	-11	202	1.1	13.4	7.17	1210	180	10 U	796	52	9	151	60	220	15	353
DH-4	6/5/2015	11.66	7.2	624	0.42	-147	69	0.5	10.5	6.94	608	290	63	366	47	8	69	6	350	7	11
DH-4	10/20/2015	12	7.2	687	0.31	123	338	0.2	11.4	6.91	660	290	28	384	50	8	71	7	360	7	39
DH-42	6/8/2015	34.9	6.6	1079	0.52	76	289	0.4	13.2	6.32	1130	160	27	815	134	35	37	10	200	16	358
DH-42	10/20/2015	34.56	6.6	1195	0.4	84	299	0.6	11.4	6.5	1260	140	10 U	917	145	39	40	10	170	18	432
DH-47	4/8/2015	12.04	7	1308	0.27	-43	175	0.8	9.1	6.75	1290	160	22	969	156	27	66	10	190	10	514
DH-47	6/5/2015	12.02	7	1353	0.17	-79	137	3.8	10.1	6.88	1370	160	25	1020	179	33	66	11	190	10	559
DH-47	10/20/2015	10.72	6.8	1797	0.13	-76	137	2.4	12.9	6.75	1860	150	21	1520	263	43	73	13	190	9	900
DH-51	6/4/2015	35.64	7.2	1492	9.51	183			15.8	6.99	1560	190	399	1150	139	27	156	12	230	15	590
DH-51	10/20/2015	35.75	7.3	1505	7.01	85	299	18	11.5	7.01	1630	190	75	1190	153	30	158	12	230	16	631
DH-52	6/4/2015	5.14	7.5	729	1.76	63	281	1.5	9.2	7.01	753	140	10 U	480	37	7	62	68	170	6	189
DH-52	10/19/2015	7.15	7.5	675	0.44	135	350	0.8	11.5	7.07	687	120	10 U	447	31	5	59	64	150	4	186
DH-53	6/4/2015	7.96	7.5	486	1.28	14	233	1.7	8.1	6.91	502	110	10 U	323	23	4	46	40	130	4	104
DH-53	10/19/2015	10	7.3	410	0.37	80	296	1.3	10.3	6.93	417	110	10	277	19	3	39	39	130	4	73
DH-55	5/29/2015	78.96	7.8	794	0.72	124	342	2.3	8.8	7.73	792	130	10 U	519	17	3	96	79	150	5	213
DH-55	10/20/2015	80.48	7.7	1257	0.38	93	311	1.6	9.1	7.31	1270	160	10 U	804	53	11	114	126	190	8	399
DH-56	4/8/2015	82.6	7.8	3731	3.07	8	226	6.7	8.9	7.71	3720	270	12	2700	74	14	495	367	330	23	1410
DH-56	5/27/2015	82.59	7.9	2892	3.91	68	285	9	9.4	7.72	2930	230	78	1950	53	10	399	309	280	25	1010
DH-56	8/14/2015	82.47	7.9	3052	2.83	215	431	2	10.4	7.3	3130	250	12	2150	52	10	392	317	300	18	1070
DH-56	10/20/2015	82.9	7.8	3074	3.51	126	342	4.9	10.5	7.74	3080	230	30	2030	56	10	387	309	280	18	1170
DH-56 (Dup)	10/20/2015	82.9	7.8	3076	3.49	126	342	4.9	10.5	7.74	3090	220	29	2030	60	11	389	313	270	17	1150
DH-59	6/8/2015	20.98	6.8	1010	0.41	8	224	2.3	10.7	6.5	1050	180	10 U	727	122	20	46	19	220	10	341
DH-59	10/21/2015	20.75	6.8	1228	0.23	30	245	1.5	11.4	6.66	1280	170	10 U	875	175	28	52	22	200	10	457
DH-6	4/7/2015	18.36	7.6	1728	3.16	116	334	0.3	9	7.34	1750	160	10 U	1150	46	7	225	149	190	11 J	592
DH-6	6/4/2015	17.72	7.6	1541	5.27	90	308	0.3	9	7.25	1600	170	10 U	1060	42	7	199	125	200	10	537
DH-6 (Dup)	6/4/2015	17.72	7.6	1541	5.38	90	308	0.3	9	7.25	1600	160	10 U	1050	41	7	196	123	200	10	537
DH-6	8/13/2015	18.03	7.6	1387	3.36	227	444	0.4	9.9	7.35	1420	160	10 U	945	36	6	185	119	200	11	450
DH-6 (Dup)	8/13/2015	18.03	7.6	1387	3.45	227	444	0.4	9.8	7.34	1420	160	10 U	933	34	5	180	118	200	12	451
DH-6	10/20/2015	18.47	7.6	1304	2.66	192	408	0.2	10.5	7.2	1320	170	10 U	800	30	5	171	112	210	12	389
DH-62	6/9/2015	52.64	7.2	1901	2.12	137	351	2.3	12.4	6.87	2000	220	10 U	1520	288	65	54	13	270	83	660
DH-62	10/22/2015	56.66	7.1	1956	2.01	111	324	2	13.4	7.1	1990	220	28 J	1550	310	68	54	13	270	105	711
DH-63	6/5/2015	39.79	6.8	1323	6.1	212	426	682	12	6.48	1370	220	652	959	142	41	101	6	270	35	422
DH-64	4/8/2015	36.09	7.1	1083	0.19	21	235	1.7	12.2	6.76	1080	220	10 U	710	17	6	198	8	270	15	275
DH-64	6/8/2015	36.34	7.1	1063	0.15	-12	201	2	13	6.76	1080	220	10 U	698	18	6	203	9	270	16	273
DH-64	8/17/2015	36.25	7.1	1062	0.25	-8	204	1.3	12.4	6.76	1070	210	10 U UJ	669	19	7	184	8	260	15	270
DH-64	10/21/2015	36.54	7	1060	0.25	36	250	1.2	12.5	6.67	1100	220	10 U	667	24	8	192	9	260	13	269
DH-64	12/22/2015	37.2	7	1106	0.07	-39	175	5.8	12	6.93	1100	220	10 U	723	25	8	188	10	270	16	270
DH-66	4/8/2015	46.93	7	3506	4.33	128	342	3.8	11.9	6.73	3560	270	10 U	2960	423	139	204	12	330	217	1420
DH-66	6/9/2015	47.41	6.8	3098	8.67	134	348	3.2	12.3	6.52	3270	260	10 U	2580	369	128	185	12	310	187	1160
DH-66	7/14/2015	46.9	6.7	2974	3.27	452	666	1.1	11.8	6.65	3090	250	10 U	2500	378	129	191	12	310	186	1120

			Field Parameters							General Chemistry					Major Ions						
Station ID	Sample Date	Depth To Water (ft)	pH (s.u.)	SC (µmhos/cm)	Diss O_2 (mg/L)	ORP (mV)	E_H (mV)	Turbidity (NTU)	Water Temp (°C)	Lab pH (s.u.)	Lab SC (µmhos/cm)	Total Alkalinity as CaCO3	Total Suspended Solids	Total Dissolved Solids	Calcium	Magnesium	Sodium	Potassium	Bicarbonate	Chloride	Sulfate
DH-66	8/17/2015	47.22	6.8	2839	3.01	207	421	2.9	12.1	6.48	2910	250	10 U UJ	2320	341	119	164	11	300	176	1040
DH-66	10/13/2015	47.17	6.8	2765	3.15	167	381	1.9	12.2	6.66	2850	240	10 U	2330	344	114	162	11	290	178	1080
DH-66 (Dup)	10/13/2015	47.17	6.8	2763	3.15	167	381	1.9	12.2	6.66	2860	240	10 U	2310	355	118	164	11	300	178	1070
DH-66	12/22/2015	48.07	6.7	2807	3.25	130	345	4.6	11.6	6.68	2770	230	10 U	2260	356	121	140	11	280	189	966
DH-67	4/7/2015	34.63	6.7	1538	0.75	116	331	1.1	11.4	6.43	1590	200	10 U	1160	154	49	117	7	250	57	514
DH-67	6/4/2015	35.06	6.7	1515	1.27	97	312	1.2	11.6	6.41	1590	200	10 U	1160	150	50	109	7	240	55	540
DH-67	7/14/2015	34.51	6.7	1459	0.97	353	568	0.8	11.5	6.55	1510	200	10 U	1130	155	51	114	7	240	43	483
DH-67 (Dup)	7/14/2015	34.51	6.7	1459	0.97	353	568	0.8	11.5	6.55	1520	190	10 U	1130	156	47	113	7	240	43	481
DH-67	8/13/2015	34.67	6.6	1445	1.1	241	455	0.7	12.1	6.44	1490	200	10 U	1130	143	47	109	7	250	49	502
DH-67	10/19/2015	34.93	6.7	1415	1.57	212	427	1.4	11.3	6.47	1450	200	10 U	1110	133	41	105	6	240	41	487
DH-69	5/27/2015	33.8	6.9	1079	0.6	-123	93	5.9	10.6	6.87	1040	180	48	676	92	16	99	6	210	14	319
DH-69	10/20/2015	34.01	6.9	1242	0.48	-63	153	29.2	11.1	6.67	1230	150	46	805	108	16	101	29	190	10	437
DH-7	5/29/2015	22	7	353	2	125	343	0.6	8.9	6.53	351	98	10 U	228	39	8	17	4	120	5	57
DH-7	10/15/2015	21.4	7	328	1.11	218	434	1.5	10.2	7.01	346	100	10 U	228	36	7	17	4	120	4	59
DH-71	6/9/2015	48.65	6.9								1180	220	786	801	123	44	54	10	260	26	302
DH-71	10/22/2015	54.83	6.8	1152	4.54	120	334	1000 J-	11.8	6.93	1180	210	1110	786	135	47	55	11	260	35	360
DH-72	6/8/2015	20.36	7.1	449	0.34	41	257	1.1	11	6.64	465	220	10 U	294	52	12	19	5	270	5	10
DH-72	10/20/2015	20.08	7.1	461	0.18	53	269	0.9	10.3	7.04	488	220	10 U	290	63	14	21	6	270	5	22
DH-73	6/5/2015	18.19	6.9	1245	0.23	37	253	1.1	10.3	6.68	1270	190	10 U	900	172	37	61	7	240	36	411
DH-73 (Dup)	6/5/2015	18.19	6.9	1242	0.24	37	254	1.1	10.3	6.68	1270	200	10 U	900	169	36	61	7	240	36	412
DH-73	10/20/2015	39.02	7	1260	0.31	68	285	2.8	9.9	6.82	1330	200	10 U	958	154	34	66	8	250	36	458
DH-74	5/29/2015	117.17	7.7	1850	2.14	146	364	1.9	9.4	7.63	1850	180	10 U	1290	76	13	219	163	220	12	671
DH-74	10/20/2015	119.05	7.7	1823	0.81	128	345	1.3	9.8	7.49	1850	170	10 U	1210	76	13	202	163	210	10	663
DH-75	5/29/2015	117.65	7.2	1464	0.15	146	362	5.5	10.5	7.15	1480	190	14	1060	101	20	191	27	230	13	539
DH-75	10/20/2015	119.51	7.3	1422	0.32	135	351	3.5	10.5	6.98	1450	190	14	956	93	18	184	25	230	11	515
DH-77	4/8/2015	50.11	5.9	1228	0.6	151	365	13.9	12.6	5.67	1230	63	48	935	112	36	69	9	76	15	541
DH-77 (Dup)	4/8/2015		5.9	1228	0.6	151	365	13.9	12.6	5.67	1230	63	43	932	112	36	68	9	76	15	537
DH-77	6/9/2015	50.22	6	1158	0.19	145	358	52.6	13.8	5.9	1200	64	72	907	107	37	68	9	77	13	458
DH-77	8/14/2015	50.41	6	1184	0.28	179	391	5.7	14.1	5.24	1200	62	70	906	114	38	63	9	75	16	510
DH-77 (Dup)	8/14/2015	50.41	6	1170	0.29	164	376	5.7	14	5.24	1200	61	78	917	111	38	64	9	74	15	507
DH-77	10/22/2015	52.33	5.8	1190	0.28	188	402	7.6	12.6	5.85	1210	61	41 J	915	124	41	65	10	74	17	537
DH-77 (Dup)	10/22/2015	52.33	5.9	1190	0.29	189	402	7.6	12.6	5.85	1210	62	61 J	916	119	39	67	10	74	16	517
DH-78	4/8/2015	48.72	7.2	3853	6.84	100	314	26.3	11.9	7.07	3910	310	53	3220	582	139	114	13	380	332	1430
DH-78	6/9/2015	49.12	7.2	3226	6.83	121	335	5	12.3	6.86	3490	300	26	2730	499	127	114	13	370	268	1140
DH-78 (Dup)	6/9/2015	49.12	7.1	3245	6.8	121	335	5	12.3	6.85	3480	300	28	2680	502	127	114	13	370	266	1130
DH-78	7/14/2015	48.67	7.1	3304	5.85	247	461	1	11.8	7.03	3490	300	41	2870	538	134	119	13	370	281	1200
DH-78	8/17/2015	48.96	7.1	3238	6.2	231	445	1.2	12.1	6.8	3370	300	174 J	2780	497	129	99	12	370	274	1160
DH-78 (Dup)	8/17/2015	48.96	7.2	3238	6.2	231	445	1.2	12.1	6.8	3330	310	92 J	2690	506	131	102	12	370	267	1130
DH-78	10/13/2015	48.96	7.2	3215	5.81	171	385	12.8	12.3	7.01	3320	300	900	2770	518	130	100	12	370	264	1240
DH-79	7/13/2015	39.45	9.2	2266	0.15	-60	152	89.8	14.4	9.23	2340	390	93	1520	4	1 U	486	8	370	42	625
DH-79	8/1/2015		9.1								2250	450		1540	3	1 U	501	7	210	40	579
DH-79	8/17/2015	37.79	9.1	2245	0.56	-8	204	189	14.1	8.92	2270	400	236 J	1450	3	1 U	504	8	390	47	646
DH-79	10/20/2015	39.69	7.8	2125	0.42	-31	181	17	13.9	8.81	2200	370	16	1390	7	3	476	10	450	44	610
DH-79	12/21/2015	40.17	8.7	2353	0.56	8	220	15	14	8.86	2300	360	23	1400	8	4	517	12	410	57	635
DH-8	4/8/2015	48.16	7.3	4978	3.63	71	284	2.9	12.7	7.23	5100	320	10 U	4310	792	182	119	19	390	558	1720
DH-8	6/9/2015	48.12	7.3	4959	3.39	80	288		17	7.19	5500	350	286	4560	843	209	118	20	420	605	1700
DH-8	7/14/2015	48.04	7.2	4810	2.84	227	441	6.2	11.9	7.16	5170	320	63	4610	846	200	129	20	390	579	1730
DH-8	8/14/2015	48.14	7.3	4965	4.62	147	359	3.5	13.7	6.71	5100	320	18	4430	817	202	114	18	390	590	1720
DH-8	10/13/2015	48.13	7.3	4879	2.62	137	351	0.7	12.6	7.12	5030	310	10 U	4590	830	195	117	18	380	543	1860
DH-8	12/22/2015	48.24	7.3	5087	5.15	73	288	38	11.3	7.22	5030	320	38	4600	875	203	110	18	390	618	1710
DH-80	7/13/2015	23.58	4.8	793	0.15	208	423	14.8	11.5	4.6	821	5	618	604	66	16	37	10	5	9	373
DH-80	8/14/2015	23.68	3.8	823	0.33	231	444	27.2	12.7	4.2	874	1 U	130	621	67	16	35	9	1 U	10	386
DH-80	10/21/2015	22.93	4.7	861	0.22	207	421	21.5	12.5	4.62	894	3 UJ	93	633	75	17	41	10	3	10	397
DH-81	7/13/2015	20.14	6.6	820	0.3	28	244	22.6	10.8	6.52	843	140	29	574	85	20	36	9	170	8	272
DH-81	8/14/2015	20.17	6.5	855	0.37	22	236	12.2	11.8	5.91	867	120	40	635	95	22	34	9	150	8	302
DH-81	10/20/2015	18.9	6.7	977	0.22	23	238	55.4	10.9	6.58	1030	130	50	708	118	27	35	9	160	9	386
DH-82	7/14/2015	41.34	7.2	3047	8.97	369	584	25	11.6	6.98	3140	290	91	2560	405	108	210	10	350	164	1170
DH-82	8/14/2015	41.53	7.1	2993	6.97	197	411	5.4	12.3	6.27	3080	290	27	2480	370	111	190	10	350	163	1130
DH-82	10/13/2015	41.62	7.1	2828	6.36	178	392	11.1	11.9	7.01	2850	290	23	2320	345	99	197	9	360	144	1090
DH-82	12/22/2015	42.52	7	2970	5.75	218	433	215	11.5	7	2920	290	60	2430	376	109	183	9	350	164	1070
DH-82 (Dup)	12/22/2015	42.52	7	2964	5.76	218	433	215	11.5	7	2900	290	70	2410	380	110	185	9	350	162	1070
DH-83	7/14/2015	47.53	7.4	4090	5.76	90	302	1000 J-	13.7	7.35	4460	360	350	3890	762	178	74	19	440	430	1500
DH-83	8/17/2015	47.74	7.4	4310	5.28	227	441	259	12.8	6.85	4430	380	375 J	3830	716	172	64	16	460	455	1550
DH-83	10/13/2015	47.73	7.4	4398	2.95	111	324	341	12.5	7.13	4590	380	733	4170	793	185	70	18	470	438	1730
East-PZ-1	7/17/2015	33.18	7.6	797	7.86	229	444		11.4	6.52	822	160	88	575	103	26	25	5	190	5	230
East-PZ-1	8/13/2015	32.15	7.6	755	8.79	282	498	17.8	10.7	7.05	787	160	23	548	101	26	24	4	200	5	212
East-PZ-2	7/17/2015	13.92	7.4	506	4.82	6	222	7.7	10.9	6.19	497	150	13	323	54	14	18	5	180	4	78
EH-100	4/7/2015	29.82	6.7	1029	0.13	113	328	0.3	11.9	6.4	1050	180	10 U	688	35	12	173	7	220	15 J	266
EH-100	5/29/2015	30.35	6.7	1066	0.43	215	429	0.3	12.5	6.56	1070	180	10 U	730	38	13	178	8	220	15	291
EH-100	8/14/2015	29.73	6.7	1057	0.32	212	426	0.7	12.4	6.05	1080	180	10 U	716	34	13	166	7	220	16	294
EH-100	10/20/2015	30.28	6.7	1077	0.65	197	410	0.4	12.3	6.26	1100	180	10 U	692	35	13	176	7	220	15	294
EH-101	6/2/2015	16.02	7.3	389	3.49	137	353	0.1	10.4	6.51	398	93	10 U	246	22	4	43	15	110	11	63
EH-101	10/19/2015	17.48	7.2	362	4.02	243	459	0.5	10.6	7.11	369	87	10 U	231	19	3	40	14	110	7	69
EH-102	6/2/2015	9.4	7.2	481	2.29	142	360	0.3	9.3	6.43	495	110	10 U	306	34	7	52	7	130	10	95
EH-102 (Dup)	6/2/2015	9.4	7.2	481	2.27	142	359	0.3	9.3	6.42	497	110	10 U	310	34	7	52	7	130	10	96
EH-102	10/19/2015	9.98	7.1	457	2.53	207	423	0.4	10.1	6.55	470	110	10 U	297	33	7	52	7	130	10	102

			Field Parameters							General Chemistry					Major Ions						
Station ID	Sample Date	Depth To Water (ft)	pH (s.u.)	SC (µmhos/cm)	Diss O_2 (mg/L)	ORP (mV)	E_H (mV)	Turbidity (NTU)	Water Temp (°C)	Lab pH (s.u.)	Lab SC (µmhos/cm)	Total Alkalinity as CaCO3	Total Suspended Solids	Total Dissolved Solids	Calcium	Magnesium	Sodium	Potassium	Bicarbonate	Chloride	Sulfate
EH-102 (Dup)	10/19/2015	9.98	7.1	457	2.53	207	423	0.4	10.2	6.55	468	110	10 U	296	32	7	52	7	130	10	102
EH-103	6/3/2015	27.19	7.5	1917	1.14	130	344	1.2	11.7	6.69	1970	170	23	1570	240	48	153	11	210	31	868
EH-103	10/19/2015	27.26	6.9	2027	0.07	152	366	2.8	12	6.85	2050	170	34	1610	227	45	163	11	210	29	890
EH-104	4/7/2015	36.8	6.9	1416	3.09	131	346	0.4	11.4	6.62	1460	230	10 U	1060	150	38	111	6	280	52	487
EH-104	6/3/2015	37.59	7.4	1467	4.65	147	362	0.4	11.3	6.5	1480	230	10 U	1090	160	40	111	7	280	48	442
EH-104	10/19/2015	37.28	6.9	1498	3.7	208	423	0.6	11.3	6.62	1530	220	10 U	1160	154	38	110	6	270	59	490
EH-104	12/22/2015	38.2	6.9	1660	5.22	193	408	1.1	11.2	6.81	1640	220	10 U	1240	184	46	113	7	270	75	537
EH-106	4/7/2015	31.13	6.7	1161	1.29	132	347	0.7	11.5	6.39	1200	180	10 U	810	83	20	143	6	220	31 J	379
EH-106	6/3/2015	31.46	7.1	1083	1.65	138	353	0.9	11.4	6.29	1110	180	10 U	762	76	18	134	6	220	26	340
EH-106	8/13/2015	30.75	6.6	1009	1.71	352	567	1.1	11.8	6.41	1070	170	17	733	71	17	136	6	200	22	317
EH-106	10/19/2015	31.39	6.8	899	2.52	210	424	0.9	11.7	6.45	925	160	10 U	630	61	14	107	5	200	22	261
EH-107	4/7/2015	24.65	6.8	1697	0.15	106	321	0.5	11.5	6.62	1750	180	10 U	1300	165	35	176	7	220	39	704
EH-107	6/3/2015	23.45	7.4	1708	0.24	93	308	2.6	11.8	6.55	1750	190	10 U	1310	166	35	166	8	230	34	672
EH-107	8/13/2015	20.45	6.8	1701	0.19	130	344	0.7	12.2	6.44	1730	180	10 U	1300	178	39	168	7	220	37	682
EH-107	10/19/2015	24.99	6.9	1716	1.09	138	352	96.6	12.4	6.72	1750	180	10 U	1330	167	35	169	7	220	35	703
EH-110	6/2/2015	22.69	7	1578	0.17	114	328	0.2	12.3	6.58	1620	160	10 U	1160	130	26	185	10	190	22	633
EH-110	10/19/2015	22.64	7	1498	0.45	208	422	0.3	11.7	6.67	1530	170	10 U	1120	115	22	173	9	200	18	596
EH-111	4/7/2015	31.25	6.7	1423	0.11	116	331	2.6	11.4	6.4	1460	160	10 U	1000	74	20	205	10	190	29 J	534
EH-111 (Dup)	4/7/2015		6.7	1422	0.18	116	331	2.6	11.4	6.4	1460	150	10 U	1000	75	20	209	10	190	23 J	478
EH-111	6/3/2015	32	7.2	1455	0.17	104	319	1.6	11.4	6.34	1480	150	10 U	1040	79	21	206	10	190	23	506
EH-111 (Dup)	6/3/2015	32	7.2	1454	0.16	103	318	1.6	11.4	6.34	1480	150	10 U	1040	79	21	208	10	190	23	510
EH-111	10/19/2015	31.78	6.7	1452	0.12	163	377	3.5	12	6.57	1460	160	10 U	1050	78	20	198	9	190	25	544
EH-111 (Dup)	10/19/2015	31.78	6.7	1451	0.13	162	376	3.5	12	6.57	1460	160	11	1060	78	20	191	9	190	24	521
EH-114	4/6/2015	34.35	6.7	1043	0.62	124	340	4.6	10.8	6.44	1050	160	10	733	76	20	108	5	200	24	338
EH-114	5/29/2015	35.33	6.7	1051	0.75	119	334	3.2	11.5	6.35	1050	160	10 U	744	82	21	114	6	200	23	326
EH-114	10/16/2015	35.02	6.7	1043	0.9	203	418	3.6	11.2	6.42	1080	160	11	720	81	21	119	6	200	25	350
EH-115	6/2/2015	37.6	6.7	1035	0.45	117	331	1.8	11.9	6.29	1060	180	10 U	738	85	22	111	6	220	22	312
EH-115	10/19/2015	37.38	6.7	1038	0.79	221	436	2.2	11.2	6.36	1060	180	10 U	756	79	20	114	5	220	21	324
EH-115	12/22/2015	38.33	6.6	1077	0.57	209	424	3.5	11.3	6.53	1080	180	10 U	771	87	23	119	5	220	24	332
EH-117	4/6/2015	30.02	6.8	1276	3.02	130	345	1.8	11	6.58	1290	190	15	891	96	25	133	6	240	39	357
EH-117	5/28/2015	30.62	6.7	1260	1.46	236	451	3.9	11.6	6.61	1300	170	15	828	99	24	151	6	210	51	404
EH-117	10/16/2015	30.27	6.9	1262	6.37	194	409	5	11.2	6.61	1300	220	15	856	115	30	124	6	260	45	393
EH-118	4/6/2015	37.75	7.2	1304	2.15	117	333	14	10.7	6.95	1310	260	37	926	142	45	66	6	310	43	349
EH-118	5/29/2015	38.82	7.2	1317	2.64	93	308	170	11.4	6.86	1320	250	172	943	152	46	71	6	300	53	371
EH-118	10/16/2015	38.47	7.1	1266	2.35	186	401	16	11.1	6.86	1310	250	61	892	143	45	72	6	300	50	376
EH-119	5/29/2015	35.77	6.9	1070	0.61	127	343	2.3	10.5	6.5	1060	190	14	749	101	29	89	5	230	26	327
EH-119	10/16/2015	35.42	6.9	1041	0.75	203	418	2.7	10.8	6.59	1070	180	10 U	727	99	29	88	5	220	27	332
EH-120	4/6/2015	32.32	6.7	1837	1.14	127	343	0.9	11	6.51	1860	160	10 U	1480	215	46	125	6	190	42	801
EH-120	5/28/2015	31.67	6.7	1819	3.02	200	415	1.3	11.6	6.6	1890	150	15	1400	244	51	133	7	180	54	794
EH-120	10/15/2015	23.68	6.7	1776	0.94	204	419	0.8	11.3	6.56	1820	160	10 U	1450	243	51	130	7	190	46	769
EH-121	5/26/2015	29.13	7.2	276	4.3	185	402	0.5	9.6	7.11	305	84	10 U	183	32	7	14	2	100	5	48
EH-121	10/15/2015	31.99	7.1	285	3.81	219	436	1.2	9.3	6.62	295	81	10 U	195	34	8	14	2	98	4	52
EH-123	5/28/2015	44.89	7.3	635		176	390	1.5	12.3	7.19	652	170	23	406	68	19	39	7	210	29	110
EH-123	10/16/2015	44.81	7.3	616	6.28	194	408	3.2	12.1	6.95	639	170	10 U	402	63	17	37	7	200	27	111
EH-123 (Dup)	10/16/2015	44.81	7.3	616	6.29	194	408	3.2	12.1	6.95	638	170	10 U	401	64	18	37	7	200	27	113
EH-124	4/6/2015	38.35	7.3	1208	3.24	113	330	1.1	10.4	7.09	1220	230	10 U	871	146	38	46	7	270	41	320
EH-124	5/28/2015	39.21	7.3	1165	4.48	228	444	0.8	11	7.16	1200	200	81	795	157	40	46	7	240	61	340
EH-124	10/16/2015	38.91	7.3	1186	3.79	205	420	1.9	10.7	6.79	1230	230	10 U	826	154	41	46	7	280	52	352
EH-125	5/28/2015	36.32	7	649	6.92	187	403	2.7	10.8	6.91	654	110	11	415	56	14	60	4	130	13	181
EH-125 (Dup)	5/28/2015	36.32	7	647	6.9	187	403	2.7	10.8	6.91	649	110	13	408	56	14	60	3	130	13	180
EH-125	10/15/2015	37.44	7	655	4.02	210	425	2.2	10.6	6.62	707	120	14	485	65	16	59	4	140	14	214
EH-126	4/6/2015	56.48	7.5	833	7.58	127	344	2	10.4	7.2	846	180	10 U	566	78	37	31	3	220	35	195
EH-126 (Dup)	4/6/2015		7.5	833	7.58	127	343	2	10.4	7.2	849	180	10 U	577	78	37	31	3	220	36	200
EH-126	5/28/2015	57.2	7.5	850	8.82	178	393	3.3	11.1	7.36	880	180	12	573	90	40	36	3	220	39	207
EH-126	10/15/2015	56.31	7.5	790	8.25	191	406	3.8	11.1	7.16	817	180	23	561	85	39	31	3	210	36	189
EH-129	5/28/2015	58.19	7.5	535	7.35	194	408	5.2	12.5	7.31	550	150	14	344	54	18	32	6	180	16	88
EH-129	10/14/2015	56.8	7.5	541	8.52	223	436	1.1	13.2	7.15	568	160	10 U	383	57	20	32	6	190	15	100
EH-130	5/27/2015	47.11	7.2	325	8.7	195	411	1.8	10.5	7.07	335	82	10 U	205	33	8	18	2	99	6	56
EH-130	10/14/2015	47.13	7.1	318	4.85	131	347	10	10.8	7.13	330	88	20	222	36	9	18	3	110	5	62
EH-131	5/27/2015	35.12	7.2	279	5.69	219	437	0.7	8.7	7.05	289	82	10 U	177	32	7	14	2	99	5	42
EH-131	10/15/2015	35.19	7.1	280	4.87	210	429	1	8.1	6.6	287	81	26	194	31	7	13	2	99	4	46
EH-132	5/28/2015	61.19	7.5	516	6.03	191	403	5.4	14.2	7.32	528	110	21	351	51	16	30	8	130	12	114
EH-132	10/14/2015	60.9	7.4	531	6.14	190	401	7.7	14.4	7.16	552	120	11	390	50	16	31	8	150	12	127
EH-132 (Dup)	10/14/2015	60.9	7.4	530	6.19	189	400	7.7	14.4	7.16	548	120	10	387	50	16	31	8	150	12	128
EH-134	5/27/2015	58.18	7.6	426		175	388	1.2	13.1	7.45	436	130	11	281	44	12	22	6	160	8	57
EH-134	10/14/2015	56.74	7.6	420	8.71	172	385	1.2	13	7.24	439	140	10 U	312	44	12	22	6	170	7	64
EH-135	5/27/2015	29.84	7.2	282	7.05	187	405	2.4	8.9	7.05	291	80	176	178	31	7	14	2	96	5	43
EH-135	10/15/2015	32.1	7.2	268	3.65	230	446	2.4	9.6	6.67	278	78	10 U	189	32	7	14	2	94	4	49
EH-138	4/6/2015	47.48	7.3	651	5.9	118	335	0.5	9.9	6.93	659	130	10 U	438	57	16	47	3	150	13	172
EH-138	6/10/2015	45.44	7.3	625	6.58	124	340	1.3	10	6.71	649	130	10 U	422	56	16	48	3	150	11	160
EH-138	10/14/2015	45.49	7.2	570	6.25	148	364	1.8	9.9	7.23	594	120	10 U	396	56	16	45	3	150	10	149
EH-139	6/10/2015	52.61	7.5	585	9.1	129	345	1.3	10.7	6.81	607	170	10 U	397	48	22	34	7	210	12	100
EH-139 (Dup)	6/10/2015	52.61	7.5	585	9.05	128	344	1.3	10.7	6.82	606	170	10 U	403	49	23	35	7	210	12	100
EH-139	10/14/2015	51.01	7.5	603	8.44	128	342	0.9	12.1	7.41	623	180	307	424	58	28	35	8	210	14	111
EH-140	5/27/2015	26.45	7.2	293	7.32	214	432	5.8	9.1	7.03	305	83	13	187	32	7	15	3	100	5	45
EH-140	10/15/2015	23.61	7.1	285	5.5	213	431	1	9	6.62	293	83	10 U	191	30	7	15	3	100	4	46

			Field Parameters							General Chemistry					Major Ions						
Station ID	Sample Date	Depth To Water (ft)	pH (s.u.)	SC (µmhos/cm)	Diss O_2 (mg/L)	ORP (mV)	E_H (mV)	Turbidity (NTU)	Water Temp (°C)	Lab pH (s.u.)	Lab SC (µmhos/cm)	Total Alkalinity as CaCO3	Total Suspended Solids	Total Dissolved Solids	Calcium	Magnesium	Sodium	Potassium	Bicarbonate	Chloride	Sulfate
EH-140 (Dup)	10/15/2015	23.61	7.1	285	5.5	212	430	1	8.9	6.61	294	84	10 U	195	30	7	15	3	100	4	48
EH-141	4/6/2015	34.45	7.4	864	4.94	126	341	0.3	10.7	7.07	877	160	10 U	605	92	23	43	7	200	23	244
EH-141	5/27/2015	33.71	7.4	825	8.47	196	411	0.5	11	7.28	852	160	10 U	565	94	24	43	7	190	25	225
EH-141	10/14/2015	31.6	7.3	838	5.55	140	355	1.6	11.2	7.29	868	170	10 U	622	99	26	45	7	200	24	238
EH-142	4/6/2015	34.96	7.5	578	6.93	148	363	2.9	10.8	6.9	585	160	26	393	54	21	26	6	190	12	104
EH-142	5/27/2015	34.16	7.5	578		210	425	2.8	11.6	7.38	601	150	46	381	58	22	27	6	180	15	111
EH-142	10/14/2015	32.27	7.4	571	7.61	132	346	6.6	12.1	7.41	595	160	10 U	398	60	22	27	6	190	12	111
EH-142 (Dup)	10/14/2015	32.27	7.4	571	7.62	132	346	6.6	12.1	7.41	597	160	10 U	411	61	23	27	6	200	12	114
EH-143	4/6/2015	35.72	7.3	597	5.64	135	352	0.3	10	6.93	609	130	10 U	404	62	15	32	4	150	13	146
EH-143	5/27/2015	34.9	7.4	605	10.17	208	424	0.9	10.8	7.2	626	120	10 U	395	66	16	33	4	150	16	152
EH-143 (Dup)	5/27/2015	34.9	7.4	603	8.88	208	424	0.9	10.8	7.2	625	120	10 U	395	66	16	33	4	140	16	152
EH-143	10/14/2015	33.03	7.3	525	6.35	152	368	1.9	10.6	7.22	547	120	10 U	370	59	14	32	4	150	10	128
EH-144D	5/26/2015	23.54	7.3	565	5.67	177	393	0.4	11	7.19	625	120	10 U	401	72	16	29	4	150	16	153
EH-144D (Dup)	5/26/2015	23.54	7.3	565	5.68	177	393	0.4	11	7.19	626	120	10 U	407	73	16	29	4	150	15	155
EH-144D	10/13/2015	21.45	7.3	605	5.48	187	402	1.1	11.3	6.9	618	130	10 U	403	68	15	28	4	150	15	155
EH-144M	5/26/2015	26.05	7.3	442	6.26	178	394	1.6	10.7	7.19	491	110	10 U	298	53	12	27	3	140	10	101
EH-144M	10/13/2015	23.85	7.3	475	5.65	208	423	0.5	10.9	6.72	488	110	10 U	322	52	11	26	4	140	10	108
EH-144S	5/26/2015	27.38	7.4	353	5.48	189	404	0.6	10.8	7.2	393	97	10 U	240	42	10	20	3	120	7	72
EH-144S	10/13/2015	25.32	7.4	381	5.1	204	419	0.9	11.2	6.72	391	98	10 U	247	42	9	19	3	120	7	77
EH-144S (Dup)	10/13/2015	25.32	7.3	381	5.09	204	419	0.9	11.2	6.73	391	97	10 U	245	43	10	20	3	120	7	79
EH-204	6/1/2015	56.14	7.3	1900	3.16	95	310	16.6	10.8	7.01	1980	260	45 J	1530	266	61	72	12	310	99	693
EH-204	10/15/2015	56.84	7.2	1876	3.54	252	467	2.1	10.8	7.18	1960	260	10 U	1520	258	58	72	11	320	88	651
EH-204 (Dup)	10/15/2015	56.84	7.2	1877	3.53	251	467	2.1	10.8	7.18	1960	260	10 U	1540	256	57	72	11	320	85	634
EH-206	5/28/2015	49.32	7.6	523	6.68	184	397	2	12.6	7.51	535	160	13	351	66	16	18	9	190	18	66
EH-206	10/14/2015	49.8	7.6	518	7.56	193	407	145	12.4	7.35	541	170	158	368	61	15	18	9	210	16	71
EH-210	6/1/2015	38.2	7.4	748	7.95	86	300	1.1	12.2	7.08	776	130	10 U UJ	545	84	18	40	9	160	22	207
EH-210	10/22/2015	38.3	7.3	810	7.11	131	344	6.5	13.2	7.28	826	130	27 J	583	96	21	42	9	160	23	227
EH-211	6/1/2015	50.4	7.6	516	8.29	90	304	0.8	11.7	7.19	534	210	41 J	332	50	14	36	8	260	7	44
EH-211 (Dup)	6/1/2015	50.4	7.7	516	8.28	90	304	0.8	11.7	7.19	529	210	131 J	334	50	13	36	8	260	6	43
EH-211	10/15/2015	50.91	7.6	499	9.4	254	469	7.8	11.2	7.62	522	210	71	341	47	13	37	7	260	6	49
EH-212	6/1/2015	50.49	7.7	496	7.78	82	297	2	11.4	7.24	510	140	10 U UJ	350	47	11	33	10	160	15	72
EH-212	10/15/2015	50.97	7.6	485	8.42	246	461	4.6	11.2	7.62	507	140	10 U	361	47	10	32	9	170	14	78
EH-50	4/7/2015	29.27	6.7	987	0.46	114	329	0.9	11.8	6.36	1020	180	10 U	686	62	18	127	5	220	20 J	248
EH-50	5/29/2015	29.8	6.6	1011	0.91	205	420	0.9	12.1	6.5	1010	190	10 U	725	62	17	136	6	230	21	281
EH-50 (Dup)	5/29/2015	29.8	6.6	1011	0.92	205	420	0.9	12.1	6.5	1010	190	10 U	724	63	18	135	5	230	21	284
EH-50	8/14/2015	21.16	6.7	993	0.72	207	421	0.7	11.9	5.97	1020	180	10 U	695	57	17	127	5	220	25	277
EH-50	10/20/2015	29.7	6.7	1008	1.22	190	404	0.7	11.9	6.23	1030	190	10 U	672	56	17	137	5	230	24	279
EH-50	12/22/2015	30.26	6.6	1030	0.72	208	422	1.2	12	6.55	1030	180	10 U	718	58	17	136	5	220	26	285
EH-51	6/2/2015	15.64	7.3	434	3.94	135	352	0.6	10	6.58	440	100	10 U	269	21	4	52	19	130	12	65
EH-51	10/19/2015	17.24	7.2	390	4.44	234	450	0.9	11	7.13	389	95	10 U	246	17	3	43	16	120	8	73
EH-52	6/2/2015	7.58	7.1	393	4.64	143	360	0.2	9.5	6.29	405	98	10 U	250	25	5	27	32	120	11	53
EH-52	10/19/2015	8.35	7	379	3.26	215	428	0.4	13	6.5	387	100	10 U	242	26	5	23	33	130	7	61
EH-53	6/2/2015	29.42	7	1307	4.49	150	365	0.2	11.3	6.52	1350	180	10 U	967	103	32	137	6	220	28	462
EH-53	10/19/2015	29.97	7	1110	6.49	176	390	0.8	11.9	6.86	1120	180	10 U	790	78	24	122	5	210	21	338
EH-54	6/2/2015	5.7	7.1	186	3.58	152	373	2.1	6.6	6.2	192	67	10 U	128	20	4	10	2	81	2	17
EH-54	10/19/2015	9.34	7	304	3.48	210	423	2.1	12.9	6.54	311	96	10 U	196	37	7	14	3	120	4	48
EH-57A	4/7/2015	39.95	7.2	1640	3.58	135	351	0.1	11.1	6.79	1700	260	10 U	1210	182	56	103	7	320	83	547
EH-57A	5/29/2015	40.95	7.2	1623	5.67	109	324	0.9	11.3	6.88	1630	270	11	1160	179	54	99	7	320	93	470
EH-57A	8/13/2015	40.05	7.1	1522	3.99	333	548	0.5	11.5	6.76	1560	280	10 U	1140	174	53	96	7	340	70	461
EH-57A	10/16/2015	40.64	7.1	1469	3.82	184	398	0.4	12.1	6.91	1510	270	10 U	1060	163	48	95	7	330	74	442
EH-58	6/1/2015	16.98	7.1	298	6	99	316	0.3	10.2	6.5	308	82	10 U UJ	192	31	7	16	3	100	5	44
EH-58	10/16/2015	16.3	6.9	298	4.29	57	272	0.2	11.3	6.89	311	88	10 U	180	32	7	16	3	110	5	54
EH-59	6/1/2015	8.35	7.1	311	6.01	112	329	14	9.5	6.41	322	83	17 J	204	30	6	15	12	100	6	47
EH-59	10/16/2015	8.53	6.9	331	2.63	137	349	0.8	13.1	6.87	343	99	10 U	199	32	7	16	14	120	6	55
EH-60	6/4/2015	24.8	6.9	1309	3.68	148	364	9.8	11.4	6.28	1410	230	12	918	72	23	185	10	280	69	350
EH-60	10/19/2015	24.87	6.9	1417	1.32	50	262	0.6	14.4	6.78	1440	250	10 U	922	76	22	185	10	300	59	394
EH-61	5/29/2015	26.89	6.9	2066	0.18	218	432	0.5	12.1	6.83	2080	190	10 U	1640	204	36	236	16	230	31	897
EH-61	10/19/2015	26.69	7	2121	0.06	98	312	1.3	12.1	6.86	2140	190	10 U	1620	191	34	233	15	230	27	932
EH-62	6/2/2015	25.02	7.2	376	5.18	141	357	0.1	10.1	6.46	387	110	10 U	240	40	10	18	4	130	7	53
EH-62	10/19/2015	28.43	7.1	424	6.27	234	450	0.5	10.9	7.05	428	130	10 U	269	46	11	20	4	160	8	65
EH-63	6/2/2015	20.45	7.1	357	4.41	143	359	3.7	10.7	6.6	367	97	10 U	229	35	7	24	4	120	8	52
EH-63	10/19/2015	22.57	7.1	360	5.62	219	435	1.3	10.6	6.71	370	94	10 U	230	35	7	24	4	110	8	63
EH-65	4/7/2015	27.94	6.7	1438	0.26	121	336	1	11.2	6.43	1480	190	61	1010	91	23	188	9	240	58	483
EH-65	6/3/2015	26.22	7.1	1474	0.28	125	341	2.5	11	6.31	1490	190	10 U	1040	101	26	185	10	230	48	453
EH-65	8/13/2015	25.5	6.6	1348	0.28	203	418	1.2	11.6	6.35	1380	190	10 U	957	88	23	176	9	230	46	434
EH-65	10/19/2015	27.81	6.7	1481	0.2	227	440	2.7	12.7	6.6	1500	190	10 U	1060	97	25	184	10	240	50	488
EH-66	5/26/2015	28.89	7.2	266	5.95	179	396	2.1	9.9	7.1	293	84	10	176	32	8	13	2	100	4	43
EH-66	10/15/2015	31.47	7.3	329	7.75	201	418	2.4	10.1	6.74	338	99	13	222	40	9	14	3	120	4	53
EH-69	6/2/2015	20.59	7	445	3.7	159	375	3.5	10.5	6.48	467	120	24	294	42	9	36	4	150	8	77
EH-69	10/19/2015	20.3	7	437	5.25	213	428	1.8	11.1	6.52	450	120	10	288	42	9	34	4	140	10	82
EH-70	5/28/2015	35.71	6.9	1244	5.58	193	409	1.8	10.9	6.82	1270	150	12	875	119	36	115	5	180	32	461
EH-70	10/15/2015	36.77	7	1218	5.13	219	435	2.4	10.7	6.73	1250	160	10 U	911	115	36	108	5	200	30	443
MW-1	5/28/2015	53.14	7.5	447	9.42	118	335	36.5	10.3	7.1	456	120	69	295	50	10	26	5	140	14	76
MW-1	10/16/2015	53.5	7.5	439	9.87	186	401	2.9	11.4	7.46	454	120	10 U	297	48	10	26	5	140	13	83
MW-2	5/28/2015	39.54	7.1	729	0.2	63	280	0.3	10.1	6.74	741	230	10 U	461	101	21	24	6	270	30	116
MW-2	10/16/2015	39.38	7.1	738	0.24	108	323	0.6	10.8	7.03	766	220	10 U	478	98	21	24	6	270	34	131

			Field Parameters							General Chemistry					Major Ions						
Station ID	Sample Date	Depth To Water (ft)	pH (s.u.)	SC (µmhos/cm)	Diss O_2 (mg/L)	ORP (mV)	E_H (mV)	Turbidity (NTU)	Water Temp (°C)	Lab pH (s.u.)	Lab SC (µmhos/cm)	Total Alkalinity as CaCO3	Total Suspended Solids	Total Dissolved Solids	Calcium	Magnesium	Sodium	Potassium	Bicarbonate	Chloride	Sulfate
MW-3	5/28/2015	34.88	7.1	818	0.25	107	324	0.2	9.9	6.72	839	240	10 U	529	115	25	26	7	290	39	141
MW-3	10/16/2015	34.73	7.1	805	0.19	133	349	0.5	10.1	7.04	839	240	10 U	528	109	24	26	7	290	38	148
MW-3 (Dup)	10/16/2015	34.73	7.1	806	0.18	133	349	0.5	10.1	7.04	836	240	10 U	525	111	25	26	7	290	38	147
MW-4	5/28/2015	49.03	7.7	550	8.85	111	327	1.6	10.1	7.22	565	190	10 U	360	65	14	37	7	230	11	77
MW-4	5/28/2015	49.03	7.7	550	8.74	111	327	1.6	10.1	7.23	563	190	10 U	345	64	14	36	7	230	11	78
MW-4	10/16/2015	49.49	7.6	537	9.54	197	412	6.9	10.6	7.57	559	180	10	354	61	13	34	7	220	10	85
MW-5	5/28/2015	54.29	7.8	357	9.56	113	329	6.5	10.5	7.35	362	130	36	248	39	8	25	4	160	6	29
MW-5	10/16/2015	54.59	7.8	358	10.24	196	410	2.9	11.6	7.79	368	140	10 U	231	37	7	25	4	170	6	34
MW-6	5/28/2015	31.25	7.3	826	0.79	114	331	2.5	10.2	6.94	832	250	10 U	553	110	24	26	5	310	30	148
MW-6	10/16/2015	31.07	7.2	894	0.34	153	369	0.9	10.3	7.16	931	240	10 U	600	122	27	28	6	290	44	193
MW-7	5/28/2015	57.3	7.7	243	9.04	125	340	12.2	11.2	7.19	247	87	26	197	21	6	19	5	110	1	25
MW-7	10/15/2015	57.56	7.6	248	8.39	241	454	20.7	12.8	7.78	249	87	10 U	204	19	6	19	5	110	1	28
MW-8	5/28/2015	53.32	7.5	473	7.61	157	373	9.4	10.5	7.02	481	160	39	333	59	11	24	6	200	10	60
MW-8	10/16/2015	53.75	7.4	464	8.02	198	414	2.6	10	7.13	482	160	12	305	54	11	24	6	190	10	69
MW-9	5/28/2015	57.88	7.6	439	9.56	189	405	2.4	10.3	7.14	445	160	14	303	51	10	27	5	190	9	49
MW-9	10/16/2015	58.99	7.6	431	9.65	194	409	5.1	11.4	7.52	449	150	10 U	278	47	9	27	5	190	8	55
MW-10	5/28/2015	44.78	7.4	812	5.22	130	347	2.9	10.2	7.07	823	250	10 U	541	103	24	39	8	300	22	150
MW-10	10/16/2015	45.3	7.4	791	5.38	204	419	2.2	10.7	7.38	817	250	10 U	525	99	24	39	8	310	20	156
MW-11	5/28/2015	63.67	7.7	638	9.59	141	358	2.3	10.4	7.37	647	110	10 U	444	52	12	61	10	140	28	150
MW-11	10/15/2015	63.82	7.7	612	9.59	245	460	1.6	11.5	7.75	638	110	10 U	455	47	11	58	10	140	22	144
PRB-1	6/8/2015	41.45	5.9	1007	0.36	116	329	78.3	12.7	5.61	1040	68	16	730	62	24	88	13	82	15	411
PRB-1	6/8/2015	41.45	5.9	1007	0.34	115	329	78.3	12.7	5.61	1030	68	17	735	61	24	88	13	82	15	411
PRB-1	10/13/2015	41.29	6	1013	0.29	135	350	19.9	11.9	5.8	1040	62	68	732	65	25	87	13	75	13	409
PRB-3	7/14/2015	42.55	6.3	1148	0.16	442	656	9	11.7	6.16	1190	120	10 U	875	112	44	76	8	140	23	437
PRB-3	10/13/2015	46.84	6.3	1161	1.39	261	475	5.1	11.7	6.15	1200	110	10 U	894	108	42	70	8	140	19	461
SC-1	8/14/2015	33.06	7.3	358	4.61	227	441	3.1	12.3	6.62	371	120	22	285	38	9	18	4	140	6	45
SDMW-1	5/29/2015	38.81	7.1	1277	0.35	86	301	1.6	12.1	6.76	1290	230	10 U	879	93	16	149	35	280	26	379
SDMW-1	5/29/2015	38.81	7	1277	0.35	87	2	1.6	12.1	6.76	1280	230	10 U	880	91	16	148	35	280	26	383
SDMW-1	10/21/2015	38.44	7.2	1198	0.34	61	276	2.9	11.3	7.03	1250	220	10 U	798	93	17	138	33	270	16	356
SDMW-1	10/21/2015	38.44	7.1	1197	0.33	62	277	2.9	11.3	7.03	1250	220	10 U	791	93	16	136	32	270	16	348
SDMW-2	4/8/2015	37.83	6.7	1186	0.3	31	245	3.4	12.4	6.42	1180	180	10 U	759	13	4	212	12	220	16	342
SDMW-2	5/26/2015	41.02	6.7	1078	0.44	59	273	7.3	12.4	6.36	1180	190	29	728	13	4	220	12	230	13	315
SDMW-2	10/21/2015	37.91	6.7	1141	0.38	-2	212	31.3	11.6	6.67	1180	190	28	679	14	4	215	12	240	13	314
SDMW-3	5/27/2015	41.51	6.7	936	0.3	76	290	2.3	12.2	6.24	948	160	10 U	558	18	4	160	21	190	12	254
SDMW-3	10/21/2015	41.08	6.7	1112	2.58	62	276	30.3	11.3	6.63	1140	160	25	690	42	11	168	21	190	10	322
SDMW-4	5/26/2015	35.08	7.4	812	0.62	306	522	32.7	11.1	6.9	900	210	37	586	58	12	117	6	260	9	223
SDMW-4	10/20/2015	45.72	7.3	856	0.62	49	263	8.6	11.7	7.25	884	210	78	576	59	12	104	6	260	9	221
SDMW-5	5/27/2015	48.96	5.6	880	0.68	170	383	2.2	12.9	5.23	890	29	10 U	570	33	11	95	16	34	14	356
SDMW-5	10/21/2015	53.2	5.7	860	0.67	131	345	28.6	12.4	5.54	894	32	10 U	552	33	11	95	17	38	11	339
TW-1	5/26/2015		9.4	3842	0.19	-185	26	1.6	15.4	9.33	4210	590	10 U	2980	9	7	966	10	480	76	1260
TW-1 (Dup)	5/26/2015		9.4	3844	0.15	-185	26	1.6	15.4	9.34	4200	590	10 U	2960	9	7	989	11	490	76	1280
TW-1	8/1/2015		9.2								4080	630		2880	9	6	952	12	720	74	1210

NOTES: All concentrations in mg/L except as indicated.
U = below laboratory reporting limit (associated value)
A = anomalous data point (historical inconsistency)
R = data point rejected during validation procedure
J = QC criterion exceeded; + = potential high bias

		Nutrients		Dissolved (D) Metals																
Station ID	Sample Date	NH4 as N	NO2 + NO3 as N	Sb (D)	As (D)	As III (D)	As V (D)	Be (D)	Cd (D)	Cr (D)	Cu (D)	Fe (D)	Pb (D)	Mn (D)	Hg (D)	Ni (D)	Se (D)	Se IV (D)	Se VI (D)	Tl (D)	Zn (D)
APSD-7	6/5/2015			0.313	1.99			0.001 U	0.068	0.001 U	0.015	3.86	0.03	1.34	0.001 U	0.01 U	0.002			0.222	0.4
APSD-7	10/20/2015			0.546	0.069			0.001 U	1.26	0.001 U	0.008	1.44	0.005 U	1.82	0.001 U	0.04	0.338			0.402	5.67
APSD-8	6/5/2015			0.004	0.148			0.001 U	0.001 U	0.001 U	0.001 U	12.6	0.005 U	6.77	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
APSD-8	10/20/2015			0.004	0.136			0.001 U	0.001 U	0.001 U	0.001 U	8.45	0.005 U	3.57	0.001 U	0.01 U	0.002			0.014	0.04
DH-1	6/4/2015			0.003 U	0.003			0.001 U	0.001 U	0.007	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01	0.311			0.001 U	0.01 U
DH-1	10/14/2015			0.003 U	0.006			0.001 U	0.001 U	0.007	0.001	0.02 U	0.005 U	0.01 U	0.001 U	0.02	0.367			0.001 U	0.01 U
DH-11	5/29/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.15	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
DH-13	5/27/2015			0.003 U	9.93			0.001 U	0.001 U	0.001 U	0.001 U	6.69	0.005 U	1.93	0.001 U	0.01 U	0.001			0.027	1.94
DH-13	10/21/2015			0.003 U	9.95			0.001 U	0.001 U	0.001 U	0.002	7.39	0.005 U	2.17	0.001 U	0.01 U	0.001 U			0.028	1.99
DH-14	6/4/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.003	0.28	0.005 U	0.66	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
DH-14	10/21/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.005 U	0.68	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
DH-15	5/29/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.003	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.32			0.001 U	0.01 U
DH-15	8/13/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.004	0.02 U	0.005 U	0.01	0.001 U	0.01 U	0.329	0.001	0.247	0.001 U	0.01 U
DH-15	10/20/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.007	0.02 U	0.005 U	0.02	0.001 U	0.01 U	0.283	0.005	0.262	0.001 U	0.01 U
DH-17	4/8/2015			0.003 U	30.8	31.7	0.199	0.001 U	0.001 U	0.001 U	0.001 U	0.19	0.005 U	0.48	0.001 U	0.01 U	0.001 U			0.001 U	0.05
DH-17	6/8/2015			0.003 U	30.7	32.1	0.779	0.001 U	0.001 U	0.001 U	0.001 U	0.2	0.005 U	0.48	0.001 U	0.01 U	0.001 U			0.001 U	0.04
DH-17	8/17/2015			0.003 U	29.9	28.9	0.349	0.001 U	0.001 U	0.001 U	0.001 U	0.17	0.005 U	0.42	0.001 U	0.01 U	0.001 U			0.001 U	0.05
DH-17	10/21/2015	1.34	0.01	0.003 U	33.1	31.7	2 U	0.001 U	0.001 U	0.001 U	0.001 U	0.15	0.005 U	0.41	0.001 U	0.01 U	0.001 U			0.001 U	0.04
DH-17 (Dup)	10/21/2015	1.35	0.01	0.003 U	33.3	32.5	2 U	0.001 U	0.001 U	0.001 U	0.001 U	0.16	0.005 U	0.42	0.001 U	0.01 U	0.001 U			0.001 U	0.04
DH-17	12/22/2015			0.003 U	32.2			0.001 U	0.001 U	0.001 U	0.001 U	0.16	0.005 U	0.41	0.001 U	0.01 U	0.001 U			0.001 U	0.04
DH-18	5/26/2015			0.003 U UJ	0.026			0.001 U	0.002	0.001 U	0.004	0.22	0.056	0.13	0.001 U	0.01 U	0.001 U			0.001 U	0.01
DH-18	10/21/2015			0.006	0.006			0.001 U	0.004	0.001 U	0.009	0.06	0.1	0.09	0.001 U	0.01 U	0.001 U			0.001 U	0.02
DH-19R	4/8/2015			0.006	15	7.81	6.67	0.001 U	0.027	0.001 U	0.018	14	0.005 U	2.41	0.001 U	0.02	0.004			0.142	1.66
DH-19R	6/8/2015			0.006	15	12.1	1.72	0.001 U	0.031	0.001 U	0.032	13.7	0.005 U	2.36	0.001 U	0.02	0.005			0.113	1.63
DH-19R	10/21/2015	5	0.06	0.006	16.3	14.6	0.833	0.001 U	0.083	0.001 U	0.038	17.2	0.005 U	3.12	0.001 U	0.02	0.005			0.12	1.93
DH-2	6/1/2015			0.003 U	0.007			0.001 U	0.001 U	0.012	0.001 U	0.17	0.005 U	0.01 U	0.001 U	0.02	0.001 U			0.001 U	0.01 U
DH-2	10/15/2015			0.003 U	0.006			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
DH-20	6/4/2015			0.003 U	0.16			0.001 U	0.001 U	0.001 U	0.001 U	9.93	0.005 U	6.58	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
DH-20	10/21/2015			0.003 U	0.155			0.001 U	0.001 U	0.001 U	0.001 U	12.2	0.005 U	8.32	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
DH-24	6/8/2015			0.003 U	18.5			0.001	0.035	0.001 U	0.002	1.44	0.005 U	3.2	0.001 U	0.01 U	0.001			0.001 U	0.4
DH-24	10/21/2015			0.003 U	10.5	0.482	9.47	0.001	0.027	0.001 U	0.008	0.11	0.005 U	3.09	0.001 U	0.01 U	0.001			0.001 U	0.39
DH-3	6/1/2015			0.003 U	0.01			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002			0.001 U	0.01 U
DH-3	10/16/2015			0.003 U	0.007			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002			0.001 U	0.01 U
DH-30	5/27/2015			0.054	6.4	0.796	7.33	0.001 U	1.18	0.001 U	0.001 U	0.23	0.005 U	2.51	0.001 U	0.01 U	0.053	0.001 U	0.044	0.095	0.7
DH-30 (Dup)	5/27/2015			0.054	6.5	0.77	7.58	0.001 U	1.2	0.001 U	0.001 U	0.21	0.005 U	2.52	0.001 U	0.01 U	0.052	0.001 U	0.045	0.096	0.71
DH-30	10/20/2015	0.62	0.08	0.054	6.29	0.802	4.4 J	0.001 U	1.42	0.001 U	0.001 U	0.16	0.005 U	3.24	0.001 U	0.01 U	0.056	0.037	0.026	0.105	0.68
DH-30 (Dup)	10/20/2015	0.53	0.08	0.055	5.95	0.81	3.09 J	0.001 U	1.43	0.001 U	0.001 U	0.16	0.005 U	3.06	0.001 U	0.01 U	0.056	0.035	0.023	0.105	0.67
DH-4	6/5/2015			0.003 U	1.56			0.001 U	0.001 U	0.001 U	0.001 U	9.7	0.005 U	3.42	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
DH-4	10/20/2015			0.003 U	1.37			0.001 U	0.001 U	0.001 U	0.001 U	11.2	0.005 U	3.97	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
DH-42	6/8/2015			0.003	2.81			0.001 U	3.44	0.001 U	0.004	0.02 U	0.005 U	6.53	0.001 U	0.01 U	0.029			0.005	2.78
DH-42	10/20/2015			0.004	2.72			0.001 U	4.12	0.001 U	0.005	0.02 U	0.005 U	7.37	0.001 U	0.01 U	0.046			0.005	3.28
DH-47	4/8/2015			0.003 U	1.16			0.001 U	0.001 U	0.001 U	0.001 U	13.8	0.005 U	5.11	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
DH-47	6/5/2015			0.003 U	1.2			0.001 U	0.001 U	0.001 U	0.001 U	16.2	0.005 U	5.86	0.001 U	0.01 U	0.001 U			0.001 U	0.01
DH-47	10/20/2015			0.027	1.54			0.001 U	0.001 U	0.001 U	0.001 U	31.3	0.005 U	8.51	0.001 U	0.01 U	0.001 U			0.001 U	2.47
DH-51	6/4/2015			0.003 U	0.896			0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.077			0.001 U	0.01 U
DH-51	10/20/2015			0.003 U	0.804			0.001 U	0.001 U	0.001 U	0.005	0.19	0.005 U	0.02	0.001 U	0.01 U	0.076			0.001 U	0.01 U
DH-52	6/4/2015			0.029	0.68			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.028			0.001 U	0.01 U
DH-52	10/19/2015			0.031	0.702			0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.021			0.001 U	0.01 U
DH-53	6/4/2015			0.021	0.526			0.001 U	0.001 U	0.001 U	0.002	0.1	0.005 U	1.08	0.001 U	0.01 U	0.009			0.001 U	0.01 U
DH-53	10/19/2015			0.018	0.538			0.001 U	0.001 U	0.001 U	0.002	0.13	0.005 U	1	0.001 U	0.01 U	0.003			0.001 U	0.01 U
DH-55	5/29/2015			0.053	0.449			0.001 U	0.001 U	0.001 U	0.004	0.02 U	0.005 U	0.02	0.001 U	0.01 U	0.087			0.005	0.01 U
DH-55	10/20/2015			0.04	0.262			0.001 U	0.001 U	0.001 U	0.003	0.02 U	0.005 U	0.03	0.001 U	0.01 U	0.04			0.01	0.02
DH-56	4/8/2015			0.032	0.73	0.005 U	0.729	0.001 U	0.001 U	0.001 U	0.003	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.604	0.022	0.502	0.001 U	0.01 U
DH-56	5/27/2015			0.033	0.931	0.005 U	0.798	0.001 U	0.001 U	0.001 U	0.003	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.492	0.006	0.372	0.001 U	0.01 U
DH-56	8/14/2015			0.035	0.956	0.005 U UJ	0.895	0.001 U	0.001 U	0.001 U	0.003	0.02 U UJ	0.005 U	0.01 U	0.001 U	0.01 U	0.56	0.015	0.359	0.001 U UJ	0.01 U
DH-56	10/20/2015	0.05 U	0.77	0.031	0.78	0.01 U	1.09 J	0.001 U	0.001 U	0.001 U	0.003	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.567	0.014	0.509	0.001 U	0.01 U
DH-56 (Dup)	10/20/2015	0.05 U	0.77	0.031	0.77	0.01 U	1.09 J	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.551	0.016	0.514	0.001 U	0.01 U
DH-59	6/8/2015			0.003 U	7.38			0.001 U	0.036	0.001 U	0.001 U	0.52	0.005 U	4.82	0.001 U	0.01 U	0.002			0.114	0.07
DH-59	10/21/2015			0.003 U	8.1			0.001 U	0.061	0.001 U	0.001 U	0.53	0.005 U	7.19	0.001 U	0.01 U	0.004			0.13	0.08
DH-6	4/7/2015			0.064	1.81	0.005 U	2.04	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.387	0.003	0.425	0.001 U	0.01 U
DH-6	6/4/2015			0.059	1.79	0.05 U	1.88	0.001 U	0.001 U	0.001 U	0.004	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.317	0.001 U	0.24	0.001 U	0.01 U
DH-6 (Dup)	6/4/2015			0.059	1.86	0.05 U	2.08	0.001 U	0.001 U	0.001 U	0.004	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.314	0.001 U	0.248	0.001 U	0.01 U
DH-6	8/13/2015			0.065	2.01	0.005 U	1.93	0.001 U	0.001 U	0.001 U	0.003	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.295	0.001 U	0.206	0.001 U	0.01 U
DH-6 (Dup)	8/13/2015			0.064	1.94	0.005 U	1.65	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.281	0.001 U	0.208	0.001 U	0.01 U
DH-6	10/20/2015			0.068	2.04	0.05 U	1.73 J	0.001 U	0.001 U	0.001 U	0.003	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.204	0.004	0.173	0.001 U	0.01 U
DH-62	6/9/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.307			0.001 U	0.01 U
DH-62	10/22/2015	0.05 U	7.11	0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.004	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.297			0.001 U	0.01 U
DH-63	6/5/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.002	0.03	0.005 U	0.04	0.001 U	0.01 U	0.378			0.001 U	0.01 U
DH-64	4/8/2015			0.003 U	18.9			0.001 U	0.006	0.001 U	0.002	0.4	0.005 U	1.22	0.001 U	0.01 U	0.001 U			0.001 U	0.09
DH-64	6/8/2015			0.003 U	18.5	22.2	1.69	0.001 U	0.005	0.001 U	0.001 U	0.44	0.005 U	1.22	0.001 U	0.01 U	0.001 U			0.001 U	0.09
DH-64	8/17/2015			0.003 U	18			0.001 U	0.006	0.001 U	0.002	0.43	0.005 U	1.28	0.001 U	0.01 U	0.001 U			0.001 U	0.12
DH-64	10/21/2015			0.003 U	19	17	1 U	0.001 U	0.006	0.001 U	0.001	0.44	0.005 U	1.55	0.001 U	0.01 U	0.001 U			0.001 U	0.11
DH-64	12/22/2015			0.003 U	17.4			0.001 U	0.007	0.001 U	0.001	0.47	0.005 U	1.65	0.001 U	0.01 U	0.001 U			0.001 U	0.11
DH-66	4/8/2015			0.003 U	0.002			0.001 U	0.475	0.003	0.005	0.02 U	0.005 U	0.01 U	0.001 U	0.02	4.31	0.005	4.26	0.001 U	0.28
DH-66	6/9/2015			0.003 U	0.002 U			0.001 U	0.366	0.002	0.004	0.02 U	0.005 U	0.01 U	0.002	0.02	3.51	0.003	2.99	0.001 U	0.2
DH-66	7/14/2015			0.003 U	0.002 U			0.001 U	0.335	0.002	0.004	0.02 U	0.005 U	0.01 U	0.001	0.02	2.78			0.001 U	0.19

		Nutrients		Dissolved (D) Metals																
Station ID	Sample Date	NH4 as N	NO2 + NO3 as N	Sb (D)	As (D)	As III (D)	As V (D)	Be (D)	Cd (D)	Cr (D)	Cu (D)	Fe (D)	Pb (D)	Mn (D)	Hg (D)	Ni (D)	Se (D)	Se IV (D)	Se VI (D)	Tl (D)	Zn (D)
DH-66	8/17/2015			0.003 U	0.002			0.001 U	0.346	0.003	0.005	0.12	0.005 U	0.01 U	0.002	0.02	2.29	0.004	1.91	0.001 U	0.19
DH-66	10/13/2015	0.05 U UJ	15.4	0.003 U	0.002 U			0.001 U	0.323	0.001	0.003	0.02 U	0.005 U	0.01 U	0.001	0.01	1.83	0.016	1.68	0.001 U	0.18
DH-66 (Dup)	10/13/2015	0.05 U UJ	15.2	0.003 U	0.002 U			0.001 U	0.324	0.001	0.003	0.02 U	0.005 U	0.01 U	0.001	0.01	1.95	0.017	1.68	0.001 U	0.19
DH-66	12/22/2015			0.003 U	0.002			0.001 U	0.32	0.001	0.004	0.02 U	0.005 U	0.01 U	0.001	0.01	1.58			0.001 U	0.16
DH-67	4/7/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.003	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	1.05	0.001	0.984	0.001 U	0.01 U
DH-67	6/4/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.003	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.926	0.001 U	0.745	0.001 U	0.01 U
DH-67	7/14/2015			0.003 U	0.002			0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.797			0.001 U	0.01 U
DH-67 (Dup)	7/14/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.785			0.001 U	0.01 U
DH-67	8/13/2015			0.003 U	0.002			0.001 U	0.001 U	0.001 U	0.003	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.669	0.001	0.512	0.001 U	0.01 U
DH-67	10/19/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.464	0.002	0.444	0.001 U	0.01 U
DH-69	5/27/2015			0.003 U	0.337			0.001 U	0.001 U	0.001 U	0.001 U	26.3	0.005 U	7.75	0.001 U	0.01 U	0.001 U			0.001 U	0.07
DH-69	10/20/2015	3.6	0.11	0.004	0.213			0.001 U	0.001 U	0.001	0.001 U	16.7	0.005 U	5.87	0.001 U	0.01 U	0.002			0.003	0.69
DH-7	5/29/2015			0.003 U	0.003			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002			0.001 U	0.01 U
DH-7	10/15/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
DH-71	6/9/2015			0.01	2.72			0.001 U	0.01	0.001 U	0.002	0.03	0.005 U	0.02	0.001 U	0.01 U	0.06			0.001 U	0.01 U
DH-71	10/22/2015			0.011	2.66			0.001 U	0.009	0.001	0.001	0.28	0.005 U	0.11	0.001 U	0.01 U	0.061			0.001 U	0.01 U
DH-72	6/8/2015			0.003 U	0.006			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.02	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
DH-72	10/20/2015			0.003 U	0.016			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.02	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
DH-73	6/5/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.008			0.001 U	0.01 U
DH-73 (Dup)	6/5/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.008			0.001 U	0.01 U
DH-73	10/20/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.005 U	0.01	0.001 U	0.01 U	0.006			0.001 U	0.01 U
DH-74	5/29/2015			0.033	0.7			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.13			0.001 U	0.01 U
DH-74	10/20/2015			0.032	0.62			0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.124			0.001 U	0.01 U
DH-75	5/29/2015			0.003 U	0.003			0.001 U	0.001 U	0.001 U	0.006	0.02	0.005 U	0.61	0.001 U	0.01 U	0.025			0.001 U	0.02
DH-75	10/20/2015			0.003 U	0.004			0.001 U	0.001 U	0.001 U	0.005	0.02 U	0.005 U	0.54	0.001 U	0.01 U	0.018			0.001 U	0.02
DH-77	4/8/2015			0.003 U	3.31	0.005 U	2.95	0.006	4.29	0.001 U	0.005	0.05	0.005 U	13.2	0.001 U	0.06	0.027	0.004	0.028 J	0.004	2.88
DH-77 (Dup)	4/8/2015			0.003 U	3.29	0.005 U	3.8	0.006	4.26	0.001 U	0.006	0.04	0.005 U	13.2	0.001 U	0.06	0.026	0.004	0.022 J	0.004	2.87
DH-77	6/9/2015			0.003 U	3.41	0.005 U	3.13	0.005	4.37	0.001 U	0.01	0.02 U	0.005 U	12.9	0.001 U	0.05	0.021	0.003	0.015	0.003	2.93
DH-77	8/14/2015			0.003 U	3.4	0.065 J	2.89	0.006	4.42	0.001 U	0.011	0.18 J	0.005 U	13	0.001 U	0.06	0.02	0.003	0.013	0.008 J	2.98
DH-77 (Dup)	8/14/2015			0.003 U	3.28	0.011 J	3.29	0.006	4.33	0.001 U	0.009	0.02 U UJ	0.005 U	12.9	0.001 U	0.06	0.022	0.004	0.012	0.003 J	2.86
DH-77	10/22/2015			0.003 U	3.42	0.05 U	2.87	0.006	4.67	0.002	0.01	0.06	0.005 U	13.9	0.001 U	0.06	0.015	0.004	0.011	0.003	3.12
DH-77 (Dup)	10/22/2015			0.003 U	3.27	0.05 U	2.78	0.006	4.38	0.001	0.01	0.05	0.005 U	13.5	0.001 U	0.06	0.016	0.004	0.012	0.003	2.99
DH-78	4/8/2015			0.003 U	0.012	0.005 U	0.012	0.001 U	0.435	0.001	0.003	0.02 U	0.005 U	0.01 U	0.001	0.01	3.62	0.006	3.65	0.001	0.64
DH-78	6/9/2015			0.003 U	0.012	0.005 U	0.01	0.001 U	0.349	0.001	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	2.8	0.004	2.4	0.001 U	0.56
DH-78 (Dup)	6/9/2015			0.003 U	0.012	0.005 U	0.01	0.001 U	0.351	0.001	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	2.8	0.004	2.41	0.001 U	0.56
DH-78	7/14/2015			0.003 U	0.014			0.001 U	0.375	0.001	0.003	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	2.86			0.001 U	0.6
DH-78	8/17/2015			0.003 U	0.013	0.005 U	0.01 J	0.001 U	0.363	0.001	0.003	0.02 U	0.005 U	0.01 U	0.001	0.01 U	2.74	0.005	2.14	0.001 U	0.57
DH-78 (Dup)	8/17/2015			0.003 U	0.013	0.005 U	0.016 J	0.001 U	0.383	0.001	0.003	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	2.86	0.005	2.22	0.001 U	0.67
DH-78	10/13/2015			0.003 U	0.011	0.002 U	0.017	0.001 U	0.342	0.001 U	0.003	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	2.7	0.025	2.35	0.001 U	0.54
DH-79	7/13/2015			0.003 U	44.5			0.001 U	0.007	0.001 U	0.04	0.57	0.016	0.06	0.001 U	0.01 U	0.044			0.001 U	0.04
DH-79	8/1/2015			0.003 U	42.2				0.011		0.044	0.51	0.009	0.05			0.119				0.04
DH-79	8/17/2015			0.003 U	41	38	2.13	0.001 U	0.001 U	0.001 U	0.005	0.09	0.005 U	0.05	0.001 U	0.01 U	0.021			0.001 U	0.01 U
DH-79	10/20/2015	1.66	0.01 U	0.003 U	38.7	35	6.1 J	0.001 U	0.001	0.001 U	0.006	0.08	0.005 U	0.2	0.001 U	0.01 U	0.005			0.001 U	0.01 U
DH-79	12/21/2015			0.003 U	41.4			0.001 U	0.001 U	0.001 U	0.002	0.15	0.005 U	0.24	0.001 U	0.01 U	0.004			0.001 U	0.01 U
DH-8	4/8/2015			0.003 U	0.003			0.001 U	0.002	0.001 U	0.003	0.02 U	0.005 U	0.01 U	0.002	0.04	0.885	0.001	0.696	0.002	0.01 U
DH-8	6/9/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.05	0.005 U	0.01 U	0.003	0.04	0.917	0.001	0.692	0.002	0.01 U
DH-8	7/14/2015			0.003 U	0.002			0.001 U	0.001 U	0.001	0.003	0.09	0.006	0.01 U	0.003	0.04	0.944			0.002	0.01 U
DH-8	8/14/2015			0.003 U	0.002			0.001 U	0.003	0.001 U	0.002	0.02 U UJ	0.005 U	0.01 U	0.004	0.04	0.882	0.001	0.682	0.002 J	0.01 U
DH-8	10/13/2015	0.05 U UJ	36.6	0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.002	0.04	0.745	0.006	0.687	0.002	0.01 U
DH-8	12/22/2015			0.003 U	0.005			0.001 U	0.001 U	0.001	0.002	0.05	0.005 U	0.01 U	0.002	0.04	0.745			0.002	0.01 U
DH-80	7/13/2015			0.003 U	14.7			0.001	2.4	0.001	0.021	14.2	0.005 U	2.57	0.001 U	0.02	0.008			0.197	6.42
DH-80	8/14/2015			0.003 U	15.8	9.68	6.3	0.001 U	1.79	0.001 U	0.001 U	13.1	0.005 U	2.54	0.001 U	0.03	0.002			0.202	6.47
DH-80	10/21/2015			0.003 U	15	14.9	0.506	0.001 U	1.58	0.001 U	0.014	14.4	0.005 U	2.76	0.001 U	0.02	0.002			0.247	6.04
DH-81	7/13/2015			0.031	4.78			0.001	3.6	0.004	0.05	5.17	0.033	5.55	0.002	0.01	0.008			0.056	2.82
DH-81	8/14/2015			0.003 U	4.38	4.23	0.331	0.001 U	3.51	0.001 U	0.001 U	2.22	0.005 U	6.41	0.001 U	0.01	0.001 U			0.034	3.24
DH-81	10/20/2015			0.003 U	4.26	4.55	0.307 J	0.001 U	3.8	0.001 U	0.001	2.42	0.005 U	7.13	0.001 U	0.01 U	0.001 U			0.029	3.28
DH-82	7/14/2015			0.003 U	0.166			0.001 U	0.001 U	0.003	0.007	0.02 U	0.005 U	0.03	0.001 U	0.01	3.75			0.001 U	0.01 U
DH-82	8/14/2015			0.003 U	0.198			0.001 U	0.001 U	0.003	0.008	0.02 U UJ	0.005 U	0.01		0.01	3.48	0.006	2.58	0.001 U UJ	0.01 U
DH-82	10/13/2015			0.003 U	0.161			0.001 U	0.001 U	0.002	0.006	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	2.47	0.008	2.57	0.001 U	0.01 U
DH-82	12/22/2015			0.003 U	0.192			0.001 U	0.001 U	0.002	0.007	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	2.55			0.001 U	0.01 U
DH-82 (Dup)	12/22/2015			0.003 U	0.2			0.001 U	0.001 U	0.002	0.007	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	2.52			0.001 U	0.01 U
DH-83	7/14/2015			0.003 U	0.002			0.001 U	0.003	0.001 U	0.002	0.02 U	0.005 U	0.78	0.001 U	0.01	0.701			0.002	0.01 U
DH-83	8/17/2015			0.003 U	0.002			0.002	0.002	0.002	0.004	0.46	0.005	0.12	0.001 U	0.01 U	0.641			0.002	0.01
DH-83	10/13/2015			0.003 U	0.002			0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.04	0.001 U	0.01 U	0.59	0.005	0.513	0.001	0.01 U
East-PZ-1	7/17/2015			0.003 U	0.003			0.001 U	0.001 U	0.003	0.015	3.24	0.005 U	0.16	0.001 U	0.01 U	0.009			0.001 U	0.01
East-PZ-1	8/13/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.03	0.005 U	0.01 U	0.001 U	0.01 U	0.009			0.001 U	0.01 U
East-PZ-2	7/17/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	2.99	0.005 U	0.3	0.001 U	0.01 U	0.003			0.001 U	0.01 U
EH-100	4/7/2015			0.003 U	19	0.005 U	18.7	0.001 U	0.001	0.001 U	0.004	0.02 U	0.005 U	3.23	0.001 U	0.01 U	0.005			0.001 U	0.18
EH-100	5/29/2015			0.003 U	19.1	0.009	19.5 J	0.001 U	0.001	0.001 U	0.004	0.02 U	0.005 U	3.31	0.0001 U	0.01 U	0.005			0.001 U	0.17
EH-100	8/14/2015			0.003 U	17.3	0.005 U UJ	18.4	0.001 U	0.002	0.001 U	0.004	0.02 U UJ	0.005 U	3.07	0.001 U	0.01 U	0.005			0.001 U UJ	0.2
EH-100	10/20/2015			0.003 U	16.7	0.2 U	16.4 J+	0.001 U	0.001	0.001 U	0.004	0.02 U	0.005 U	3.09	0.001 U	0.01 U	0.004			0.001 U	0.16
EH-101	6/2/2015			0.003 U	0.004			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.007			0.001 U	0.01 U
EH-101	10/19/2015			0.003 U	0.004			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.005			0.001 U	0.01 U
EH-102	6/2/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.025			0.001 U	0.01 U
EH-102 (Dup)	6/2/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.026			0.001 U	0.01 U
EH-102	10/19/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.019			0.001 U	0.01 U

		Nutrients		Dissolved (D) Metals																
Station ID	Sample Date	NH4 as N	NO2 + NO3 as N	Sb (D)	As (D)	As III (D)	As V (D)	Be (D)	Cd (D)	Cr (D)	Cu (D)	Fe (D)	Pb (D)	Mn (D)	Hg (D)	Ni (D)	Se (D)	Se IV (D)	Se VI (D)	Tl (D)	Zn (D)
EH-102 (Dup)	10/19/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.019			0.001 U	0.01 U
EH-103	6/3/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.25	0.001 U	0.01 U	0.371			0.001 U	0.01 U
EH-103	10/19/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.3	0.001 U	0.01 U	0.338	0.001 U	0.316	0.001 U	0.01 U
EH-104	4/7/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.606			0.001 U	0.01 U
EH-104	6/3/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.673			0.001 U	0.01 U
EH-104	10/19/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.776			0.001 U	0.01 U
EH-104	12/22/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	1.04			0.001 U	0.01 U
EH-106	4/7/2015			0.003 U	1.9			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.34	0.001 U	0.01 U	0.04			0.001 U	0.01 U
EH-106	6/3/2015			0.003 U	1.55			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.31	0.001 U	0.01 U	0.032			0.001 U	0.01 U
EH-106	8/13/2015			0.003 U	2.38			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.44	0.001 U	0.01 U	0.029			0.001 U	0.01 U
EH-106	10/19/2015			0.003 U	0.315			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.16	0.001 U	0.01 U	0.018			0.001 U	0.01 U
EH-107	4/7/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.04	0.001 U	0.01 U	0.245			0.001 U	0.01 U
EH-107	6/3/2015			0.003 U	0.002			0.001 U	0.001 U	0.001 U	0.003	0.02 U	0.005 U	0.07	0.001 U	0.01 U	0.249			0.001 U	0.01 U
EH-107	8/13/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.05	0.001 U	0.01 U	0.272			0.001 U	0.01 U
EH-107	10/19/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.06	0.001 U	0.01 U	0.248			0.001 U	0.01 U
EH-110	6/2/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.41	0.001 U	0.01 U	0.346			0.001 U	0.01 U
EH-110	10/19/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.31	0.001 U	0.01 U	0.299			0.001 U	0.01 U
EH-111	4/7/2015			0.003 U	4.08	0.005 U	3.23	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	6.37	0.001 U	0.01 U	0.12	0.002	0.115	0.001 U	0.01 U
EH-111 (Dup)	4/7/2015			0.003 U	4.03	0.005 U	3.49	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	6.62	0.001 U	0.01 U	0.122	0.002	0.119	0.001 U	0.01 U
EH-111	6/3/2015			0.003 U	3.64	0.005 U	4.55	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	6.52	0.001 U	0.01 U	0.13	0.001 U	0.107	0.001 U	0.01 U
EH-111 (Dup)	6/3/2015			0.003 U	3.64	0.005 U	4.19	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	6.46	0.001 U	0.01 U	0.133	0.001 U	0.105	0.001 U	0.01 U
EH-111	10/19/2015			0.003 U	3.56	0.02 U	3.08 J+	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	5.95	0.001 U	0.01 U	0.107	0.001	0.107	0.001 U	0.01 U
EH-111 (Dup)	10/19/2015			0.003 U	3.54	0.02 U	3.09 J+	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	5.95	0.001 U	0.01 U	0.111	0.001	0.108	0.001 U	0.01 U
EH-114	4/6/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.041			0.001 U	0.01 U
EH-114	5/29/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.036			0.001 U	0.01 U
EH-114	10/16/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.025			0.001 U	0.01 U
EH-115	6/2/2015			0.003 U	0.095			0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.049			0.001 U	0.01 U
EH-115	10/19/2015			0.003 U	0.243			0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.047			0.001 U	0.01 U
EH-115	12/22/2015			0.003 U	0.322			0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.062			0.001 U	0.01 U
EH-117	4/6/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.089			0.001 U	0.01 U
EH-117	5/28/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.117			0.001 U	0.01 U
EH-117	10/16/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.068			0.001 U	0.01 U
EH-118	4/6/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.03	0.005 U	0.01 U	0.001 U	0.01 U	0.263			0.001 U	0.01 U
EH-118	5/29/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.003	0.002	0.34	0.005 U	0.01 U	0.001 U	0.01 U	0.315			0.001 U	0.01 U
EH-118	10/16/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.274			0.001 U	0.01 U
EH-119	5/29/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.056			0.001 U	0.01 U
EH-119	10/16/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.05			0.001 U	0.01 U
EH-120	4/6/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.255			0.001 U	0.01 U
EH-120	5/28/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.249			0.001 U	0.01 U
EH-120	10/15/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.228			0.001 U	0.01 U
EH-121	5/26/2015			0.003 U UJ	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
EH-121	10/15/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
EH-123	5/28/2015			0.003 U	0.006			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.003			0.001 U	0.01 U
EH-123	10/16/2015			0.003 U	0.006			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.003			0.001 U	0.01 U
EH-123 (Dup)	10/16/2015			0.003 U	0.006			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002			0.001 U	0.01 U
EH-124	4/6/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.319			0.001 U	0.01 U
EH-124	5/28/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.362			0.001 U	0.01 U
EH-124	10/16/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.305			0.001 U	0.01 U
EH-125	5/28/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.048			0.001 U	0.01 U
EH-125 (Dup)	5/28/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.047			0.001 U	0.01 U
EH-125	10/15/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.053			0.001 U	0.01 U
EH-126	4/6/2015			0.003 U	0.003			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.095			0.001 U	0.01 U
EH-126 (Dup)	4/6/2015			0.003 U	0.003			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.092			0.001 U	0.01 U
EH-126	5/28/2015			0.003 U	0.003			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.103			0.001 U	0.01 U
EH-126	10/15/2015			0.003 U	0.003			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.091			0.001 U	0.01 U
EH-129	5/28/2015			0.003 U	0.006			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.016			0.001 U	0.01 U
EH-129	10/14/2015			0.003 U	0.005			0.001 U	0.001 U	0.001 U	0.001 U	0.03	0.005 U	0.01 U	0.001 U	0.01 U	0.022			0.001 U	0.01 U
EH-130	5/27/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.003			0.001 U	0.01 U
EH-130	10/14/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.003			0.001 U	0.01 U
EH-131	5/27/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
EH-131	10/15/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
EH-132	5/28/2015			0.003 U	0.023			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002			0.001 U	0.01 U
EH-132	10/14/2015			0.003 U	0.022			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002			0.001 U	0.01 U
EH-132 (Dup)	10/14/2015			0.003 U	0.022			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002			0.001 U	0.01 U
EH-134	5/27/2015			0.003 U	0.005			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001			0.001 U	0.01 U
EH-134	10/14/2015			0.003 U	0.005			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001			0.001 U	0.01 U
EH-135	5/27/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
EH-135	10/15/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
EH-138	4/6/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.041			0.001 U	0.01 U
EH-138	6/10/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.04			0.001 U	0.01 U
EH-138	10/14/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.028			0.001 U	0.01 U
EH-139	6/10/2015			0.003 U	0.005			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002			0.001 U	0.01 U
EH-139 (Dup)	6/10/2015			0.003 U	0.005			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002			0.001 U	0.01 U
EH-139	10/14/2015			0.003 U	0.005			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.003			0.001 U	0.01 U
EH-140	5/27/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
EH-140	10/15/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U

		Nutrients		Dissolved (D) Metals																
Station ID	Sample Date	NH4 as N	NO2 + NO3 as N	Sb (D)	As (D)	As III (D)	As V (D)	Be (D)	Cd (D)	Cr (D)	Cu (D)	Fe (D)	Pb (D)	Mn (D)	Hg (D)	Ni (D)	Se (D)	Se IV (D)	Se VI (D)	Tl (D)	Zn (D)
EH-140 (Dup)	10/15/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
EH-141	4/6/2015			0.003 U	0.002			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.073			0.001 U	0.01 U
EH-141	5/27/2015			0.003 U	0.002			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.065			0.001 U	0.01 U
EH-141	10/14/2015			0.003 U	0.002			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.072			0.001 U	0.01 U
EH-142	4/6/2015			0.003 U	0.005			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.023			0.001 U	0.01 U
EH-142	5/27/2015			0.003 U	0.004			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.022			0.001 U	0.01 U
EH-142	10/14/2015			0.003 U	0.004			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.019			0.001 U	0.01 U
EH-142 (Dup)	10/14/2015			0.003 U	0.005			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.019			0.001 U	0.01 U
EH-143	4/6/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.032			0.001 U	0.01 U
EH-143	5/27/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.033			0.001 U	0.01 U
EH-143 (Dup)	5/27/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.033			0.001 U	0.01 U
EH-143	10/14/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.024			0.001 U	0.01 U
EH-144D	5/26/2015			0.003 U UJ	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.029			0.001 U	0.01 U
EH-144D (Dup)	5/26/2015			0.003 U UJ	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.028			0.001 U	0.01 U
EH-144D	10/13/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.025			0.001 U	0.01 U
EH-144M	5/26/2015			0.003 U UJ	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.014			0.001 U	0.01 U
EH-144M	10/13/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.012			0.001 U	0.01 U
EH-144S	5/26/2015			0.003 U UJ	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.007			0.001 U	0.01 U
EH-144S	10/13/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.007			0.001 U	0.01 U
EH-144S (Dup)	10/13/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.007			0.001 U	0.01 U
EH-204	6/1/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001	0.001 U	0.05	0.005 U	0.01 U	0.001 U	0.01 U	0.113			0.001 U	0.01 U
EH-204	10/15/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.108			0.001 U	0.01 U
EH-204 (Dup)	10/15/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.109			0.001 U	0.01 U
EH-206	5/28/2015			0.003 U	0.031			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002			0.001 U	0.01 U
EH-206	10/14/2015			0.003 U	0.029			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001			0.001 U	0.01 U
EH-210	6/1/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.074			0.001 U	0.01 U
EH-210	10/22/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.077			0.001 U	0.01 U
EH-211	6/1/2015			0.003 U	0.007			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
EH-211 (Dup)	6/1/2015			0.003 U	0.008			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
EH-211	10/15/2015			0.003 U	0.007			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
EH-212	6/1/2015			0.003 U	0.014			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002			0.001 U	0.01 U
EH-212	10/15/2015			0.003 U	0.013			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002			0.001 U	0.01 U
EH-50	4/7/2015			0.003 U	4.86	0.005 U	4.18	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.005			0.001 U	0.01 U
EH-50	5/29/2015			0.003 U	7.36	0.005 U	9.89 J	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.005			0.001 U	0.01 U
EH-50 (Dup)	5/29/2015			0.003 U	7.35	0.005 U	7.52 J	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.005			0.001 U	0.01 U
EH-50	8/14/2015			0.003 U	5.22	0.005 U UJ	5.79	0.001 U	0.001 U	0.001 U	0.002	0.02 U UJ	0.005 U	0.01 U	0.001 U	0.01 U	0.007			0.001 U UJ	0.01 U
EH-50	10/20/2015			0.003 U	7.25	0.05 U	6 J	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.004			0.001 U	0.01 U
EH-50	12/22/2015			0.003 U	8.38			0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.004			0.001 U	0.01 U
EH-51	6/2/2015			0.003 U	0.12			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.007			0.001 U	0.01 U
EH-51	10/19/2015			0.003 U	0.036			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.004			0.001 U	0.01 U
EH-52	6/2/2015			0.017	0.37			0.001 U	0.001 U	0.001 U	0.001	0.02	0.005 U	0.01 U	0.001 U	0.01 U	0.01			0.001 U	0.01 U
EH-52	10/19/2015			0.02	0.4			0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.005			0.001 U	0.01 U
EH-53	6/2/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.163			0.001 U	0.01 U
EH-53	10/19/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.112			0.001 U	0.01 U
EH-54	6/2/2015			0.003 U	0.021			0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
EH-54	10/19/2015			0.003 U	0.017			0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
EH-57A	4/7/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.977			0.001 U	0.01 U
EH-57A	5/29/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.912			0.001 U	0.01 U
EH-57A	8/13/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.002	0.07	0.005 U	0.01	0.001 U	0.01 U	0.789			0.001 U	0.01 U
EH-57A	10/16/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.561			0.001 U	0.01 U
EH-58	6/1/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001			0.001 U	0.01 U
EH-58	10/16/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
EH-59	6/1/2015			0.009	0.028			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.003			0.001 U	0.01 U
EH-59	10/16/2015			0.008	0.027			0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
EH-60	6/4/2015			0.003 U	5.58	3.46	2.58	0.001 U	0.001 U	0.001 U	0.002	0.12	0.005 U	10.3	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
EH-60	10/19/2015			0.003 U	4.89	3.43	1.25	0.001 U	0.001 U	0.001 U	0.002	0.15	0.005 U	13.2	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
EH-61	5/29/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.005 U	1.66	0.0001 U	0.01 U	0.347			0.001 U	0.01 U
EH-61	10/19/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.005 U	1.55	0.001 U	0.01 U	0.354			0.001 U	0.01 U
EH-62	6/2/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002			0.001 U	0.01 U
EH-62	10/19/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002			0.001 U	0.01 U
EH-63	6/2/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.003			0.001 U	0.01 U
EH-63	10/19/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.003			0.001 U	0.01 U
EH-65	4/7/2015			0.003 U	0.54			0.001 U	0.001 U	0.001 U	0.003	0.03	0.005 U	4.97	0.001 U	0.01 U	0.083			0.001 U	0.01 U
EH-65	6/3/2015			0.003 U	0.586			0.001 U	0.001 U	0.001 U	0.003	0.02 U	0.005 U	5.57	0.001 U	0.01 U	0.102			0.001 U	0.01 U
EH-65	8/13/2015			0.003 U	0.59			0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	4.77	0.001 U	0.01 U	0.097			0.001 U	0.01 U
EH-65	10/19/2015			0.003 U	0.536			0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	5.19	0.001 U	0.01 U	0.102			0.001 U	0.01 U
EH-66	5/26/2015			0.003 U UJ	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
EH-66	10/15/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
EH-69	6/2/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.12	0.005 U	0.01 U	0.001 U	0.01 U	0.011			0.001 U	0.01 U
EH-69	10/19/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.007			0.001 U	0.01 U
EH-70	5/28/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.141			0.001 U	0.01 U
EH-70	10/15/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.12			0.001 U	0.01 U
MW-1	5/28/2015			0.003 U	0.004			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002			0.001 U	0.01 U
MW-1	10/16/2015			0.003 U	0.004			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002			0.001 U	0.01 U
MW-2	5/28/2015			0.003 U	0.011			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.35	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
MW-2	10/16/2015			0.003 U	0.011			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.38	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U

		Nutrients		Dissolved (D) Metals																	
Station ID	Sample Date	NH4 as N	NO2 + NO3 as N	Sb (D)	As (D)	As III (D)	As V (D)	Be (D)	Cd (D)	Cr (D)	Cu (D)	Fe (D)	Pb (D)	Mn (D)	Hg (D)	Ni (D)	Se (D)	Se IV (D)	Se VI (D)	Tl (D)	Zn (D)
MW-3	5/28/2015			0.003 U	0.009			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.04	0.001 U	0.01 U	0.009			0.001 U	0.01 U
MW-3	10/16/2015			0.003 U	0.009			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.04	0.001 U	0.01 U	0.009			0.001 U	0.01 U
MW-3 (Dup)	10/16/2015			0.003 U	0.01			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.04	0.001 U	0.01 U	0.009			0.001 U	0.01 U
MW-4	5/28/2015			0.003 U	0.003			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002			0.001 U	0.01 U
MW-4	5/28/2015			0.003 U	0.004			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001			0.001 U	0.01 U
MW-4	10/16/2015			0.003 U	0.003			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001			0.001 U	0.01 U
MW-5	5/28/2015			0.003 U	0.006			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002			0.001 U	0.01 U
MW-5	10/16/2015			0.003 U	0.007			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001			0.001 U	0.01 U
MW-6	5/28/2015			0.003 U	0.051			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	3.13	0.001 U	0.01 U	0.002			0.001 U	0.01 U
MW-6	10/16/2015			0.003 U	0.044			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	2.32	0.001 U	0.01 U	0.004			0.001 U	0.01 U
MW-7	5/28/2015			0.003 U	0.013			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
MW-7	10/15/2015			0.003 U	0.014			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U			0.001 U	0.01 U
MW-8	5/28/2015			0.003 U	0.008			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002			0.001 U	0.01 U
MW-8	10/16/2015			0.003 U	0.007			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002			0.001 U	0.01 U
MW-9	5/28/2015			0.003 U	0.006			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002			0.001 U	0.01 U
MW-9	10/16/2015			0.003 U	0.006			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001			0.001 U	0.01 U
MW-10	5/28/2015			0.003 U	0.009			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.004			0.001 U	0.01 U
MW-10	10/16/2015			0.003 U	0.008			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.003			0.001 U	0.01 U
MW-11	5/28/2015			0.003 U	0.017			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.004			0.001 U	0.01 U
MW-11	10/15/2015			0.003 U	0.017			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.003			0.001 U	0.01 U
PRB-1	6/8/2015			0.003 U	3.37	0.271 J	4.35	0.005	0.769	0.001 U	0.005	0.59	0.005 U	9.42	0.001 U	0.02	0.031	0.025	0.003 J	0.001 U	2.38
PRB-1	6/8/2015			0.003 U	3.37	0.152 J	4.14	0.005	0.788	0.001 U	0.005	0.57	0.005 U	9.41	0.001 U	0.02	0.031	0.024	0.001 J	0.001 U	2.37
PRB-1	10/13/2015			0.003 U	3.38	0.084	2.76 J+	0.005	0.746	0.001 U	0.006	0.39	0.005 U	10.1	0.001 U	0.02	0.029	0.026	0.005	0.001 U	2.49
PRB-3	7/14/2015			0.003 U	2.83			0.001 U	0.124	0.001 U	0.003	0.04	0.005 U	7.09	0.001 U	0.01 U	0.058			0.001 U	0.01 U
PRB-3	10/13/2015			0.003 U	2.63	0.069	2.04 J+	0.001 U	0.136	0.001 U	0.003	0.02 U	0.005 U	7.02	0.001 U	0.01 U	0.035	0.002	0.031	0.001 U	0.01 U
SC-1	8/14/2015			0.003 U	0.002 U			0.001 U	0.001 U	0.001 U	0.001 U	0.02 U UJ	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U			0.001 U UJ	0.01 U
SDMW-1	5/29/2015			0.019	3.12	0.008	3.08 J	0.001 U	1.15	0.001 U	0.001	0.03	0.005 U	4.03	0.001 U	0.01 U	0.064	0.036	0.011	0.001 U	0.01 U
SDMW-1	5/29/2015			0.019	3.03	0.007	3.9 J	0.001 U	1.12	0.001 U	0.001	0.03	0.005 U	3.97	0.001 U	0.01 U	0.065	0.036	0.013	0.001 U	0.01 U
SDMW-1	10/21/2015			0.02	3.3	0.05 U	2.24	0.001 U	1.2	0.001 U	0.001	0.02 U	0.005 U	4.09	0.001 U	0.01 U	0.089	0.042	0.042	0.001 U	0.01 U
SDMW-1	10/21/2015			0.02	3.26	0.05 U	2.67	0.001 U	1.19	0.001 U	0.001	0.02 U	0.005 U	4.06	0.001 U	0.01 U	0.086	0.039	0.042	0.001 U	0.01 U
SDMW-2	4/8/2015			0.003 U	12.6	10.9	2 U	0.001 U	0.001	0.001 U	0.001 U	2.77	0.005 U	1.28	0.001 U	0.01 U	0.001			0.021	0.28
SDMW-2	5/26/2015			0.003 U UJ	12.6	15.2	0.122 J	0.001 U	0.001 U	0.001 U	0.001 U	2.81	0.005 U	1.26	0.001 U	0.01 U	0.001			0.018	0.26
SDMW-2	10/21/2015			0.003 U	13.2	12.3	0.5 U	0.001 U	0.005	0.001 U	0.001 U	2.84	0.005 U	1.33	0.001 U	0.01 U	0.002			0.019	0.28
SDMW-3	5/27/2015			0.003 U	8.78			0.001 U	0.023	0.001 U	0.001 U	0.46	0.005 U	1.15	0.001 U	0.01 U	0.001			0.063	0.17
SDMW-3	10/21/2015			0.003 U	8.37			0.001 U	0.912	0.001 U	0.004	0.24	0.005 U	2.03	0.001 U	0.01 U	0.028			0.068	0.75
SDMW-4	5/26/2015			0.003 U UJ	0.409			0.001 U	0.001 U	0.001 U	0.004	0.02 U	0.005 U	3.05	0.001 U	0.01 U	0.001 U			0.001	0.01 U
SDMW-4	10/20/2015			0.003 U	0.172			0.001 U	0.001 U	0.001 U	0.004	0.02 U	0.005 U	3.04	0.001 U	0.01 U	0.001 U			0.002	0.01 U
SDMW-5	5/27/2015			0.003 U	11.2			0.002	0.884	0.001 U	0.001 U	8.83	0.005 U	3.52	0.001 U	0.02	0.001			0.029	6.13
SDMW-5	10/21/2015			0.003 U	10.7			0.002	0.871	0.001 U	0.001 U	8.85	0.005 U	3.42	0.001 U	0.02	0.001 U			0.03	5.66
TW-1	5/26/2015			0.004 J	92.7	96.6	1.42 J	0.001 U	0.001	0.001 U	0.003	0.11	0.005 U	0.06	0.001 U	0.01 U	0.075			0.001 U	0.03
TW-1 (Dup)	5/26/2015			0.003 J	94.5	102	9.1 J	0.001 U	0.001	0.001 U	0.003	0.12	0.005 U	0.06	0.001 U	0.01 U	0.081			0.001 U	0.03
TW-1	8/1/2015			0.003 U	94.1				0.002		0.003	0.07	0.005 U	0.05			0.028				0.01

NOTES: All concentrations in mg/L except as indicated.
U = below laboratory reporting limit (associated value)
A = anomalous data point (historical inconsistency)
R = data point rejected during validation procedure
J = QC criterion exceeded; + = potential high bias

			Field Parameters							General Chemistry					Major Ions							
Station ID	Sample Date	Depth To Water (ft)	pH (s.u.)	SC (µmhos/cm)	Diss O_2 (mg/L)	ORP (mV)	E_H (mV)	Turbidity (NTU)	Water Temp (°C)	Lab pH (s.u.)	Lab SC (µmhos/cm)	Total Alkalinity as CaCO3	Total Suspended Solids	Total Dissolved Solids	Calcium	Magnesium	Sodium	Potassium	Bicarbonate	Chloride	Sulfate	Bromide
2843 Canyon Ferry Road	4/14/2016	33.33	7.94	596	0.2	-203	13	121	10.3	7.6	619	120	56 J	394	70	17	32	5	140	20	168	1.89
2843 Canyon Ferry Road	6/23/2016	26.53	7.2	698	4.8	33	250	3.4	10.4	7.4	706	140	10 U	480	83	19	30	4	160	18	199	1.19
2843 Canyon Ferry Road	9/6/2016	28.95	7.17	697	5.82	73	290	4.1	10.1	7.3	710	140	10 U	481	84	19	31	5	170	18	199	1.27
2843 Canyon Ferry Road	10/19/2016	29.55	6.92	719	3.15	14	231	14.3	9.2	7.4	704	140	10 U	453	88	20	31	5	170	18	186	1.14
2853 Canyon Ferry Road	4/14/2016	34.7	7.15	753	0.88	-67	149	342	10.3	7.2	762	130	142 J	512	95	21	33	5	160	24	233	2.36
2853 Canyon Ferry Road	6/23/2016	30.84	7.08	719	4.31	48	264	3.6	10.7	7.3	729	140	10 U	498	86	19	30	4	170	19	212	1.21
2853 Canyon Ferry Road	9/6/2016	38.50	7.02	721	5.27	87	394	6.3	9.9	7.3	735	140	10 U	494	89	20	32	5	170	19	212	1.27
2853 Canyon Ferry Road	10/19/2016	30.85	6.64	742	2.94	31	248	8.8	9.3	7.3	730	140	10 U	485	91	21	32	5	160	19	200	1.14
DH-1	6/10/2016	44.99	7.17	2077	6.97	240	455	7.3	11.2	7.5	2120	240	22	1730	240	56	155	13	290	67	796	5.5
DH-1	10/17/2016	45.11	6.91	2015	7.5	37	253	0.6	10.3	7.4	2060	240	10 U	1670	247	58	162	13	290	65	783	4.9
DH-15	4/14/2016	20	6.92	1917	0.1	99	315	1.5	10.6	7	1950	160	10 U UJ	1560	232	50	173	8	200	24	943	3.9
DH-15	6/13/2016	19.08	6.57	1986	0.6	194	411	0.6	10.1	7	2000	160	10 U	1670	236	51	163	7	190	27	910	3
DH-15 (Dup)	6/13/2016	19.08	6.57	1984	0.61	194	411	0.6	10.1	7	2010	160	10 U	1650	224	48	161	7	190	26	901	2.9
DH-15 (Low Flow)	8/30/2016	19.45	6.84	1945	0.69	138	351	0.5	13	7	2010	170	10 U	1670	243	51	161	8	200	27	887	3.1
DH-15 (Standard)	8/30/2016	19.41	6.76	1925	0.42	138	355	0.3	10.2	7	1960	160	10 U	1620	222	47	170	8	200	25	852	2.8
DH-15 (Low Flow)	10/17/2016	19.75	7.39	1964	1.2	73	288	0.7	11.1	7	2040	160	13	1670	243	52	156	7	200	26	939	2.9
DH-15 (Standard)	10/17/2016	19.75	7.05	1918	0.63	70	286	0.4	10.4	7	1980	160	10 U	1630	223	48	166	8	200	24	904	2.8
DH-17	6/14/2016	49.03	7.39	1573	0.59	61	276	10.6	12.1	7.6	1590	330	17	1100	12	4	323	6	400	24	412	2.36
DH-17 (Low Flow)	9/1/2016	49.09	7.27	1501	2.26	-8	202	9.3	16.2	7.4	1500	300	10 U	1010	12	4	316	7	360	21	401	2.17
DH-17 (Standard)	9/1/2016	49.09	7.28	1523	1.05	-14	200	10.3	12.7	7.6	1510	310	10	1030	12	4	317	7	370	22	403	2.15
DH-17 (Low Flow)	10/13/2016	49.58	7.27	1513	0.74	-21	192	12.7	13.1	7.5	1520	300	10 U	1000	13	4	302	7	370	22	416	2.56
DH-17 (Standard)	10/13/2016	49.58	7.27	1522	0.41	-54	161	8.6	11.3	7.6	1520	300	10	957	13	4	309	7	370	23	420	2.6
DH-17 (Dup)	10/13/2016	49.58	7.27	1522	0.41	-54	161	8.6	11.3	7.6	1530	310	10 U	928	13	4	306	7	380	23	418	2.53
DH-20	6/10/2016	18.95	6.93	928	0.39	-116	102	0.8	8.6	7.1	917	210	24	657	124	26	27	5	260	8	271	0.05 U
DH-20	10/17/2016	18.81	6.76	968	0.44	-125	89	0.7	11.6	7.1	959	250	19	692	132	27	31	6	300	7	261	0.05 U
DH-42	4/18/2016	35.57	6.43	1114	0.46	247	462	0.9	11.4	6.6	1120	140	10 U UJ	880	139	39	40	10	160	15	414	2.38
DH-42	6/13/2016	36.18	6.3	1218	0.67	240	454	1.4	12	6.6	1210	130	10 U	933	143	38	37	9	160	13	455	1.82
DH-42	10/13/2016	48.52	6.84	1056	2.01	-5	210	1.2	11.1	6.8	1060	150	10 U	793	127	35	34	8	190	11	370	1.07
DH-47	6/10/2016	15.14	6.99	1000	0.9	-91	126	2.5	9.7	7	987	160	19	719	132	23	39	8	200	7	347	0.13
DH-52	4/14/2016	6.88	7.56	705	1.66	86	305	3.3	8	7.4	707	130	50 J	467	43	8	60	66	160	5	198	0.24
DH-52 (Dup)	4/14/2016	6.88	7.56	703	1.6	86	305	3.3	8	7.5	707	130	20 J	460	43	8	60	65	160	5	198	0.19
DH-52	6/10/2016	5.88	7.2	819	1.3	229	443	2.8	12.1	7.4	837	120	10 U	535	51	9	65	67	140	5	262	0.19
DH-52	8/30/2016	7.38	7.48	514	1.64	133	349	4.3	11.1	7.6	491	80	10 U	316	19	3	48	45	97	3	134	0.07
DH-52	10/14/2016	6.4	7.38	628	0.23	39	254	1.3	11.4	7.5	632	97	10 U UJ	401	30	5	56	54	120	5	167	0.17
DH-56	4/18/2016	84.13	7.46	4071	2.77	211	430	10.1	8.5	7.6	4090	270	48 J	3070	105	21	544	381	330	24	1830	3
DH-56 (Dup)	4/18/2016	84.13	7.46	4070	2.72	211	430	10.1	8.5	7.6	4080	270	23 J	3060	104	20	536	376	330	25	1840	3
DH-56	6/13/2016	82.87	7.36	4428	3.67	214	431	4.6	9.4	7.6	4430	280	13	3340	136	25	578	388	340	33	1930	2.7
DH-56	8/31/2016	85.04	7.19	4311	1.96	222	440	9.9	9.4	7.6	4340	270	54	3310	114	21	590	441	330	26	1940	2.1
DH-56 (Low Flow)	10/17/2016	84.18	7.55	3080	2.11	29	245	4.7	10.6	7.7	3080	230	10 U	2230	60	12	414	322	280	17	1180	1
DH-56 (Standard)	10/17/2016	84.18	7.51	3059	2.05	35	253	1.5	8.6	7.7	3060	240	10 U	2210	61	12	414	317	290	17	1170	1
DH-59	6/13/2016	22.28	6.54	1031	0.77	41	257	2	11	6.8	1080	160	10 U	798	124	21	54	18	190	9	386	0.37
DH-59	10/12/2016	44.74	6.7	1017	0.52	-49	166	2.6	11	6.8	1020	160	10 U	737	113	20	54	17	200	10	345	0.42
DH-59 (Dup)	10/12/2016	44.74	6.69	1018	0.53	-48	167	2.6	11	6.8	1020	160	10 U	736	116	20	55	18	200	10	341	0.46
DH-6	4/14/2016	19.98	7.55	1272	2.15	77	295	1.4	9.3	7.7	1300	160	10 U UJ	860	35	6	172	111	190	7	445	0.6
DH-6	6/10/2016	19.05	7.37	1218	3.37	234	452	0.3	9	7.6	1250	160	10 U	799	31	5	154	99	190	7	388	0.35
DH-6	8/30/2016	19.44	7.32	1210	2.31	140	357	0.3	9.6	7.6	1190	160	10 U	779	31	5	161	101	190	8	360	0.32
DH-6 (Dup)	8/30/2016	19.44	7.32	1209	2.33	141	358	0.3	9.6	7.6	1190	160	10 U	782	30	5	157	101	190	8	360	0.32
DH-6	10/17/2016	19.79	7.63	1088	2.14	74	290	0.3	10.6	7.6	1130	160	10 U	745	27	4	144	92	190	7	332	0.3
DH-64	4/18/2016	38.18	6.8	1121	0.39	38	252	2.1	11.9	7	1130	210	10 U UJ	741	30	10	197	11	260	16	310	2.12
DH-64	6/13/2016	37.96	6.8	1142	0.39	12	226	1.3	12.4	7	1140	210	10 U	759	31	10	181	11	250	16	319	1.77
DH-64	8/31/2016	37.89	6.78	1159	0.41	-4	210	1.4	12.3	7	1140	210	10 U	760	37	12	191	12	250	16	324	1.88
DH-64 (Dup)	8/31/2016	37.89	6.78	1159	0.39	-4	210	1.4	12.3	7	1140	210	10 U	758	37	12	192	12	250	16	324	1.89
DH-64	10/18/2016	38.45	6.83	1170	1.52	8	223	3.7	11	7	1160	210	10 U	751	40	13	185	12	250	16	337	1.82
DH-64 (Dup)	10/18/2016	38.45	6.83	1170	1.5	5	220	3.7	11	7	1160	210	10 U	757	40	13	184	12	250	16	333	1.89
DH-66	4/18/2016	47.46	6.46	3047	3.9	219	435	1.9	11.2	6.6	3050	220	21 J	2600	373	123	140	12	270	226	1240	20.9
DH-66	6/14/2016	52.18	6.45	2928	3.25	205	420	13.6	11.5	6.7	2970	220	12	2460	368	122	129	11	270	229	1160	18.2
DH-66	9/1/2016	52.18	6.47	2661	3.06	206	421	3.2	11.4	6.6	2870	220	10 U	2360	368	122	117	11	260	214	1100	14.8
DH-66	10/13/2016	52.65	6.58	2952	3.61	138	354	8.6	10.4	6.7	3040	220	10 U	2450	378	127	116	11	270	223	1070	18.3
DH-67	6/10/2016	36.46	6.3	1352	1.39	225	439	1	13.1	6.6	1400	180	10 U	1030	140	46	96	6	210	36	471	2.44
DH-67 (Dup)	6/10/2016	36.46	6.3	1352	1.36	225	439	1	13.1	6.6	1390	180	10 U	1080	136	45	95	6	220	36	472	2.44
DH-67	10/14/2016	36.75	6.43	1316	0.73	65	279	0.9	11.8	6.6	1330	170	32 J	988	130	43	95	6	210	32	476	1.8
DH-67 (Dup)	10/14/2016	36.75	6.43	1315	0.72	65	279	0.9	11.7	6.5	1320	170	10 U UJ	983	129	43	94	6	200	32	478	1.77
DH-7	6/8/2016	19.63	6.7	330	0.46	215	433	0.3	9.3	7	339	97	10 U	219	33	8	16	3	120	4	61	0.05 U
DH-7	10/11/2016	16.31	6.97	336	0.55	19	235	0.7	10.3	7	340	97	10 U	223	36	8	18	4	120	4	52	0.05 U
DH-77	6/14/2016	53.07	5.86	1167	1.84	189	403	3.3	12.3	5.9	1180	51	10 U	909	111	37	58	10	62	15	511	1.29
DH-77	10/13/2016	53.55	5.8	1132	1.68	73	285	19.8	13.6	5.9	1140	47	37	871	111	37	54	10	57	14	522	0.89
DH-79	2/25/2016	40.55	8.78	2072	1	29		4.3	13.6	8.7	2060	410	70	1340	8	3	479	12	470	33	583	
DH-79	6/15/2016	53.58	8.64	1815	2.23	43	256	8	13.2	8.6	1840	380	28	1120	7	3	376	11	450	31	485	2.9
DH-8	4/18/2016	48.49	7.04	5052	3.51	225	440	4.1	11.5	7.3	5060	340	32 J	4760	913	210	123	21	410	604	1990	46
DH-8	6/14/2016	51.41	7.07	5030	5.37	205	420	7	11.8	7.4	5040	330	10 U	4780	800	183	109	19	400	594	1910	39.7
DH-8 (Dup)	6/14/2016	51.41	7.08	5030	5.39	205	420	7	11.8	7.3	5050	330	10 U	4710	803	184	109	19	400	594	1910	39.7
DH-8	9/1/2016	51.53	7.19	4844	3.77	148	363	13.1	11.8	7.2	5100	330	72	4460	808	185	110	19	410	556	1910	27
DH-8	10/13/2016	51.66	7.18	4920	4	31	245	3.5	12.5	7.3	5010	330	10 U	4380	778	185	111	19	400	555	1710	40
DH-80	6/13/2016	24.38	4.44	897	0.76	208	421	4.6	13.1	4.6	898	3 UJ	15	689	75	17	37	9	3	9	411	0.28
DH-80 (Low Flow)	10/12/2016	48.71	4.48	1380	0.87	117	331	2.6	12.2	4.4	1350	1 UJ	10 U	1130	142	32	50	12	1	13	701	0.76
DH-80 (Standard)	10/12/2016	48.71	4.25	1355	0.57	137	352	4.9	11.7	4.4	1340	1 UJ	38	1100	139	31	49	12	1 U	13	692	0.65

			Field Parameters							General Chemistry					Major Ions							
Station ID	Sample Date	Depth To Water (ft)	pH (s.u.)	SC (µmhos/cm)	Diss O_2 (mg/L)	ORP (mV)	E_H (mV)	Turbidity (NTU)	Water Temp (°C)	Lab pH (s.u.)	Lab SC (µmhos/cm)	Total Alkalinity as CaCO3	Total Suspended Solids	Total Dissolved Solids	Calcium	Magnesium	Sodium	Potassium	Bicarbonate	Chloride	Sulfate	Bromide
DH-82	6/10/2016	43.38	6.77	2802	5.46	242	455	29.4	13.1	7	2880	260	63	2430	355	102	172	9	320	181	1040	11.4
DH-82 (Low Flow)	10/18/2016	43.76	6.75	2636	4.8	91	307	5	10.6	7	2570	270	14	2020	308	87	155	8	330	161	949	9.7
DH-82 (Standard)	10/18/2016	43.76	6.83	2621	4.8	78	294	4.4	10.5	7	2560	260	10 U	2000	307	88	155	8	320	160	939	9.6
EH-100	6/16/2016	31.44	6.46	1089	0.13	124	339	0.4	11.9	6.7	1100	190	10 U	738	36	13	174	7	230	16	323	1.98
EH-100 (Dup)	6/16/2016	31.44	6.46	1089	0.13	124	338	0.4	11.9	6.7	1100	180	10 U	767	36	13	175	7	220	16	324	1.99
EH-100 (Low Flow)	10/18/2016	31.7	6.47	1138	0.73	104	317	2.3	12.8	6.8	1150	180	10 U	779	36	13	188	8	220	17	327	1.85
EH-100 (Standard)	10/18/2016	31.7	6.43	1129	0.12	97	311	0.9	12.1	6.7	1140	180	10 U	755	39	14	180	7	220	17	327	1.91
EH-101	6/15/2016	17.03	6.84	347	4.66	123	339	0.4	10.2	7.2	351	84	10 U	220	20	4	35	13	100	6	67	0.05 U
EH-101	10/14/2016	18.4	6.45	335	4.6	89	305	1	10.4	7.3	340	83	10 U UJ	207	20	4	34	14	100	6	54	0.05 U
EH-102	6/14/2016	9.61	6.9	410	2.55	118	336	0.2	9.5	7.1	424	110	10 U	267	29	6	46	7	130	7	87	0.05 U
EH-102	10/13/2016	9.46	6.8	403	2.42	62	278	0.4	10.5	7.2	413	100	10 U	253	25	5	47	7	120	8	72	0.05 U
EH-103	6/15/2016	28.52	6.79	2049	0.06	109	323	3.7	11.6	7	2050	170	11	1650	218	42	176	11	210	28	920	3.2
EH-103	10/17/2016	28.92	6.75	1956	0.61	31	247	2.8	10.7	6.9	2000	170	22	1620	233	47	175	11	210	26	908	2.8
EH-104	6/15/2016	39.36	6.73	1664	6.37	113	327	0.6	11.6	6.9	1690	220	10 U	1270	191	47	118	7	270	70	578	4.2
EH-104	10/17/2016	39.46	6.7	1614	6.44	70	285	1.8	11.5	6.9	1660	220	10 U	1280	184	46	116	7	270	68	550	3.7
EH-106	6/15/2016	32.81	6.57	858	1.41	114	329	12.9	11.9	6.7	872	140	29	581	54	13	101	5	170	28	241	1.35
EH-106	10/17/2016	32.87	6.55	880	1.84	67	281	3.7	12	6.7	912	150	16	626	65	16	109	5	190	30	242	1.13
EH-107	6/15/2016	25.07	6.65	1698	0.12	109	324	2.8	11.9	6.9	1710	180	10 U	1320	159	34	161	7	220	34	680	1.7
EH-107 (Dup)	6/15/2016	25.07	6.65	1698	0.11	109	324	2.8	11.9	6.9	1710	180	10 U	1340	157	33	160	7	220	34	682	1.7
EH-107	10/17/2016	26.34	6.67	1640	0.54	69	283	3.2	12.1	6.8	1700	180	10 U	1300	163	35	168	7	220	34	676	1.4
EH-110	6/14/2016	23.99	6.86	1344	0.14	111	325	0.9	12.4	7.1	1370	160	10 U	959	91	18	174	8	200	18	495	0.51
EH-110	10/14/2016	24.23	6.76	1255	0.19	83	296	1.6	12.3	7.1	1260	170	10 U UJ	854	79	16	166	8	200	16	443	0.18
EH-111	6/15/2016	33.85	6.49	1563	0.11	112	327	2	11.6	6.7	1560	150	10 U	1110	84	22	195	8	190	28	570	2.7
EH-111 (Low Flow)	10/17/2016	34.07	6.52	1609	0.99	64	274	7.9	14.8	6.7	1650	150	20	1220	104	28	206	10	190	26	646	2.5
EH-111 (Standard)	10/17/2016	34.07	6.52	1587	0.88	65	279	1.5	12.3	6.6	1600	150	10 U	1170	94	24	219	9	180	26	613	2.2
EH-114	6/13/2016	37.11	6.46	1083	0.44	116	331	7.1	11.3	6.7	1090	160	21	762	76	20	123	6	200	21	352	1.28
EH-114	10/12/2016	37.32	6.54	1086	0.51	83	297	6.5	11.4	6.7	1100	170	10	784	77	21	130	6	200	22	353	1.84
EH-115	6/15/2016	39.55	6.42	1107	0.7	126	341	1.7	11.6	6.6	1110	180	10 U	777	80	21	122	5	220	21	351	1.9
EH-115	10/17/2016	39.65	6.47	1079	0.72	68	282	2	12	6.6	1120	180	11	806	79	21	126	5	220	21	349	1.58
EH-115 (Dup)	10/17/2016	39.65	6.46	1079	0.71	68	282	2	12	6.6	1110	180	10 U	802	82	22	130	6	220	20	347	1.62
EH-117	6/13/2016	32.19	6.58	1295	1.89	117	332	6.9	11.5	6.7	1300	170	19	910	91	22	152	5	200	40	425	2.1
EH-117	10/12/2016	32.93	6.5	1313	0.99	82	297	5.1	11.4	6.7	1340	170	11	946	97	24	155	6	200	42	450	2.71
EH-118	6/14/2016	40.68	7.05	1213	2.62	117	332	18.9	10.9	7.1	1250	240	66	909	136	43	75	6	290	44	359	1.9
EH-118 (Low Flow)	10/13/2016	40.88	6.86	1235	3.07	58	269	316	14.8	7	1230	220	612	872	131	39	76	6	270	41	365	1.95
EH-118 (Standard)	10/13/2016	40.88	6.84	1227	3.16	60	275	14.1	11.4	7	1260	230	28	880	135	41	77	6	280	43	377	2.04
EH-119	6/13/2016	37.4	6.56	1055	0.31	110	326	5.7	10.8	6.8	1060	180	10 U	761	96	28	87	5	220	23	339	1.3
EH-119	10/13/2016	37.65	6.86	1069	0.3	65	281	5.4	10.8	6.9	1100	190	10	766	100	29	91	5	230	24	349	1.78
EH-120	6/13/2016	33.13	6.52	1898	0.4	113	328	1.6	11.4	6.7	1900	160	17	1570	241	51	135	7	190	41	800	2.99
EH-120	10/13/2016	34.53	6.58	1903	0.37	62.5	277	2.2	11.3	6.8	1970	160	10 U	1550	238	50	136	7	200	39	885	3.5
EH-120 (Dup)	10/13/2016	34.53	6.58	1902	0.36	62	277	2.2	11.3	6.8	1970	160	10 U	1550	238	50	135	7	200	38	891	3.3
EH-121	6/10/2016	30.07	7.11	276	3.37	115	332	0.8	9.2	7.2	287	78	13	171	33	8	13	2	94	4	52	0.05 U
EH-121	10/7/2016	33.1	6.98	278	4.66	60	278	0.6	8.8	7.2	286	79	10 U	183	32	7	13	2	95	4	42	0.05 U
EH-123	6/10/2016	46.79	7.18	577	6.17	52	267	4	12.1	7.3	589	160	69	415	60	17	35	6	190	20	102	0.05 U
EH-123	10/11/2016	47.03	7.18	570	7.07	32	247	5.6	11.1	7.3	575	160	10	392	58	16	36	7	190	20	88	0.13
EH-123 (Dup)	10/11/2016	47.03	7.18	570	7.13	32	247	5.6	11.1	7.3	576	160	12	396	58	16	35	6	190	20	88	0.12
EH-124	6/13/2016	40.66	7.14	1007	6.23	104	319	2.3	10.8	7.4	1010	190	10 U	717	120	31	40	6	230	48	260	1.01
EH-124	10/13/2016	40.88	7.06	1010	7	62	277	3.9	10.8	7.4	1040	200	10 U	705	123	32	42	6	240	53	258	1.44
EH-125	6/13/2016	37.91	6.94	665	4.08	116	332	3	10.8	7	672	110	10 U	458	54	14	56	3	140	12	197	0.19
EH-125 (Low Flow)	10/12/2016	39.58	6.82	857	4.16	79	293	2.1	12.3	6.9	869	130	51	610	67	18	74	4	160	18	271	0.66
EH-125 (Standard)	10/12/2016	39.55	6.83	628	4.37	81	297	2.5	11	7	625	110	10 U	421	51	13	55	3	140	11	165	0.31
EH-126	6/13/2016	58.91	7.17	1024	6.1	109	325	4.1	10.7	7.4	1040	190	10 U	742	104	42	47	4	230	37	295	1.19
EH-126	10/12/2016	59.51	7.24	1029	7.1	81	296	3.6	10.8	7.4	1060	190	10 U	760	106	46	47	4	240	40	297	1.82
EH-126 (Dup)	10/12/2016	59.51	7.24	1029	7.11	81	296	3.6	10.8	7.4	1060	200	10 U	756	107	46	47	4	240	39	296	1.8
EH-129	6/13/2016	59.92	7.27	555	7.22	120	334	3.9	12	7.5	561	150	46	386	53	17	30	6	180	14	103	0.13
EH-129	10/12/2016	60.25	7.51	544	7.73	77	291	9.6	11.9	7.5	556	150	10 U	385	54	18	31	6	190	14	89	0.22
EH-130	6/9/2016	48.79	7.16	311	4.43	97	313	11.1	10.6	7.1	315	85	15	205	33	8	17	2	100	5 UJ	62	0.05 U
EH-130	10/7/2016	50.23	6.98	321	4.28	56	273	8.8	9.6	7.2	327	87	23	219	35	8	18	2	110	5	52	0.05 U
EH-131	6/8/2016	36.69	6.97	273	4.96	99	317	1.7	9.1	7.2	281	80	10 U	177	28	7	13	2	97	4	48	0.05 U
EH-131 (Dup)	6/8/2016	36.69	6.97	273	4.92	99	317	1.7	9.1	7.2	281	79	10 U	179	29	7	13	2	96	4	48	0.05 U
EH-131	10/6/2016	38	6.79	286	6.52	65	284	3.1	7.6	7.2	288	81	10 U	189	31	7	13	2	98	4	42	0.05 U
EH-132	6/13/2016	62.49	7.27	592	5.34	126	339	3	13.4	7.4	596	120	13	438	57	18	33	8	150	14	147	0.07
EH-132	10/11/2016	62.59	7.44	612	6.03	13	226	7.3	13	7.4	610	130	13	423	58	19	33	8	150	17	139	0.15
EH-134	6/13/2016	59.72	7.33	435	7.28	117	331	1.8	12.4	7.6	440	140	10 U	324	45	12	22	6	170	7	66	0.05 U
EH-134 (Dup)	6/13/2016	59.72	7.33	435	7.29	117	331	1.8	12.4	7.6	440	140	10 U	314	44	12	22	6	170	7	65	0.05 U
EH-134	10/12/2016	59.95	7.41	431	7.98	77	290	5.2	12.5	7.6	442	140	10 U	305	46	13	23	6	170	7	56	0.05 U
EH-135	6/13/2016	31.71	7.07	282	6.23	114	333	3.5	8.6	7.2	287	77	10 U	187	30	7	13	2	94	4	52	0.05 U
EH-135	10/7/2016	34.5	6.91	274	5.46	60	278	3.5	8.8	7.2	281	77	36	186	31	7	14	2	93	4	43	0.05 U
EH-135 (Dup)	10/7/2016	34.5	6.91	273	5.45	60	278	3.5	8.8	7.2	281	77	40	187	31	7	13	2	93	4	42	0.05 U
EH-138	6/14/2016	47.7	6.78	602	6.87	209	426	0.4	9.7	7.3	610	130	10 U	404	54	15	46	3	150	11	163	0.4
EH-138	10/7/2016	48.33	7.03	570	6.79	60	278	1.3	9	7.3	581	120	10 U	385	53	14	45	3	150	10	135	0.35
EH-139	6/14/2016	54.11	7.1	600	9.28	205	422	1.6	10.4	7.5	607	180	10 U	416	51	22	35	8	220	12	114	0.06
EH-139	10/7/2016	54.02	7.26	599	8.51	56	271	1.2	10.7	7.5	606	180	10 U	412	54	23	36	8	220	12	101	0.06
EH-140	6/8/2016	26.85	7.08	288	5.55	93	311	4.7	9.5	7.1	294	86	10 U	183	30	7	15	3	100	4	49	0.05 U
EH-140	10/6/2016	26.54	6.9	297	6.33	55	273	2.7	8.4	7.2	299	85	11	196	32	7	16	3	100	4	43	0.05 U
EH-140 (Dup)	10/6/2016	26.54	6.89	297	6.36	55	273	2.7	8.4	7.2	298	84	11	191	31	7	15	3	100	4	43	0.05 U
EH-141	4/14/2016	37.45	7.23	829	5.05	83	299	1.5	10.8	7.3	845	170	10 U UJ	593	98	26	47	7	200	24	240	1.6

			Field Parameters							General Chemistry					Major Ions							
Station ID	Sample Date	Depth To Water (ft)	pH (s.u.)	SC (µmhos/cm)	Diss O_2 (mg/L)	ORP (mV)	E_H (mV)	Turbidity (NTU)	Water Temp (°C)	Lab pH (s.u.)	Lab SC (µmhos/cm)	Total Alkalinity as CaCO3	Total Suspended Solids	Total Dissolved Solids	Calcium	Magnesium	Sodium	Potassium	Bicarbonate	Chloride	Sulfate	Bromide
EH-141	6/9/2016	33.41	7.26	843	5.41	93	308	5.5	11.3	7.4	850	170	10 U	599	96	25	44	7	210	23	244	1.46
EH-141 (Low Flow)	8/30/2016	33.33	7.11	857	4.99	111	325	0.4	12.2	7.3	842	170	13	601	93	24	46	7	200	24	230	1.38
EH-141 (Standard)	8/30/2016	33.33	6.95	870	5.09	116	332	0.3	10.6	7.3	842	170	10 U	600	93	24	47	7	210	24	230	1.36
EH-141 (Low Flow)	10/11/2016	33.79	7.33	861	6.14	39	257	0.5	8.9	7.4	868	170	10 U	616	95	25	46	7	200	24	231	1.22
EH-141 (Standard)	10/11/2016	33.79	7.25	859	6.04	22	238	1.6	9.9	7.3	867	170	18	614	97	26	48	7	200	24	233	1.22
EH-142	4/14/2016	37.65	7.32	579	6.84	80	295	7.1	11.3	7.4	594	160	10 J	400	61	24	28	6	200	13	126	0.68
EH-142	6/9/2016	33.8	7.44	577	6.79	94	309	3.8	11.5	7.5	583	160	18	398	57	24	26	6	190	13	123	0.54
EH-142	8/30/2016	33.39	7.07	609	6.47	127	342	2.1	11.3	7.4	590	160	10 U	401	61	22	27	6	190	13	122	0.46
EH-142	10/7/2016	33.67	7.43	573	7.24	65	280	3.6	10.8	7.5	581	160	14	394	59	21	26	6	190	12	103	0.45
EH-143	4/14/2016	38.4	7.18	523	6.16	66	283	3.4	10.1	7.3	539	120	10 U UJ	355	59	15	32	4	150	11	137	0.6
EH-143	6/9/2016	34.7	7.27	509	6.18	98	314	2.5	10.4	7.3	520	120	10 U	350	54	14	29	3	140	10	130	0.45
EH-143 (Dup)	6/9/2016	34.7	7.27	511	6.18	98	314	2.5	10.4	7.3	520	120	10 U	353	53	13	29	3	140	10	130	0.44
EH-143	8/30/2016	34.14	6.29	504	5.67	237	454	1.7	9.7	7.4	497	120	10 U	325	50	12	30	4	140	9	120	0.36
EH-143	10/7/2016	34.4	7.25	501	6.32	56	273	4	9.4	7.4	514	120	10 U	343	54	13	30	3	140	9	108	0.39
EH-144D	6/8/2016	23.9	7.05	601	5.28	101	317	0.9	10.8	7.2	611	120	10 U	407	71	15	26	4	150	14	163	1.23
EH-144D (Low Flow)	10/6/2016	22.09	7.04	619	5.56	42	258	5.6	10.4	7.3	618	120	69	409	72	16	28	4	150	15	149	1.14
EH-144D (Standard)	10/6/2016	22.12	7.02	610	5.57	44	261	1.4	9.9	7.3	615	120	10 U	407	72	16	28	4	150	15	148	1.04
EH-144M	6/8/2016	22.66	7.01	479	5.46	98	314	2.6	10.6	7.2	489	110	10 U	320	48	12	25	3	140	10	114	0.66
EH-144M	10/6/2016	24.48	7.01	488	6.01	43	260	1.5	9.6	7.3	484	110	10 U	319	54	12	26	4	140	10	100	0.65
EH-144S	6/8/2016	28.19	6.94	391	4.6	104	320	0.9	10.7	7.3	399	98	10 U	256	43	9	18	3	120	7	85	0.31
EH-144S	10/6/2016	25.83	7.11	401	5.7	42	259	0.5	9.7	7.3	403	99	10 U	263	44	10	19	3	120	7	73	0.33
EH-145D	10/6/2016	29.78	6.93	422	5.04	42	258	1.3	9.8	7.3	425	100	10 U	286	47	11	20	4	130	6	82	0.43
EH-145S	10/6/2016	30.69	6.94	445	10.02	59	276	9.2	9.7	7.3	450	110	11	298	47	11	28	3	130	6	89	0.36
EH-200	6/8/2016	29.24	7.16	735	6.09	206	423	3.2	10.4	7.6	756	240	24	448	48	38	44	3	290	40	103	0.18
EH-201	6/8/2016	98.01	7.4	592	6.49	207	421	3.7	11.9	7.7	611	230	10 U	392	49	30	29	6	270	13	76	0.08
EH-202	6/8/2016	66.86	7.48	496	8.85	219	433	12.1	11.7	7.6	509	140	25	353	43	13	30	11	170	16	81	0.13
EH-202 (Dup)	6/8/2016	66.86	7.48	495	8.85	219	433	12.1	11.8	7.7	508	140	28	354	47	13	30	11	170	16	80	0.14
EH-203	6/9/2016	105.98	7.68	465	9.15	106	321	3	12.2	7.8	470	140	10 U	332	45	13	27	10	170	13	78	0.13
EH-204	6/10/2016	57.45	6.79	1928	3.32	234	449	3.3	11.4	7.2	1990	260	10 U	1550	275	64	73	12	320	92	695	4.8
EH-204	10/17/2016	57.68	6.87	1901	3.52	32	249	1.9	9.8	7.2	1930	260	10 U	1550	282	66	75	12	320	94	689	4.6
EH-206	6/10/2016	51.08	7.52	536	5.43	76	290	2.6	12.7	7.7	543	170	10 U	369	67	16	17	9	210	17	66	0.05 U
EH-206	10/11/2016	51.67	7.39	519	6.72	15	229	28.7	12.2	7.6	523	180	139	356	62	15	18	9	220	18	49	0.05
EH-208	6/9/2016	58.69	7.55	863	7.32	96	311	16.2	11.5	7.6	873	170	28	592	91	21	51	12	200	68	171	0.3
EH-209	6/9/2016	45.44	7.69	741	7.91	92	307	2.9	11.7	7.8	748	250	16	484	65	41	30	10	310	22	121	0.07
EH-210	6/9/2016	39.17	7.16	862	7.75	191	405	1.6	12.4	7.3	864	130	10 U	616	101	23	42	9	160	28	267	3.27
EH-210	10/14/2016	31.19	7.28	902	7.77	68	282	0.9	11.7	7.4	921	130	10 U UJ	648	107	24	44	9	160	30	275	2.82
EH-50	6/16/2016	30.91	6.4	1029	1.14	127	341	1	11.8	6.7	1040	180	10 U	708	57	17	136	5	220	27	300	1.65
EH-50	10/18/2016	31.16	6.2	1047	1.43	118	333	1.1	11.9	6.7	1060	180	10 U	731	55	17	145	5	220	28	290	1.51
EH-50 (Dup)	10/18/2016	31.16	6.21	1047	1.42	118	332	1.1	11.9	6.7	1060	180	10 U	734	58	18	146	5	220	29	291	1.5
EH-51	6/15/2016	16.73	6.68	358	5.01	133	349	0.8	10.1	7.2	361	88	10 U	230	17	3	39	16	110	7	66	0.05 U
EH-51	10/14/2016	18.11	6.63	355	5.09	82	298	0.5	10.9	7.2	360	85	10 U UJ	219	18	3	39	16	100	7	54	0.05 U
EH-51 (Dup)	10/14/2016	18.11	6.63	356	5.1	86	302	0.5	10.9	7.2	358	87	10 U UJ	217	17	3	39	16	110	7	54	0.05 U
EH-52	6/14/2016	7.79	6.95	327	3.9	119	335	0.2	10.3	7.1	337	87	10 U	213	24	5	18	27	110	8	52	0.05 U
EH-52	10/13/2016	7.92	6.73	365	3.59	59	271	0.4	13.5	7	374	97	10 U	235	27	5	20	28	120	6	53	0.05 U
EH-53	6/14/2016	31.86	6.73	985	6.16	116	332	0.4	11.3	7	1010	150	10 U	692	65	19	115	5	190	21	318	0.42
EH-53	10/14/2016	32.81	6.75	795	7.21	79	293	0.5	11.8	7	809	150	10 U UJ	521	48	15	99	4	180	14	208	0.09
EH-54	6/10/2016	7.27	7.11	226	5.42	96	316	3.2	6.9	7.2	235	83	10 U	148	27	6	11	2	100	2	26	0.05 U
EH-54	10/13/2016	10.63	6.84	304	2.63	59	273	3.5	12.3	7.1	314	95	10 U	204	35	7	15	3	110	4	41	0.05 U
EH-58	6/10/2016	15.8	6.85	295	3.91	113	330	0.1	10.3	7	303	83	12	177	33	8	15	3	100	5	52	0.05 U
EH-58	10/11/2016	14.12	6.64	369	4.05	23	239	0.8	10.6	6.8	370	99	10 U	239	39	9	18	3	120	5	62	0.05 U
EH-59	6/10/2016	8.43	6.83	345	5.1	114	331	2.9	10.3	7	355	78	10 U	223	36	8	15	13	95	8	69	0.05 U
EH-59	10/13/2016	8.15	6.68	333	1.98	58	271	0.7	12.9	6.9	340	94	10 U	211	32	7	16	14	110	5	49	0.05 U
EH-60	6/16/2016	26.21	7.29	1468	5.38	131	346	13.3	11.4	6.8	1510	240	48	1070	84	25	190	10	290	60	454	1.53
EH-60	10/17/2016	26.59	6.6	1531	3.46	58	273	5.2	11.2	6.8	1590	250	10 U	1120	99	30	209	11	300	60	481	1.2
EH-61	6/15/2016	27.95	6.81	2147	0.06	109	324	0.3	11.7	7	2150	180	10 U	1640	188	34	237	15	220	25	934	1.9
EH-61	10/17/2016	28.34	6.79	2044	0.64	34	250	0.5	10.4	6.9	2070	180	10 U	1630	192	35	248	16	220	23	917	1.5
EH-61 (Dup)	10/17/2016	28.34	6.78	2044	0.62	34	250	0.5	10.4	7	2070	190	10 U	1610	192	35	249	16	230	23	906	1.5
EH-62	6/10/2016	26.92	7.02	343	4.78	0	216	0.3	10.4	7.2	352	99	10 U	227	38	9	17	3	120	5	61	0.05 U
EH-62 (Dup)	6/10/2016	26.92	7.01	343	4.78	0	216	0.3	10.4	7.2	352	98	10 U	223	39	9	17	3	120	5	61	0.05 U
EH-62	10/13/2016	29.62	7.03	354	6.31	62	277	0.1	10.6	7.2	363	100	10 U	228	40	9	18	3	120	6	52	0.05 U
EH-63	6/14/2016	21.74	6.85	312	4.79	113	329	1.8	10.7	7.2	322	93	10 U	210	33	7	20	4	110	6	51	0.05 U
EH-63 (Dup)	6/14/2016	21.74	6.86	312	4.77	113	329	1.8	10.7	7.1	322	93	10 U	192	31	7	20	4	110	6	52	0.05 U
EH-63	10/13/2016	23.8	6.8	347	7.9	62	278	1.5	10.9	7.1	359	95	18	227	35	7	20	4	120	8	51	0.05 U
EH-65	6/15/2016	27.39	6.36	1533	0.21	122	337	1.9	11.6	6.5	1540	160	10 U	1080	101	25	177	9	190	56	521	1.44
EH-65	10/17/2016	29.53	6.6	1576	0.59	72	286	0.9	11.9	6.6	1620	180	10 U	1170	117	30	188	10	220	51	561	1.3
EH-66	6/10/2016	29.74	7.23	268	5.2	115	332	3.4	9.8	7.3	278	78	10 U	168	31	8	12	2	94	4	48	0.05 U
EH-66	10/7/2016	32.9	6.99	282	7.61	63	281	8.2	8.9	7.2	290	81	28	185	32	7	13	2	98	4	41	0.05 U
EH-69	6/10/2016	21.28	6.82	410	4.27	113	328	4.5	10.8	7	422	110	23	262	39	9	32	4	140	7	78	0.05 U
EH-69	10/11/2016	21.28	6.85	406	5.93	38	253	11	10.7	6.9	413	110	17	267	37	8	33	4	140	8	61	0.05 U
EH-70	6/13/2016	37.22	6.76	1271	5.06	118	333	3.8	10.9	6.9	1280	160	10 U	939	112	34	110	5	190	28	454	0.66
EH-70 (Low Flow)	10/12/2016	39	6.9	1213	5.08	79	293	2.1	12.2	6.9	1250	160	32	908	106	34	112	5	200	29	436	1.42
EH-70 (Standard)	10/12/2016	39.11	6.87	1211	5.29	80	296	1.8	10.8	6.9	1230	160	10 U	898	104	33	111	5	190	29	430	1.44
MW-1	6/9/2016	53.74	7.28	446	8.42	239	453	3.6	12.6	7.5	450	120	10 U	309	48	10	25	5	140	12	86	0.12
MW-10	6/9/2016	46.12	7	791	4.77	241	457	2.7	10.9	7.4	798	250	10 U	539	97	24	36	7	300	17	154	0.1
MW-11	6/8/2016	63.81	7.56	626	9.25	238	454	4.4	11.2	7.7	642	110	11	447	50	11	57	10	140	24	166	0.18
MW-2	6/9/2016	41.2	6.77	753	0.4	88	304	0.4	10.6	7.1	760	230	10 U	498	99	22	23	6	270	30	136	0.19

			Field Parameters							General Chemistry					Major Ions							
Station ID	Sample Date	Depth To Water (ft)	pH (s.u.)	SC (µmhos/cm)	Diss O_2 (mg/L)	ORP (mV)	E_H (mV)	Turbidity (NTU)	Water Temp (°C)	Lab pH (s.u.)	Lab SC (µmhos/cm)	Total Alkalinity as CaCO3	Total Suspended Solids	Total Dissolved Solids	Calcium	Magnesium	Sodium	Potassium	Bicarbonate	Chloride	Sulfate	Bromide
MW-3	6/9/2016	36.39	6.79	851	0.49	152	368	0.6	10.8	7.1	850	240	10 U	574	116	26	26	7	290	37	161	0.29
MW-4	6/9/2016	50.01	7.17	528	7.94	245	460	3.8	10.7	7.6	538	180	10 U	365	59	13	32	6	220	9	87	0.08
MW-4 (Dup)	6/9/2016	50.01	7.17	530	7.97	244	460	3.8	10.7	7.6	532	180	10 U	362	59	13	33	6	220	9	87	0.08
MW-5	6/9/2016	55.01	7.6	360	7.99	232	446	1	12.5	7.8	362	130	45	247	37	8	24	4	160	5 UJ	37	0.05
MW-6	6/9/2016	32.93	6.94	948	0.59	174	389	2.3	10.9	7.2	945	240	10 U	653	127	28	28	6	290	42	212	0.28
MW-7	6/9/2016	57.61	7.83	293	8.55	206	417	70.5	14.8	7.7	246	88	21	194	20	6	19	5	110	1 UJ	30	0.05 U
MW-8	6/9/2016	54.06	6.95	469	6.07	238	453	1.8	11.7	7.4	471	160	10 U	318	55	11	22	6	190	9	70	0.05 U
MW-9	6/8/2016	59.14	7.41	433	7.85	216	427	4.2	15.1	7.6	446	150	10 U	301	44	10	26	5	190	7	56	0.05 U
PRB-2	6/13/2016	36.87	6.78	1092	0.48	105	320	3.4	11.7	7	1090	210	36	807	87	16	119	13	260	16	317	1.63
SDMW-2	6/15/2016	53	6.41	1187	2.68	12	226	8.5	11.8	6.6	1210	180	10 U	765	14	4	218	12	220	15	359	1.83
SDMW-2 (Dup)	6/15/2016	53	6.41	1187	2.67	11	226	8.5	11.8	6.6	1200	180	10 U	771	14	4	215	12	220	15	360	1.83
SDMW-2	9/1/2016	53.37	6.94	1256	1.5	-132	81	5.4	13.4	6.6	1210	180	10 U	777	14	4	218	13	220	14	359	1.53
SDMW-2 (Dup)	9/1/2016	53.37	6.89	1257	1.47	-132	81	5.4	13.4	6.6	1200	180	10 U	771	14	4	219	13	220	14	362	1.51
SDMW-2	10/12/2016	54.43	7.19	1307	1.04	-51	165	16	10.4	6.6	1210	180	14	778	14	4	222	13	220	14	358	1.32
TW-1	2/25/2016	44.75	9.29	3183	2.56	30		1.5	14.7	9.1	3190	500	18	2220	11	5	736	11	480	64	1070	
TW-1	6/15/2016	50.9	9.02	3681	3.31	11	223	2.9	13.6	9	3720	470	10 U	2630	11	6	791	12	480	75	1310	11.2
TW-1	10/13/2016	51.52	8.95	4250	4.69	340	551		14.3	8.7	4390	450	126	2970	20	10	952	16	500	97	1580	13.7
TW-2	10/12/2016														8	2	914	10				
TW-2	10/12/2016	52.92	9.38	4050	0.43	-87	127	13.9	11.9	9.3	4020	540	10 U	2850	8	2	968	11	440	90	1260	9.5

NOTES: All concentrations in mg/L except as indicated.
U = below laboratory reporting limit (associated value)
A = anomalous data point (historical inconsistency)
R = data point rejected during validation procedure
J = QC criterion exceeded; + = potential high bias

		Dissolved (D) Metals													
Station ID	Sample Date	Sb (D)	As (D)	Be (D)	Cd (D)	Cr (D)	Cu (D)	Fe (D)	Pb (D)	Mn (D)	Hg (D)	Ni (D)	Se (D)	Tl (D)	Zn (D)
2843 Canyon Ferry Road	4/14/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	2.41	0.005 U	1.91	0.001 U	0.01 U	0.011	0.001 U	0.01 U
2843 Canyon Ferry Road	6/23/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02	0.005 U	0.01 U	0.001 U	0.01 U	0.042	0.001 U	0.01 U
2843 Canyon Ferry Road	9/6/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.06	0.005 U	0.01 U	0.001 U	0.01 U	0.048	0.001 U	0.01 U
2843 Canyon Ferry Road	10/19/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.08	0.005 U	0.01 U	0.0001 U	0.01 U	0.05	0.001 U	0.01
2853 Canyon Ferry Road	4/14/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	3.02	0.005 U	1.12	0.001 U	0.01 U	0.023	0.001 U	0.01 U
2853 Canyon Ferry Road	6/23/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.03	0.005 U	0.01	0.001 U	0.01 U	0.044	0.001 U	0.01
2853 Canyon Ferry Road	9/6/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.1	0.005 U	0.02	0.001 U	0.01 U	0.049	0.001 U	0.01
2853 Canyon Ferry Road	10/19/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.003	0.1	0.005 U	0.01	0.0001 U	0.01 U	0.054	0.001 U	0.01
DH-1	6/10/2016	0.003 U	0.005	0.001 U	0.001 U	0.007	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.02	0.358	0.001 U	0.01 U
DH-1	10/17/2016	0.003 U	0.005	0.001 U	0.001 U	0.007	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.02	0.361	0.001 U	0.01 U
DH-15	4/14/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.002	0.02 U UJ	0.005 U	0.01 U	0.001 U	0.01 U	0.302	0.001 U	0.01 U
DH-15	6/13/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.003	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.352	0.001 U	0.01 U
DH-15 (Dup)	6/13/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.003	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.346	0.001 U	0.01 U
DH-15 (Low Flow)	8/30/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.004	0.02 U	0.005 U	0.02	0.001 U	0.01 U	0.338	0.001 U	0.02
DH-15 (Standard)	8/30/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.004	0.02 U	0.005 U	0.01	0.001 U	0.01 U	0.328	0.001 U	0.01 U
DH-15 (Low Flow)	10/17/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.003	0.02 U	0.005 U	0.02	0.001 U	0.01 U	0.404	0.001 U	0.01 U
DH-15 (Standard)	10/17/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.003	0.02 U	0.005 U	0.02	0.001 U	0.01 U	0.379	0.001 U	0.01 U
DH-17	6/14/2016	0.003 U	30.4	0.001 U	0.001 U	0.001 U	0.001 U	0.1	0.005 U	0.42	0.001 U	0.01 U	0.001 U	0.001 U	0.04 J-
DH-17 (Low Flow)	9/1/2016	0.003 U	28.2	0.001 U	0.001 U	0.001 U	0.001 U	0.11	0.005 U	0.46	0.001 U	0.01 U	0.001 U	0.001 U	0.09
DH-17 (Standard)	9/1/2016	0.003 U	29.5	0.001 U	0.001 U	0.001 U	0.001 U	0.09	0.005 U	0.42	0.001 U	0.01 U	0.001 U	0.001 U	0.09
DH-17 (Low Flow)	10/13/2016	0.003 U	28.7	0.001 U	0.001 U	0.001 U	0.001 U	0.12	0.005 U	0.48	0.001 U	0.01 U	0.001 U	0.001 U	0.05
DH-17 (Standard)	10/13/2016	0.003 U	29.7	0.001 U	0.001 U	0.001 U	0.001 U	0.1	0.005 U	0.45	0.001 U	0.01 U	0.001 U	0.001 U	0.05
DH-17 (Dup)	10/13/2016	0.003 U	30.5	0.001 U	0.001 U	0.001 U	0.001 U	0.1	0.005 U	0.45	0.001 U	0.01 U	0.001 U	0.001 U	0.05
DH-20	6/10/2016	0.003 U	0.122	0.001 U	0.001 U	0.001 U	0.001 U	10.8	0.005 U	7.34	0.001 U	0.01 U	0.001 U	0.001 U	0.01 U
DH-20	10/17/2016	0.003 U	0.157	0.001 U	0.001 U	0.001 U	0.001 U	11.3	0.005 U	8.28	0.001 U	0.01 U	0.001 U	0.001 U	0.01 U
DH-42	4/18/2016	0.004	2.84	0.001 U	4.72	0.001 U	0.004	0.02 U	0.005 U	8.58	0.001 U	0.01 U	0.032	0.005	3.23
DH-42	6/13/2016	0.003	2.49	0.001 U	4.66	0.001 U	0.005	0.02 U	0.005 U	8.46	0.001 U	0.01	0.043	0.005	3.19
DH-42	10/13/2016	0.003	2.67	0.001 U	4.5	0.001 U	0.007	0.02 U	0.005 U	7.82	0.001 U	0.01 U	0.025	0.004	2.88
DH-47	6/10/2016	0.003 U	0.864	0.001 U	0.001 U	0.001 U	0.001 U	9.72	0.005 U	3.62	0.001 U	0.01 U	0.001 U	0.001 U	0.01 U
DH-52	4/14/2016	0.027	0.578	0.001 U	0.001 U	0.001 U	0.002	0.06 J	0.005 U	0.01 U	0.001 U	0.01 U	0.027	0.001 U	0.01 U
DH-52 (Dup)	4/14/2016	0.026	0.568	0.001 U	0.001 U	0.001 U	0.001	0.03 J	0.005 U	0.01 U	0.001 U	0.01 U	0.025	0.001 U	0.01 U
DH-52	6/10/2016	0.027	0.575	0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.042	0.001 U	0.01 U
DH-52	8/30/2016	0.036	0.931	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.019	0.001 U	0.01 U
DH-52	10/14/2016	0.034	0.756	0.001 U	0.001 U	0.001 U	0.002	0.05	0.005 U	0.01 U	0.001 U	0.01 U	0.018	0.001 U	0.01 U
DH-56	4/18/2016	0.026	0.512	0.001 U	0.001 U	0.001 U	0.002	0.02	0.005 U	0.01 U	0.001 U	0.01 U	0.635	0.001 U	0.01 U
DH-56 (Dup)	4/18/2016	0.026	0.513	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.644	0.001 U	0.01 U
DH-56	6/13/2016	0.023	0.482	0.001 U	0.001 U	0.001	0.003	0.02	0.005 U	0.01 U	0.001 U	0.01 U	0.978	0.001 U	0.01 U
DH-56	8/31/2016	0.024	0.46	0.001 U	0.001 U	0.001	0.003	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.626	0.001 U	0.01 U
DH-56 (Low Flow)	10/17/2016	0.028	0.608	0.001 U	0.001 U	0.001 U	0.003	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.434	0.001 U	0.01 U
DH-56 (Standard)	10/17/2016	0.028	0.598	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.447	0.001 U	0.01 U
DH-59	6/13/2016	0.003 U	6.18	0.001 U	0.032	0.001 U	0.001 U	0.46	0.005 U	5.86	0.001 U	0.01 U	0.003	0.106	0.06
DH-59	10/12/2016	0.003 U	6.29	0.001 U	0.049	0.001 U	0.001 U	0.51	0.005 U	5.47	0.001 U	0.01 U	0.001	0.116	0.07
DH-59 (Dup)	10/12/2016	0.003 U	6.38	0.001 U	0.048	0.001 U	0.001 U	0.51	0.005 U	5.58	0.001 U	0.01 U	0.001	0.115	0.07
DH-6	4/14/2016	0.063	1.8	0.001 U	0.001 U	0.001 U	0.001	0.02 U UJ	0.005 U	0.01 U	0.001 U	0.01 U	0.198	0.001 U	0.01 U
DH-6	6/10/2016	0.063	1.77	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.19	0.001 U	0.01 U
DH-6	8/30/2016	0.059	1.82	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.171	0.001 U	0.01 U
DH-6 (Dup)	8/30/2016	0.06	1.78	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.168	0.001 U	0.01 U
DH-6	10/17/2016	0.065	1.8	0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.168	0.001 U	0.01 U
DH-64	4/18/2016	0.003 U	16.2	0.001 U	0.009	0.001 U	0.001	0.55	0.005 U	2	0.001 U	0.01 U	0.001 U	0.001 U	0.13
DH-64	6/13/2016	0.003 U	15.3	0.001 U	0.009	0.001 U	0.001	0.56	0.005 U	1.97	0.001 U	0.01 U	0.001 U	0.001 U	0.14
DH-64	8/31/2016	0.003 U	14.8	0.001 U	0.01	0.001 U	0.001	0.62	0.005 U	2.29	0.001 U	0.01 U	0.001 U	0.001 U	0.15
DH-64 (Dup)	8/31/2016	0.003 U	14.6	0.001 U	0.01	0.001 U	0.001	0.63	0.005 U	2.27	0.001 U	0.01 U	0.001 U	0.001 U	0.15
DH-64	10/18/2016	0.003 U	14.1	0.001 U	0.01	0.001 U	0.001	0.61	0.005 U	2.39	0.001 U	0.01 U	0.001 U	0.001 U	0.16
DH-64 (Dup)	10/18/2016	0.003 U	14	0.001 U	0.01	0.001 U	0.001	0.61	0.005 U	2.39	0.001 U	0.01 U	0.001 U	0.001 U	0.16
DH-66	4/18/2016	0.003 U	0.002	0.001 U	0.369	0.001	0.004	0.02 U	0.005 U	0.01 U	0.002	0.01	1.43	0.001 U	0.14
DH-66	6/14/2016	0.003 U	0.003	0.001 U	0.334	0.001 U	0.004	0.02 U	0.005 U	0.01 U	0.001	0.01	1.16	0.001 U	0.15 J-
DH-66	9/1/2016	0.003 U	0.004	0.001 U	0.316	0.001 U	0.004	0.02 U	0.005 U	0.01 U	0.001	0.01	1.06	0.001 U	0.14
DH-66	10/13/2016	0.003 U	0.005	0.001 U	0.314	0.001	0.005	0.02 U	0.005 U	0.01 U	0.001	0.01	1.24	0.001 U	0.14
DH-67	6/10/2016	0.003 U	0.003	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.238	0.001 U	0.01 U
DH-67 (Dup)	6/10/2016	0.003 U	0.003	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.243	0.001 U	0.01 U
DH-67	10/14/2016	0.003 U	0.004	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.173	0.001 U	0.01 U
DH-67 (Dup)	10/14/2016	0.003 U	0.004	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.169	0.001 U	0.01 U
DH-7	6/8/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U	0.001 U	0.01 U
DH-7	10/11/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U	0.001 U	0.01 U
DH-77	6/14/2016	0.003 U	3.27	0.006	4.68	0.001 U	0.012	0.02	0.005 U	13.7	0.001 U	0.06	0.015	0.003	3.42
DH-77	10/13/2016	0.003 U	3.48	0.007	4.8	0.001 U	0.011	0.02 U	0.005 U	13.2	0.001 U	0.06	0.012	0.003	3.46
DH-79	2/25/2016	0.003 U	44.2	0.001	0.001 U	0.001 U	0.091	0.11	0.005 U	0.21	0.001 U	0.01 U	0.003	0.001 U	0.04
DH-79	6/15/2016	0.003 U	37.1	0.001 U	0.001 U	0.001 U	0.003	0.08	0.005 U	0.24	0.001 U	0.01 U	0.002	0.001 U	0.01 U
DH-8	4/18/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.002	0.004	0.02 U	0.005 U	0.01 U	0.002	0.04	0.847	0.003	0.01 U
DH-8	6/14/2016	0.003 U	0.003	0.001 U	0.001	0.001 U	0.002	0.03	0.005 U	0.01 U	0.002	0.03	0.883	0.002	0.01 U
DH-8 (Dup)	6/14/2016	0.003 U	0.003	0.001 U	0.001	0.001 U	0.001	0.02	0.005 U	0.01 U	0.002	0.03	0.828	0.002	0.01 U v
DH-8	9/1/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001	0.001	0.02 U	0.005 U	0.01 U	0.003	0.03	0.78	0.002	0.01 U
DH-8	10/13/2016	0.003 U	0.004	0.001 U	0.001 U	0.002	0.001	0.02 U	0.005 U	0.01 U	0.002	0.03	0.868	0.002	0.01 U
DH-80	6/13/2016	0.003 U	14.7	0.001 U	1.73	0.001 U	0.01	14	0.005 U	2.84	0.001 U	0.03	0.007	0.237	5.98
DH-80 (Low Flow)	10/12/2016	0.003 U	9.03	0.001	4.91	0.001	0.005	23.9	0.005 U	5.09	0.001 U	0.05	0.009	0.302	10.9
DH-80 (Standard)	10/12/2016	0.003 U	9.72	0.001	4.52	0.001 U	0.002	23.7	0.005 U	5.03	0.001 U	0.04	0.007	0.305	10.7

		Dissolved (D) Metals													
Station ID	Sample Date	Sb (D)	As (D)	Be (D)	Cd (D)	Cr (D)	Cu (D)	Fe (D)	Pb (D)	Mn (D)	Hg (D)	Ni (D)	Se (D)	Tl (D)	Zn (D)
DH-82	6/10/2016	0.003 U	0.206	0.001 U	0.001 U	0.002	0.007	0.03	0.005 U	0.01 U	0.001 U	0.01 U	2.01	0.001 U	0.01 U
DH-82 (Low Flow)	10/18/2016	0.003 U	0.166	0.001 U	0.001 U	0.002	0.006	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	1.55	0.001 U	0.01 U
DH-82 (Standard)	10/18/2016	0.003 U	0.172	0.001 U	0.001 U	0.002	0.005	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	1.53	0.001 U	0.01 U
EH-100	6/16/2016	0.003 U	16.2	0.001 U	0.002	0.001 U	0.004	0.02 U	0.005 U	3.21	0.001 U	0.01 U	0.004	0.001 U	0.19
EH-100 (Dup)	6/16/2016	0.003 U	16.4	0.001 U	0.002	0.001 U	0.004	0.02 U	0.005 U	3.25	0.001 U	0.01 U	0.004	0.001 U	0.19
EH-100 (Low Flow)	10/18/2016	0.003 U	17.3	0.001 U	0.001	0.001 U	0.003	0.02 U	0.005 U	3.24	0.001 U	0.01 U	0.005	0.001 U	0.17
EH-100 (Standard)	10/18/2016	0.003 U	17.5	0.001 U	0.002	0.001 U	0.003	0.02 U	0.005 U	3.55	0.001 U	0.01 U	0.004	0.001 U	0.18
EH-101	6/15/2016	0.003 U	0.004	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.004	0.001 U	0.01 U
EH-101	10/14/2016	0.003 U	0.004	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.004	0.001 U	0.01 U
EH-102	6/14/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.012	0.001 U	0.01 U
EH-102	10/13/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.01	0.001 U	0.01 U
EH-103	6/15/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.31	0.001 U	0.01 U	0.368	0.001 U	0.01 U
EH-103	10/17/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.25	0.001 U	0.01 U	0.408	0.001 U	0.01 U
EH-104	6/15/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.94	0.001 U	0.01 U
EH-104	10/17/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.881	0.001 U	0.01 U
EH-106	6/15/2016	0.003 U	0.762	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.16	0.001 U	0.01 U	0.012	0.001 U	0.01 U
EH-106	10/17/2016	0.003 U	0.456	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.11	0.001 U	0.01 U	0.009	0.001 U	0.01 U
EH-107	6/15/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.03	0.005 U	0.05	0.001 U	0.01 U	0.268	0.001 U	0.01 U
EH-107 (Dup)	6/15/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.03	0.005 U	0.05	0.001 U	0.01 U	0.275	0.001 U	0.01 U
EH-107	10/17/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.05	0.001 U	0.01 U	0.295	0.001 U	0.01 U
EH-110	6/14/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.18	0.001 U	0.01 U	0.272	0.001 U	0.01 U
EH-110	10/14/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.11	0.001 U	0.01 U	0.244	0.001 U	0.01 U
EH-111	6/15/2016	0.003 U	1.6	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	6.18	0.001 U	0.01 U	0.137	0.001 U	0.01 U
EH-111 (Low Flow)	10/17/2016	0.003 U	2.37	0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.005 U	9.75	0.001 U	0.01 U	0.171	0.001 U	0.01 U
EH-111 (Standard)	10/17/2016	0.003 U	1.53	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	5.76	0.001 U	0.01 U	0.155	0.001 U	0.01 U
EH-114	6/13/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.026	0.001 U	0.01 U
EH-114	10/12/2016	0.003 U	0.004	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.02	0.001 U	0.01 U
EH-115	6/15/2016	0.003 U	0.82	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.062	0.001 U	0.01 U
EH-115	10/17/2016	0.003 U	1.13	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.054	0.001 U	0.01 U
EH-115 (Dup)	10/17/2016	0.003 U	1.22	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.051	0.001 U	0.01 U
EH-117	6/13/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.113	0.001 U	0.01 U
EH-117	10/12/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.105	0.001 U	0.01 U
EH-118	6/14/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.386	0.001 U	0.01 U
EH-118 (Low Flow)	10/13/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.05	0.005 U	0.01 U	0.001 U	0.01 U	0.396	0.001 U	0.01 U
EH-118 (Standard)	10/13/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.391	0.001 U	0.01 U
EH-119	6/13/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02	0.005 U	0.01 U	0.001 U	0.01 U	0.043	0.001 U	0.01 U
EH-119	10/13/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.048	0.001 U	0.01 U
EH-120	6/13/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.348	0.001 U	0.01 U
EH-120	10/13/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.374	0.001 U	0.01 U
EH-120 (Dup)	10/13/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.368	0.001 U	0.01 U
EH-121	6/10/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U	0.001 U	0.01 U
EH-121	10/7/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U	0.001 U	0.01 U
EH-123	6/10/2016	0.003 U	0.006	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002	0.001 U	0.01 U
EH-123	10/11/2016	0.003 U	0.006	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002	0.001 U	0.01 U
EH-123 (Dup)	10/11/2016	0.003 U	0.006	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002	0.001 U	0.01 U
EH-124	6/13/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.002	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.328	0.001 U	0.01 U
EH-124	10/13/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.002	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.372	0.001 U	0.01 U
EH-125	6/13/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.05	0.001 U	0.01 U
EH-125 (Low Flow)	10/12/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.063	0.001 U	0.01 U
EH-125 (Standard)	10/12/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.038	0.001 U	0.01 U
EH-126	6/13/2016	0.003 U	0.002	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.147	0.001 U	0.01 U
EH-126	10/12/2016	0.003 U	0.003	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.14	0.001 U	0.01 U
EH-126 (Dup)	10/12/2016	0.003 U	0.003	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.153	0.001 U	0.01 U
EH-129	6/13/2016	0.003 U	0.005	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.031	0.001 U	0.01 U
EH-129	10/12/2016	0.003 U	0.005	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.025	0.001 U	0.01 U
EH-130	6/9/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002	0.001 U	0.01 U
EH-130	10/7/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.003	0.001 U	0.01 U
EH-131	6/8/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U	0.001 U	0.01 U
EH-131 (Dup)	6/8/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U	0.001 U	0.01 U
EH-131	10/6/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U	0.001 U	0.01 U
EH-132	6/13/2016	0.003 U	0.028	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.003	0.001 U	0.01 U
EH-132	10/11/2016	0.003 U	0.021	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002	0.001 U	0.01 U
EH-134	6/13/2016	0.003 U	0.004	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001	0.001 U	0.01 U
EH-134 (Dup)	6/13/2016	0.003 U	0.005	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001	0.001 U	0.01 U
EH-134	10/12/2016	0.003 U	0.005	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001	0.001 U	0.01 U
EH-135	6/13/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U	0.001 U	0.01 U
EH-135	10/7/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U	0.001 U	0.01 U
EH-135 (Dup)	10/7/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U	0.001 U	0.01 U
EH-138	6/14/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.03	0.001 U	0.01 U
EH-138	10/7/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.03	0.001 U	0.01 U
EH-139	6/14/2016	0.003 U	0.005	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002	0.001 U	0.01 U
EH-139	10/7/2016	0.003 U	0.005	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001	0.001 U	0.01 U
EH-140	6/8/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U	0.001 U	0.01 U
EH-140	10/6/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U	0.001 U	0.01 U
EH-140 (Dup)	10/6/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U	0.001 U	0.01 U
EH-141	4/14/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U UJ	0.005 U	0.01 U	0.001 U	0.01 U	0.067	0.001 U	0.01 U

		Dissolved (D) Metals													
Station ID	Sample Date	Sb (D)	As (D)	Be (D)	Cd (D)	Cr (D)	Cu (D)	Fe (D)	Pb (D)	Mn (D)	Hg (D)	Ni (D)	Se (D)	Tl (D)	Zn (D)
EH-141	6/9/2016	0.003 U	0.002	0.001 U	0.001 U	0.001 U	0.001 U	0.03	0.005 U	0.01 U	0.001 U	0.01 U	0.078	0.001 U	0.01 U
EH-141 (Low Flow)	8/30/2016	0.003 U	0.002	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.072	0.001 U	0.01 U
EH-141 (Standard)	8/30/2016	0.003 U	0.002	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.073	0.001 U	0.01 U
EH-141 (Low Flow)	10/11/2016	0.003 U	0.002	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.073	0.001 U	0.01 U
EH-141 (Standard)	10/11/2016	0.003 U	0.002	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.075	0.001 U	0.01 U
EH-142	4/14/2016	0.003 U	0.004	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U UJ	0.005 U	0.01 U	0.001 U	0.01 U	0.026	0.001 U	0.01 U
EH-142	6/9/2016	0.003 U	0.004	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.024	0.001 U	0.01 U
EH-142	8/30/2016	0.003 U	0.004	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.021	0.001 U	0.01 U
EH-142	10/7/2016	0.003 U	0.005	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.021	0.001 U	0.01 U
EH-143	4/14/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U UJ	0.005 U	0.01 U	0.001 U	0.01 U	0.025	0.001 U	0.01 U
EH-143	6/9/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.024	0.001 U	0.01 U
EH-143 (Dup)	6/9/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.024	0.001 U	0.01 U
EH-143	8/30/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.019	0.001 U	0.01 U
EH-143	10/7/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.024	0.001 U	0.01 U
EH-144D	6/8/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.027	0.001 U	0.01 U
EH-144D (Low Flow)	10/6/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.029	0.001 U	0.01 U
EH-144D (Standard)	10/6/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.029	0.001 U	0.01 U
EH-144M	6/8/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.014	0.001 U	0.01 U
EH-144M	10/6/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.013	0.001 U	0.01 U
EH-144S	6/8/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.008	0.001 U	0.01 U
EH-144S	10/6/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.008	0.001 U	0.01 U
EH-145D	10/6/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01	0.001 U	0.01 U	0.007	0.001 U	0.01 U
EH-145S	10/6/2016	0.003 U	0.006	0.001 U	0.001 U	0.001 U	0.001 U	0.13	0.005 U	0.03	0.001 U	0.01 U	0.005	0.001 U	0.01 U
EH-200	6/8/2016	0.003 U	0.006	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002	0.001 U	0.01 U
EH-201	6/8/2016	0.003 U	0.014	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002	0.001 U	0.01 U
EH-202	6/8/2016	0.003 U	0.019	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002	0.001 U	0.01 U
EH-202 (Dup)	6/8/2016	0.003 U	0.018	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002	0.001 U	0.01 U
EH-203	6/9/2016	0.003 U	0.017	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002	0.001 U	0.01 U
EH-204	6/10/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.128	0.001 U	0.01 U
EH-204	10/17/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.123	0.001 U	0.01 U
EH-206	6/10/2016	0.003 U	0.032	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002	0.001 U	0.01 U
EH-206	10/11/2016	0.003 U	0.027	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001	0.001 U	0.01 U
EH-208	6/9/2016	0.003 U	0.011	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.003	0.001 U	0.01 U
EH-209	6/9/2016	0.003 U	0.007	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001	0.001 U	0.01 U
EH-210	6/9/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.097	0.001 U	0.01 U
EH-210	10/14/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.11	0.001 U	0.01 U
EH-50	6/16/2016	0.003 U	7.31	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.005	0.001 U	0.01 U
EH-50	10/18/2016	0.003 U	9.14	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.004	0.001 U	0.01 U
EH-50 (Dup)	10/18/2016	0.003 U	8.11	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.005	0.001 U	0.01 U
EH-51	6/15/2016	0.003 U	0.051	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.004	0.001 U	0.01 U
EH-51	10/14/2016	0.003 U	0.055	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.004	0.001 U	0.01 U
EH-51 (Dup)	10/14/2016	0.003 U	0.053	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.004	0.001 U	0.01 U
EH-52	6/14/2016	0.016	0.348	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.009	0.001 U	0.01 U
EH-52	10/13/2016	0.019	0.398	0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.004	0.001 U	0.01 U
EH-53	6/14/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.109	0.001 U	0.01 U
EH-53	10/14/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.068	0.001 U	0.01 U
EH-54	6/10/2016	0.003 U	0.017	0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U	0.001 U	0.01 U
EH-54	10/13/2016	0.003 U	0.011	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U	0.001 U	0.01 U
EH-58	6/10/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U	0.001 U	0.01 U
EH-58	10/11/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U	0.001 U	0.01 U
EH-59	6/10/2016	0.007	0.027	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.003	0.001 U	0.01 U
EH-59	10/13/2016	0.007	0.025	0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U	0.001 U	0.01 U
EH-60	6/16/2016	0.003 U	4.79	0.001 U	0.001 U	0.001 U	0.003	0.06	0.005 U	10.1	0.001 U	0.01 U	0.001 U	0.001 U	0.01 U
EH-60	10/17/2016	0.003 U	5.12	0.001 U	0.001 U	0.001 U	0.003	0.12	0.005 U	14.7	0.001 U	0.01 U	0.001 U	0.001 U	0.01 U
EH-61	6/15/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.005 U	1.35	0.001 U	0.01 U	0.393	0.001 U	0.01 U
EH-61	10/17/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.005 U	1.29	0.001 U	0.01 U	0.422	0.001 U	0.01 U
EH-61 (Dup)	10/17/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.005 U	1.28	0.001 U	0.01 U	0.421	0.001 U	0.01 U
EH-62	6/10/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001	0.001 U	0.01 U
EH-62 (Dup)	6/10/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001	0.001 U	0.01 U
EH-62	10/13/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002	0.001 U	0.01 U
EH-63	6/14/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U	0.001 U	0.01 U
EH-63 (Dup)	6/14/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U	0.001 U	0.01 U
EH-63	10/13/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001	0.001 U	0.01 U
EH-65	6/15/2016	0.003 U	0.382	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	4.86	0.001 U	0.01 U	0.125	0.001 U	0.01 U
EH-65	10/17/2016	0.003 U	0.392	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.005 U	3.24	0.001 U	0.01 U	0.169	0.001 U	0.01 U
EH-66	6/10/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U	0.001 U	0.01 U
EH-66	10/7/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U	0.001 U	0.01 U
EH-69	6/10/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.008	0.001 U	0.01 U
EH-69	10/11/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.005	0.001 U	0.01 U
EH-70	6/13/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.149	0.001 U	0.01 U
EH-70 (Low Flow)	10/12/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.124	0.001 U	0.01 U
EH-70 (Standard)	10/12/2016	0.003 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.128	0.001 U	0.01 U
MW-1	6/9/2016	0.003 U	0.004	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.002	0.001 U	0.01 U
MW-10	6/9/2016	0.003 U	0.009	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.003	0.001 U	0.01 U
MW-11	6/8/2016	0.003 U	0.017	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.003	0.001 U	0.01 U
MW-2	6/9/2016	0.003 U	0.011	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.39	0.001 U	0.01 U	0.001 U	0.001 U	0.01 U

		Dissolved (D) Metals													
Station ID	Sample Date	Sb (D)	As (D)	Be (D)	Cd (D)	Cr (D)	Cu (D)	Fe (D)	Pb (D)	Mn (D)	Hg (D)	Ni (D)	Se (D)	Tl (D)	Zn (D)
MW-3	6/9/2016	0.003 U	0.009	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.04	0.001 U	0.01 U	0.012	0.001 U	0.01 U
MW-4	6/9/2016	0.003 U	0.003	0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001	0.001 U	0.01 U
MW-4 (Dup)	6/9/2016	0.003 U	0.003	0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001	0.001 U	0.01 U
MW-5	6/9/2016	0.003 U	0.006	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001	0.001 U	0.01 U
MW-6	6/9/2016	0.003 U	0.055	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	2.41	0.001 U	0.01 U	0.004	0.001 U	0.01 U
MW-7	6/9/2016	0.003 U	0.015	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001 U	0.001 U	0.01 U
MW-8	6/9/2016	0.003 U	0.008	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001	0.001 U	0.01 U
MW-9	6/8/2016	0.003 U	0.006	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.005 U	0.01 U	0.001 U	0.01 U	0.001	0.001 U	0.01 U
PRB-2	6/13/2016	0.009	1.36	0.001 U	0.002	0.001	0.001	0.07	0.005 U	0.51	0.001 U	0.01 U	0.018	0.001 U	0.08
SDMW-2	6/15/2016	0.003 U	11.7	0.001 U	0.003	0.001 U	0.001 U	3.19	0.005 U	1.38	0.001 U	0.01 U	0.001	0.022	0.38
SDMW-2 (Dup)	6/15/2016	0.003 U	11.4	0.001 U	0.002	0.001 U	0.001 U	3.15	0.005 U	1.36	0.001 U	0.01 U	0.001 U	0.022	0.38
SDMW-2	9/1/2016	0.003 U	11.5	0.001 U	0.001	0.001 U	0.001 U	3.24	0.005 U	1.39	0.001 U	0.01 U	0.002	0.023	0.34
SDMW-2 (Dup)	9/1/2016	0.003 U	11.4	0.001 U	0.001	0.001 U	0.001 U	3.22	0.005 U	1.38	0.001 U	0.01 U	0.001	0.022	0.34
SDMW-2	10/12/2016	0.003 U	11.1	0.001 U	0.001 U	0.001 U	0.001 U	3.17	0.005 U	1.38	0.001 U	0.01 U	0.001	0.02	0.35
TW-1	2/25/2016	0.003 U	89.2	0.001 U	0.001	0.001 U	0.001 U	0.08	0.005 U	0.09	0.001 U	0.01 U	0.027	0.001 U	0.01 U
TW-1	6/15/2016	0.007	88.6	0.001 U	0.001 U	0.001 U	0.01	0.06	0.005 U	0.11	0.001 U	0.01 U	0.024	0.001 U	0.01 U
TW-1	10/13/2016	0.006	77.5	0.001 U	0.001	0.001 U	0.011	0.31	0.006	0.23	0.001 U	0.01 U	0.035	0.005	0.01 U
TW-2	10/12/2016	0.006	78.1	0.001 U	0.002 J	0.001 U	0.005	0.33	0.005 U	0.05	0.001 U	0.01 U	0.128 J	0.001 U	0.06
TW-2	10/12/2016	0.005	84.1	0.001 U	0.004 J	0.001 U	0.007	0.45	0.006	0.06	0.001 U	0.01 U	0.05 J	0.002	0.1

NOTES: All concentrations in mg/L except as indicated.
U = below laboratory reporting limit (associated value)
A = anomalous data point (historical inconsistency)
R = data point rejected during validation procedure
J = QC criterion exceeded; + = potential high bias

APPENDIX A2

2015/16 RESIDENTIAL WELL WATER QUALITY DATABASE

			Field Parameters							General Chemistry					Major Ions						
Map Key	Sample Date	Depth To Water (ft)	pH (s.u.)	SC (µmhos/cm)	Diss O_2 (mg/L)	ORP (mV)	E_H (mV)	Turbidity (NTU)	Water Temp (°C)	Lab pH (s.u.)	Lab SC (µmhos/cm)	Total Alkalinity as CaCO3	Total Suspended Solids	Total Dissolved Solids	Calcium	Magnesium	Sodium	Potassium	Bicarbonate	Chloride	Sulfate
1	5/28/2015		6.92	310	5.73	125	345	11.8	7.8	7.1	282	75	10 U	164	31	7	13	2	91	4	44
1	10/8/2015		6.77	266	1.23	150	367	0.7	9.6	7.2	266	83	10 U	170	29	6	13	3	100	3	43
2	6/1/2015		6.97	350	3.19	119	335	0.3	10.4	7.3	323	90	10 U	204	35	8	15	3	110	6	46
2	10/8/2015		6.83	306	4.87	194	411	0.2	9.9	7.2	306	88	10 U	190	35	8	14	3	110	4	54
3	6/3/2015		6.93	455	3.05	95	312	0.2	9.4	7.1	435	100	10 U	282	38	8	34	8	120	8	87
3	10/5/2015		6.58	394	2.39	149	365	0.2	10.6	7	408	100	10 U	264	36 J+	8 J+	31	10 J+	120	6	85
4	5/29/2015		6.84	337	3.11	122	338	1.1	10.2	7.1	304	87	10 U	178	35	8	14	3	110	5	45
4	10/8/2015		6.76	271	2.09	159	378	0.6	8.8	7.1	270	83	10 U	168	30	7	12	2	100	3	44
5	6/1/2015		7.01	348	3.36	82	299	0.5	10	7.3	318	89	10 U	199	35	8	15	3	110	5	48
6	6/1/2015		6.79	392	5	180	397	0.2	10.8	7	366	91	10 U	229	31	6	22	14	110	6	59
6	10/6/2015		6.66	358	2.48	166	377	0.2	15.2	7	364	110	10 U	224	35	7	23	16	130	5	61
7	6/1/2015	17	9.19	166	3.67	83	298	30.2	11	9	119	53	13	67	7	1	15	3	64	3	1 U
8	6/1/2015	19.97	7.04	340	3.49	81	298	0.7	10.3	7.2	313	84	10 U	195	33	7	14	3	100	5	48
8	10/8/2015	22.58	6.9	305	3.82	141	357	0.5	10.5	7.2	305	82	10 U	190	34	8	14	3	100	5	58
9	6/3/2015		6.89	464	2	31	248	0.2	10.2	7	443	100	10 U	289	44	10	31	4	120	6	97
9	10/6/2015		6.79	423	2.6	145	361	0.2	10.4	7.2	434	98	10 U	273	44	10	31	3	120	6	108
10	6/3/2015		7.01	321	4.03	56	274	2.5	9.1	7.1	295	81	10 U	185	32	7	14	3	98	5	45
10	10/6/2015		6.85	283	5.56	144	362	1.2	9	7.2	290	79	10 U	177	33	8	14	2	96	4	57
11	5/29/2015		7.05	482	3.91	148	365	0.7	9.8	7.2	462	110	10 U	304	57	12	18	5	140	5	96
11	10/6/2015		7.02	439	4.03	187	404	0.7	9.8	7.2	451	110	10 U	306	58	13	18	5	140	5	109
12	6/4/2015	29.48	7.19	756	5.31	97	313	2.7	10.5	7.8	732	140	10 U	490	89	20	31	5	170	19	193
12	6/4/2015	29.48	7.19	756	5.31	97	313	2.7	10.5	7.8	731	140	10 U	493	89	20	32	5	170	20	193
12	7/20/2015	27.71	7.05	731	6.97	125	341	2.7	11	7.3	739	140	10 U	497	87	19	32	5	170	20	192
12	10/5/2015	27.83	7.04	690	5.36	185	401	4.4	10.8	7.2	726	140	10 U	495	91 J+	20 J+	32	5 J+	170	19	200
12	12/21/2015	30.62	7.09	723	5.46	147		4.6	9.6	7.3	712	140	10 U	497	85	19	33	5	170	20	187
13	6/4/2015		7.13	774	5.44	76	292	0.3	10	7.8	745	130	10 U	501	91	20	31	5	160	21	208
13	7/20/2015		6.84	745	6.82	116	333	1.1	9.9	7.2	755	130	10 U	503	86	19	32	4	160	20	202
13	10/5/2015		6.74	713	5.31	194	411	1.1	9.9	7.2	740	130	10 U	503	94 J+	21 J+	32	5 J+	160	20	213
13	10/5/2015		6.74	713	5.31	194	411	1.1	9.9	7.2	739	130	10 U	499	94 J+	21 J+	32	5 J+	160	20	210
13	12/21/2015		7.05	736	5.24	120		1.1	9.5	7.2	727	130	10 U	501	88	19	32	5	160	21	198
14	6/4/2015	34.31	7.12	338	1.45	89	305	0.2	10.7	7.8	303	95	10 U	190	33	8	15	3	120	4	38
14	10/5/2015	32.2	6.96	274	1.63	185	401	0.3	10.8	7.2	283	86	10 U	178	31 J+	7 J+	15	3 J+	100	4	44
15	5/28/2015	10.6	7	305	5.32	122	342	0.7	7.5	7.1	281	75	10 U	165	31	7	13	3	91	4	44
15	10/8/2015	11.87	6.52	268	0.93	-297 A	-80 A	0.4	9.7	7.1	267	86	10 U	163	30	7	13	3	100	3	41
15	5/28/2015	10.6	7.3	321	4.83	96	316	22.3	7.3	7.4	282	78	10 U	163	32	7	13	2	94	4	43
16	6/1/2015		6.89	400	4.23	103	319	2.8	11.1	7.2	377	97	10 U	236	41	9	15	3	120	8	55
17	5/29/2015	22	9.93	544	3.13	149	364	73.3	11.8	9.8	502	100	24	258	2	1 U	100	4	80	79	1 U
18	5/29/2015		6.88	823	1.84	119	334	2.2	11.6	7.1	790	130	10 U	553	105	22	26	6	150	24	237
18	8/18/2015		6.59	793	1.81	186	401	0.8	11.6	7.1	817	130	10 U	573	101	23	25	6	150	24	241
18	10/6/2015		6.62	784	1.82	166	380	0.5	11.7	7.1	803	120	10 U	582	108	24	26	6	150	24	253
19	6/3/2015	23.88	7.2	560	2.24	103	319	0.4	10.8	7.3	544	130	10 U	350	66	15	21	3	160	8	118
19	10/6/2015	22.61	7.08	533	2.15	175	391	0.1	10.8	7.3	544	140	10 U	352	69	16	21	3	160	9	136
20	6/5/2015	46.31	7.81	278	1.3	2	205	75.1	21.9	7.6	227	93	110	120	28	4	11	4	110	9	4
21	6/5/2015	18.79	7.22	600	3.75	122	339	0.5	9.5	7.4	591	230	10 U	364	65	14	37	6	280	9	53
21	10/9/2015	20.04	7.2	573	3.46	174	392	0.6	9.4	7.4	571	210	10 U	358	62	13	35	6	260	8	73
22	10/9/2015	13.64	6.44	280	3.23	164	382	2.3	8.8	7.1	279	83	10 U	172	30	7	13	3	100	3	45
23	6/5/2015		7.58	766	8.11	-160	54	0.1	11.9	7.7	752	200	10 U	509	77	20	40	14	240	29	117
23	10/7/2015		7.5	686	8.19	152	367	0.1	11.6	7.7	700	190	10 U	498	69	18	38	14	230	24	109
24	6/5/2015		7.64	732	9.29	25	240	3.9	11.4	7.7	709	170	10 U	486	68	19	43	14	210	28	122
24	10/7/2015		7.36	702	9.22	137	352	2.7	11.2	7.7	715	170	10 U	505	70	19	44	14	200	27	132
25	6/5/2015	85.04	7.72	530	9.66	93	308	0.1	12.2	7.8	512	140	10 U	355	45	13	33	12	160	14	76
25	10/7/2015	85.17	7.46	503	9.72	198	412	0.3	12.1	7.7	508	130	10 U	369	46	13	34	12	160	14	85
26	5/29/2015		6.83	340	6.3	147	364	0.1	9.5	7	308	82	10 U	180	36	8	14	3	100	6	48
26	5/29/2015		6.83	340	6.3	147	364	0.1	9.5	7	307	82	10 U	181	36	8	14	3	99	5	48
26	10/8/2015		6.7	277	3.6	175	391	0.1	9.9	7.1	278	86	10 U	175	31	7	13	3	100	3	45
27	6/3/2015		7.06	330	5.01	93	308	0.1	12.1	7.5	300	93	10 U	197	33	8	14	3	110	5	38
27	10/9/2015	38.5	6.69	309	5.45	178	392	0.2	12.4	7.3	308	100	10 U	193	34	8	14	3	120	5	39
27	10/9/2015	38.5	6.69	309	5.45	178	392	0.2	12.4	7.3	309	100	10 U	188	34	8	14	3	120	5	38
28	6/3/2015		7.16	333	8.86	91	308	0.2	9.9	7.2	306	86	10 U	193	34	8	13	3	100	5	43
28	10/9/2015		7.14	303	8.48	176	393	3.1	9.9	7.3	303	86	10 U	188	34	8	13	3	100	5	45
29	6/3/2015		7.06	318	6.16	73	291	25.4	9.1	7.1	290	82	10 U	188	32	7	14	3	100	4	43
29	10/9/2015		7.06	273	7.04	-301 A	-83 A	13.2	9.3	7.3	273	79	10 U	167	29	6	13	3	96	3	41

NOTES: All concentrations in mg/L except as indicated.
U = below laboratory reporting limit (associated value)
A = anomalous data point (historical inconsistency)
R = data point rejected during validation procedure
J+ = QC criterion exceeded; potential high bias
Locations shown on Exhibit 1

		Dissolved (D) and Total (T) Metals																									
Map Key	Sample Date	Sb (D)	Sb (T)	As (D)	As (T)	Be (D)	Be (T)	Cd (D)	Cd (T)	Cr (D)	Cr (T)	Cu (D)	Cu (T)	Fe (D)	Fe (T)	Pb (D)	Pb (T)	Mn (D)	Mn (T)	Hg (D)	Hg (T)	Ni (D)	Ni (T)	Se (D)	Se (T)	Tl (D)	Tl (T)	Zn (D)	Zn (T)
1	5/28/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.097	0.176	0.05	0.9	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01
1	10/8/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.068	0.084	0.04	0.32	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U
2	6/1/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.009	0.01	0.02 U	0.02 U	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.002	0.002	0.001 U	0.001 U	0.01 U	0.01 U
2	10/8/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.018	0.018	0.02 U	0.02 U	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.001	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U
3	6/3/2015	0.003 U	0.003 U	0.031	0.031	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.086 R	0.008 R	0.02 U	0.05	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.013	0.012	0.001 U	0.001 U	0.06	0.01
3	10/5/2015	0.003 U	0.003 U	0.038	0.041	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.147 R	0.084 R	0.02	0.07	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.008	0.008	0.001 U	0.001 U	0.08	0.05
4	5/29/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.008	0.008	0.03	0.1	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.0001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U
4	10/8/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.007	0.007	0.07	0.03	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U
5	6/1/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.004	0.02 U	0.07	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.002	0.001	0.001 U	0.001 U	0.01 U	0.01 U
6	6/1/2015	0.003	0.003	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.024	0.027	0.02 U	0.02 U	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.006	0.006	0.001 U	0.001 U	0.01 U	0.01 U
6	10/6/2015	0.004	0.004	0.002 U	0.002	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.034	0.031	0.02 U	0.03	0.005 U	0.005 U	0.02	0.02	0.001 U	0.001 U	0.01 U	0.01 U	0.002	0.002	0.001 U	0.001 U	0.01	0.01
7	6/1/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.003	0.03	5.24	0.005 U	0.005 U	0.01 U	0.07	0.001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U
8	6/1/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.011	0.014	0.06	0.53	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.002	0.002	0.001 U	0.001 U	0.01 U	0.01
8	10/8/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.007	0.01	0.05	0.35	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.001	0.001	0.001 U	0.001 U	0.01 U	0.01 U
9	6/3/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.03	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.009	0.007	0.001 U	0.001 U	0.01 U	0.01 U
9	10/6/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.002	0.004	0.04	0.07	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.008	0.008	0.001 U	0.001 U	0.01	0.02
10	6/3/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.002	0.02	0.16	0.005 U	0.005 U	0.01 U	0.01	0.001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01	0.01
10	10/6/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.002	0.003	0.02	0.15	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001	0.001 U	0.001 U	0.01	0.01
11	5/29/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.002	0.001	0.02 U	0.08	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.0001 U	0.01 U	0.01 U	0.003	0.002	0.001 U	0.001 U	0.02	0.02
11	10/6/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001	0.002	0.02 U	0.16	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.002	0.002	0.001 U	0.001 U	0.02	0.01
12	6/4/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.007	0.008	0.02 U	0.31	0.005 U	0.005 U	0.01 U	0.02	0.001 U	0.001 U	0.01 U	0.01 U	0.046	0.044	0.001 U	0.001 U	0.01 U	0.01 U
12	6/4/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.007	0.008	0.02	0.29	0.005 U	0.005 U	0.01 U	0.02	0.001 U	0.001 U	0.01 U	0.01 U	0.05	0.043	0.001 U	0.001 U	0.01 U	0.01
12	7/20/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.006	0.012	0.02 U	0.19	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.046	0.042	0.001 U	0.001 U	0.01 U	0.01
12	10/5/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.006	0.009	0.02 U	0.33	0.005 U	0.005 U	0.01 U	0.02	0.001 U	0.001 U	0.01 U	0.01 U	0.042	0.041	0.001 U	0.001 U	0.01 U	0.01 U
12	12/21/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01	0.011	0.02 U	0.41	0.005 U	0.005 U	0.01 U	0.03	0.001 U	0.001 U	0.01 U	0.01 U	0.042	0.04	0.001 U	0.001 U	0.01 U	0.01 U
13	6/4/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.002	0.003	0.03	0.05	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.052	0.047	0.001 U	0.001 U	0.01 U	0.01 U
13	7/20/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001	0.001	0.02 U	0.04	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.051	0.044	0.001 U	0.001 U	0.01 U	0.01 U
13	10/5/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001	0.002	0.02 U	0.02	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.043	0.041	0.001 U	0.001 U	0.01 U	0.01 U
13	10/5/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001	0.002	0.02 U	0.02	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.043	0.043	0.001 U	0.001 U	0.01 U	0.01 U
13	12/21/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001	0.001	0.02 U	0.02	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.046	0.042	0.001 U	0.001 U	0.01 U	0.01 U
14	6/4/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.002	0.004	0.02 U	0.09	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U
14	10/5/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.003	0.004	0.02 U	0.1	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U
15	5/28/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.009	0.01	0.02 U	0.07	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01	0.01
15	10/8/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005	0.007	0.02 U	0.04	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U
15	5/28/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001	0.07	2.95	0.005 U	0.005 U	0.01 U	0.24	0.001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U
16	6/1/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.003	0.003	0.02	0.11	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.002	0.002	0.001 U	0.001 U	0.01 U	0.01 U
17	5/29/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001	0.22	11.6	0.005 U	0.005 U	0.01 U	0.12	0.001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01
18	5/29/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.002	0.003	0.02 U	0.22	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.0001 U	0.01 U	0.01 U	0.028	0.026	0.001 U	0.001 U	0.02	0.02
18	8/18/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.002	0.005	0.04	0.06	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.032	0.029	0.001 U	0.001 U	0.04	0.01
18	10/6/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.002	0.003	0.02 U	0.05	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.031	0.031	0.001 U	0.001 U	0.02	0.02
19	6/3/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.014	0.025	0.02 U	0.16	0.005 U	0.005 U	0.01 U	0.01	0.001 U	0.001 U	0.01 U	0.01 U	0.002	0.002	0.001 U	0.001 U	0.01 U	0.01 U
19	10/6/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02	0.02	0.02 U	0.02 U	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.002	0.002	0.001 U	0.001 U	0.01 U	0.01 U
20	6/5/2015	0.003 U	0.003 U	0.002 U	0.005	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001	0.001 U	0.017	0.02 U	53.3	0.005 U	0.018	0.22	0.65	0.001 U	0.001 U	0.01 U	0.02	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	1.47
21	6/5/2015	0.003 U	0.003 U	0.014	0.014	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.019	0.023	0.02 U	0.03 UJ	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.03	0.03
21	10/9/2015	0.003 U	0.003 U	0.013	0.014	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.017	0.018	0.02 U	0.08	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01	0.01
22	10/9/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.38	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U
23	6/5/2015	0.003 U	0.003 U	0.016	0.016	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.02 U	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.003	0.002	0.001 U	0.001 U	0.01 U	0.01 U
23	10/7/2015	0.003 U	0.003 U	0.016	0.016	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001	0.002	0.02 U	0.02 U	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.002	0.003	0.001 U	0.001 U	0.01 U	0.01 U
24	6/5/2015	0.003 U	0.003 U	0.017	0.017	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001	0.04	0.5	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.003	0.003	0.001 U	0.001 U	0.01	0.01
24	10/7/2015	0.003 U	0.003 U	0.016	0.017	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.05	0.67	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.002	0.003	0.001 U	0.001 U	0.01 U	0.01 U
25	6/5/2015	0.003 U	0.003 U	0.018	0.018	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.02 U	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.002	0.002	0.001 U	0.001 U	0.01 U	0.01 U
25	10/7/2015	0.003 U	0.003 U	0.017	0.017	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.02 U	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.002	0.002	0.001 U	0.001 U	0.01 U	0.01 U
26	5/29/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.037	0.038	0.02 U	0.04	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01
26	5/29/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.037	0.038	0.02 U	0.02 U	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01
26	10/8/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.048	0.049	0.02 U	0.02 U	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U
27	6/3/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.02 U	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U
27	10/9/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.02 U	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U
27	10/9/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.02 U	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U
28	6/3/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001	0.002	0.02 U	0.02 U	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U
28	10/9/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.02 U	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U
29	6/3/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001	0.002	0.04	0.14	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01	0.01
29	10/9/2015	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001	0.002	0.02 U	0.06	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U

NOTES: All concentrations in mg/L except as indicated.
U = below laboratory reporting limit (associated value)
A = anomalous data point (historical inconsistency)
R = data point rejected during validation procedure
J+ = QC criterion exceeded; potential high bias
Locations shown on Exhibit 1

			Field Parameters							General Chemistry					Major Ions							
Map Key	Sample Date	Depth To Water (ft)	pH (s.u.)	SC (µmhos/cm)	Diss O_2 (mg/L)	ORP (mV)	E_H (mV)	Turbidity (NTU)	Water Temp (°C)	Lab pH (s.u.)	Lab SC (µmhos/cm)	Total Alkalinity as CaCO3	Total Suspended Solids	Total Dissolved Solids	Calcium	Magnesium	Sodium	Potassium	Bicarbonate	Chloride	Sulfate	Bromide
4	5/24/2016		6.97	356	5.43	131	348	1.2	10.3	7.1	296	80	10 U	190	31	7	13	3	97	5	53	0.05 U
4	10/5/2016		6.68	260	2.47	110	327	0.5	8.8	7.2	266	79	10 U	164	29	7	12	2	96	3	36	0.05 U
4	10/5/2016		6.68	260	2.47	110	327	0.5	8.8	7.2	266	79	10 U	170	29	7	13	2	96	3	36	0.05 U
5	5/24/2016		7.1	372	3.22	145	362	1.2	10.1	7.2	310	85	10 U	184	33	7	14	3	100	4	55	0.05 U
5	5/24/2016									7.2	310	86	10 U	197	33	8	14	3	100	4	54	0.05 U
5	9/20/2016		6.59	305	5.05	131	348	0.5	9.8	7.2	306	84	10 U	200	35	8	15	3	100	4	55	0.05 U
6	5/24/2016		6.81	406	4.37	182	398	0.1	10.8	7.3	336	84	10 U	215	29	6	19	13	100	6	63	0.05 U
6	10/6/2016		6.63	332	2.18	153	364	0.2	14.8	7.5	343	95	10 U	218	31	6	19	15	120	5	49	0.05 U
9	5/24/2016		6.98	517	2.17	121	338	0.3	10.2	7.2	428	99	10 U	275	40	9	30	3	120	6	100	0.11
9	10/6/2016		6.76	401	2.16	102	318	0.4	10.4	7.2	411	96	10 U	269	39	9	29	3	120	6	86	0.15
10	5/23/2016		7.1	346	4.14	137	355	0.1	8.7	7.2	284	80	10 U	183	30	7	13	2	97	4	51	0.05 U
10	10/7/2016		6.85	280	5.73	97	314	0.8	8.9	7.2	292	76	10 U	182	31	7	13	3	92	4	45	0.05 U
11	5/23/2016		7.17	570	4.03	127	344	3.2	9.3	7.2	464	110	10 U	312	56	12	18	5	140	5	110	0.19
11	10/5/2016		6.88	459	3.49	128	344	1.5	10.1	7.2	469	110	10 U	320	55	12	18	5	140	6	98	0.26
12	1/28/2016	32.3	7.18	340	5.11	59		19.8	9.5	7.3	351	94	10 U	229	41	9	16	3	110	6	71	
12	5/23/2016	32.82	7.27	420	5.3	162	379	64.8	10.2	7.3	343	93	10 U	210	38	9	16	3	110	5	66	0.05 U
12	10/4/2016	30.05	7.02	326	4.33	120	335	2.1	10.8	7.4	345	92	10 U	223	38	9	16	3	110	6	56	0.05 U
13	1/28/2016	35.7	7.12	283	3.97	53		1.1	10.1	7.3	295	84	10 U	188	33	8	14	3	100	4	55	
13	5/23/2016		7.2	355	3.46	206	423	0.5	10.1	7.3	291	84	10 U	178	32	7	14	3	100	4	50	0.05 U
13	10/4/2016	31.42	6.92	282	3.55	132	348	0.4	10.2	7.3	294	84	10 U	188	32	7	14	3	100	4	41	0.05 U
14	5/19/2016	36.68	7.14	285	2.13	138	353	0.7	11.3	7.3	293	88	10 U	216	31	7	14	3	110	4	46	0.05 U
14	10/4/2016	33.83	6.95	269	1.79	162	376	0.2	11.7	7.3	280	85	10 U	172	30	6	14	3	100	4	35	0.05 U
NS*	5/26/2016	47.89	7.21	320	5.62	174	391	3.4	9.6	7.3	273	80	10 U	166	29	7	13	3	98	3	48	0.05 U
NS*	5/26/2016	47.89	7.13	321	3.51	132	350	2.5	9.1	7.3	273	80	10 U	169	29	7	12	2	97	3	48	0.05 U
16	9/20/2016		6.59	361	3.93	116	332	0.3	10.9	7.1	363	96	10 U	237	42	10	15	3	120	7	63	0.05 U
18	5/24/2016		6.95	986	1.73	172	387	1.9	11.5	7	813	130	10 U	576	104	23	26	6	150	23	254	3.47
18	10/6/2016		6.79	786	1.58	119	333	1.3	11.6	7.2	799	130	10 U	604	104	23	26	6	160	24	245	3.24
19	5/24/2016	22.3	7.25	649	2.43	173	389	0.4	10.9	7.4	536	140	10 U	343	64	15	21	3	170	7	120	0.8
19	10/6/2016		7.03	498	2.65	132	348	0.2	10.8	7.4	503	140	10 U	334	61	14	20	3	170	7	102	0.6
21	5/24/2016	19.21	7.31	690	3.88	126	344	0.3	9	7.4	565	210	10 U	359	64	13	32	6	260	8	68	0.05 U
21	10/6/2016		7.12	460	2.89	124	341	0.2	8.9	7.4	464	180	10 U	298	53	11	27	6	220	6	44	0.05 U
23	5/26/2016		7.65	849	8.5	199	414	1.2	11.5	7.7	716	190	10 U	478	71	19	36	13	230	27	123	0.23
23	10/6/2016		7.44	702	6.9	167	381	0.2	11.6	7.7	705	190	10 U	494	73	19	39	14	230	27	109	0.23
24	5/26/2016		7.7	832	9.23	68	283	43.9	11.4	7.7	704	170	10 U	482	67	18	39	13	210	28	134	0.26
24	10/7/2016		7.46	674	8.88	67	281	2.4	11.4	7.8	633	160	10 U	427	65	18	40	14	190	23	97	0.18
25	5/26/2016	85.61	7.28	606	9.6	192	406	33.1	12	7.8	512	140	10 U	344	45	12	31	11	170	15	90	0.18
25	10/7/2016	85.84	7.51	504	8.02	89	303	0.2	12.1	7.8	523	140	10 U	357	47	13	33	12	170	15	78	0.11
27	10/5/2016		6.93	306	5.06	146	359	0.4	12.6	7.4	313	100	10 U	187	35	7	15	3	120	6	32	0.05 U
28	5/23/2016		7.23	358	7.96	230	448	2.6	9.7	7.2	294	85	10 U	183	33	7	13	3	100	5	49	0.05 U
29	5/23/2016	47.77	7.21	348	6.89	224	443	18.6	8.6	7.2	284	82	10 U	176	31	7	13	3	100	4	49	0.05 U

NOTES: All concentrations in mg/L except as indicated.
U = below laboratory reporting limit (associated value)
Locations shown on Exhibit 1
NS* - non-CAMP location sampled at homeowner request, not shown on Exhibit 1

		Dissolved (D) and Total (T) Metals																									
Map Key	Sample Date	Sb (D)	Sb (T)	As (D)	As (T)	Be (D)	Be (T)	Cd (D)	Cd (T)	Cr (D)	Cr (T)	Cu (D)	Cu (T)	Fe (D)	Fe (T)	Pb (D)	Pb (T)	Mn (D)	Mn (T)	Hg (D)	Hg (T)	Ni (D)	Ni (T)	Se (D)	Se (T)	Tl (D)	Tl (T)	Zn (D)	Zn (T)
4	5/24/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.007	0.008	0.02	0.09 J	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U
4	10/5/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.007	0.011	0.07	0.52	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U
4	10/5/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.007	0.011	0.08	0.49	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U
5	5/24/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.16 J	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.002	0.002	0.001 U	0.001 U	0.01 U	0.01 U
5	5/24/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.12 J	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.002	0.002	0.001 U	0.001 U	0.01 U	0.01 U
5	9/20/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.03	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.002	0.002	0.001 U	0.001 U	0.01 U	0.01 U
6	5/24/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.044	0.062	0.02 U	0.02 U UJ	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.004	0.003	0.001 U	0.001 U	0.01 U	0.01 U
6	10/6/2016	0.004	0.003	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.036	0.035	0.02 U	0.02 U	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.002	0.002	0.001 U	0.001 U	0.01 U	0.01 U
9	5/24/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.06 J	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.008	0.007	0.001 U	0.001 U	0.01 U	0.01 U
9	10/6/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.05	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.006	0.006	0.001 U	0.001 U	0.01 U	0.01 U
10	5/23/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.002	0.004	0.03	0.38	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01	0.01
10	10/7/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001	0.002	0.02 U	0.12	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01	0.02
11	5/23/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001	0.002	0.03	0.53	0.005 U	0.005 U	0.01	0.01	0.0001 U	0.001 U	0.01 U	0.01 U	0.003	0.003	0.001 U	0.001 U	0.02	0.02
11	10/5/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001	0.004	0.03	1.53	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.003	0.002	0.001 U	0.001 U	0.02	0.02
12	1/28/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.008	0.039	0.08	1.79	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.004	0.004	0.001 U	0.001 U	0.01	0.05
12	5/23/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.009	0.011	0.02 U	0.45	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.004	0.003	0.001 U	0.001 U	0.01 U	0.01 U
12	10/4/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01	0.011	0.02	0.19	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.004	0.003	0.001 U	0.001 U	0.01 U	0.01 U
13	1/28/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.07	0.005 U	0.005 U	0.01 U	0.01 U	0.001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U
13	5/23/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001	0.002	0.02 U	0.03	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U
13	10/4/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.002	0.002	0.02 U	0.03	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U
14	5/19/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.003	0.004	0.02 U	0.31	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U
14	10/4/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.002	0.002	0.02 U	0.07	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U
NS*	5/26/2016		0.003 U		0.002 U		0.001 U		0.001 U		0.001 U		0.011		0.04		0.005 U		0.01 U		0.001 U		0.01 U		0.001 U		0.001 U		0.02
NS*	5/26/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.003	0.009	0.02 U	0.24	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01
16	9/20/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.002	0.002	0.02 U	0.02	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.002	0.002	0.001 U	0.001 U	0.01 U	0.01 U
18	5/24/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.003	0.005	0.02 U	0.31 J	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.036	0.033	0.001 U	0.001 U	0.03	0.02
18	10/6/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.002	0.003	0.02 U	0.09	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.037	0.032	0.001 U	0.001 U	0.02	0.02
19	5/24/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.024	0.017	0.02 U	0.02 U UJ	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.002	0.002	0.001 U	0.001 U	0.01 U	0.01 U
19	10/6/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.016	0.008	0.02 U	0.02 U	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.002	0.002	0.001 U	0.001 U	0.01 U	0.01 U
21	5/24/2016	0.003 U	0.003 U	0.014	0.013	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.012	0.011	0.02 U	0.02 J	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01	0.01
21	10/6/2016	0.003 U	0.003 U	0.014	0.012	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.007	0.01	0.02 U	0.02 U	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U
23	5/26/2016	0.003 U	0.003 U	0.015	0.016	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.02 U	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.002	0.002	0.001 U	0.001 U	0.01 U	0.01 U
23	10/6/2016	0.003 U	0.003 U	0.016	0.015	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.02 U	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.002	0.002	0.001 U	0.001 U	0.01 U	0.01 U
24	5/26/2016	0.003 U	0.003 U	0.016	0.017	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.002	0.04	0.46	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.002	0.002	0.001 U	0.001 U	0.01	0.11
24	10/7/2016	0.003 U	0.003 U	0.017	0.017	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.002	0.02 U	0.15	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.002	0.002	0.001 U	0.001 U	0.01 U	0.01
25	5/26/2016	0.003 U	0.003 U	0.018	0.017	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.02 U	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.002	0.002	0.001 U	0.001 U	0.01 U	0.01 U
25	10/7/2016	0.003 U	0.003 U	0.017	0.017	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.02 U	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.002	0.002	0.001 U	0.001 U	0.01 U	0.01 U
27	10/5/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.02 U	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U
28	5/23/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.02 U	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U
29	5/23/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.02 U	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U

NOTES: All concentrations in mg/L except as indicated.
U = below laboratory reporting limit (associated value)
Locations shown on Exhibit 1
NS* - non-CAMP location sampled at homeowner request, not shown on Exhibit 1

2016 Downgradient Selenium Area Residential Well Database -- East Helena Facility

			Field Parameters							General Chemistry					Major Ions							
Map Key	Sample Date	Depth To Water (ft)	pH (s.u.)	SC (µmhos/cm)	Diss O_2 (mg/L)	ORP (mV)	E_H (mV)	Turbidity (NTU)	Water Temp (°C)	Lab pH (s.u.)	Lab SC (µmhos/cm)	Total Alkalinity as CaCO3	Total Suspended Solids	Total Dissolved Solids	Calcium	Magnesium	Sodium	Potassium	Bicarbonate	Chloride	Sulfate	Bromide
D1	5/19/2016	27.1	7.03	460	9.13	-3	213	112.6	10.2	7.2	471	110	10 U	348	52	11	23	3	130	9	109	0.94
D2	5/18/2016	33.21	7.04	285	3.4	91	307	3.2	10.8	7.2	297	81	10 U	186	31	7	14	3	98	4	53	0.05 U
D3	5/18/2016	34.01	7.13	286	3.42	134	350	10.2	10.8	7.3	301	83	10 U	198	31	7	14	3	100	4	50	0.05 U
D4	5/18/2016		7.06	304	3.63	125	341	0.8	10.6	7.3	317	87	10 U	206	34	7	15	3	110	5	55	0.05 U
D5	5/19/2016	30.88	6.97	327	3.86	152	369	3.1	10.2	7.2	336	86	10 U	262	37	8	15	3	100	5	68	0.05 U
D6	5/19/2016	28.45	6.98	403	4.53	141	357	93	10.2	7.6	413	98	10 U	309	47	10	18	3	120	7	94	0.45
D7	5/18/2016	27.69	6.97	470	1.53	136	352	0.4	10.9	7.1	487	170	10 U	306	56	12	22	4	200	11	58	0.05 U
D8	5/19/2016	22.69	7.32	417	6.34	203	420	0.5	10.4	7.4	430	130	10 U	310	49	11	18	4	160	6	67	0.05 U
D9	5/23/2016	27.67	7.02	503	4.34	197	413	61.7	10.1	7.1	413	100	10 U	264	46	10	19	3	120	7	89	0.41

All concentrations in mg/L except as indicated.
U = below laboratory reporting limit (associated value)
Locations shown on Figure 2-2

		Dissolved (D) and Total (T) Metals																									
Map Key	Sample Date	Sb (D)	Sb (T)	As (D)	As (T)	Be (D)	Be (T)	Cd (D)	Cd (T)	Cr (D)	Cr (T)	Cu (D)	Cu (T)	Fe (D)	Fe (T)	Pb (D)	Pb (T)	Mn (D)	Mn (T)	Hg (D)	Hg (T)	Ni (D)	Ni (T)	Se (D)	Se (T)	Tl (D)	Tl (T)	Zn (D)	Zn (T)
D1	5/19/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02	0.43	2.12	0.005 U	0.009	0.04	0.05	0.0001 U	0.001 U	0.01 U	0.01 U	0.009	0.009	0.001 U	0.001 U	0.01 U	0.01 U
D2	5/18/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.003	0.02 U	1.19	0.005 U	0.005 U	0.01 U	0.01	0.0001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U
D3	5/18/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.05	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01	0.01
D4	5/18/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.54	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U
D5	5/19/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.006	0.007	0.02 U	0.3	0.005 U	0.005 U	0.01 U	0.01	0.0001 U	0.001 U	0.01 U	0.01 U	0.002	0.002	0.001 U	0.001 U	0.01 U	0.01 U
D6	5/19/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.25	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.005	0.004	0.001 U	0.001 U	0.01 U	0.01 U
D7	5/18/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.03	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02	0.02
D8	5/19/2016	0.003 U	0.003 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001	0.002	0.02 U	0.02	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.003	0.003	0.001 U	0.001 U	0.01 U	0.01 U
D9	5/23/2016	0.003 U	0.003 U	0.002 U	0.002	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.007	0.02	1.74	0.005 U	0.005 U	0.01 U	0.01	0.0001 U	0.001 U	0.01 U	0.01 U	0.005	0.005	0.001 U	0.001 U	0.01 U	0.01 U

NOTES: All concentrations in mg/L except as indicated.
U = below laboratory reporting limit (associated value)
Locations shown on Figure 2-2

2016 Seaver Park Residential Well Database -- East Helena Facility

			Field Parameters							General Chemistry					Major Ions							
Map Key	Sample Date	Depth To Water (ft)	pH (s.u.)	SC (µmhos/cm)	Diss O_2 (mg/L)	ORP (mV)	E_H (mV)	Turbidity (NTU)	Water Temp (°C)	Lab pH (s.u.)	Lab SC (µmhos/cm)	Total Alkalinity as CaCO3	Total Suspended Solids	Total Dissolved Solids	Calcium	Magnesium	Sodium	Potassium	Bicarbonate	Chloride	Sulfate	Bromide
S1	5/17/2016	56.73	7.54	723	8.49	30	244	3.8	11.9	7.7	742	230	10 U	472	53	42	38	8	280	30	112	0.21
S2	5/17/2016		7.62	932	13.5	145	361	3.2	11.1	7.7	958	240	10 U	624	73	49	47	13	290	70	144	0.17
S2 (Dup)	5/17/2016									7.7	958	240	10 U	627	74	50	47	12	290	71	145	0.18
S3	5/17/2016	63.77	7.68	644	8.69	117	332	0.3	12	7.8	643	170	10 U	431	53	25	38	11	210	33	99	0.05 U
S4	5/17/2016	59.77	7.77	709	8.84	90	305	0.8	11.2	7.9	686	170	10 U	460	57	15	60	13	210	39	103	0.23
S5	5/17/2016	58.13	7.53	782	6.8	150	365	2	11.6	7.7	787	180	10 U	541	76	17	62	11	220	39	157	0.28
S6	5/18/2016		7.34	3074	8.11	138	354	10.4	10.6	7.5	3180	320	10 U	2320	292	106	203	28	390	437	585	0.05 U
S7	5/17/2016	44.12	7.21	510	6.31	177	392	8.6	11.7	7.4	522	150	10 U	365	57	12	30	8	180	19	79	0.17

NOTES: All concentrations in mg/L except as indicated.
U = below laboratory reporting limit (associated value)
Locations shown on Figure 2-2

		Dissolved (D) and Total (T) Metals																									
Map Key	Sample Date	Sb (D)	Sb (T)	As (D)	As (T)	Be (D)	Be (T)	Cd (D)	Cd (T)	Cr (D)	Cr (T)	Cu (D)	Cu (T)	Fe (D)	Fe (T)	Pb (D)	Pb (T)	Mn (D)	Mn (T)	Hg (D)	Hg (T)	Ni (D)	Ni (T)	Se (D)	Se (T)	Tl (D)	Tl (T)	Zn (D)	Zn (T)
S1	5/17/2016	0.003 U	0.003 U	0.01	0.01	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.002	0.001	0.03	0.11	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.004	0.004	0.001 U	0.001 U	0.01 U	0.01 U
S2	5/17/2016	0.003 U	0.003 U	0.008	0.009	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.35	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.003	0.003	0.001 U	0.001 U	0.01 U	0.01 U
S2 (Dup)	5/17/2016	0.003 U	0.003 U	0.008	0.009	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.34	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.003	0.003	0.001 U	0.001 U	0.01 U	0.01 U
S3	5/17/2016	0.003 U	0.003 U	0.014	0.014	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.02 U	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.002	0.002	0.001 U	0.001 U	0.01 U	0.01 U
S4	5/17/2016	0.003 U	0.003 U	0.026	0.025	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001	0.002	0.02 U	0.02 U	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.003	0.002	0.001 U	0.001 U	0.01 U	0.01 U
S5	5/17/2016	0.003 U	0.003 U	0.018	0.018	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U	0.02 U	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.003	0.003	0.001 U	0.001 U	0.01 U	0.01 U
S6	5/18/2016	0.003 U	0.003 U	0.033	0.031	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.002	0.002	0.02 U	0.02	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.005	0.004	0.001 U	0.001 U	0.01 U	0.01 U
S7	5/17/2016	0.003 U	0.003 U	0.005	0.005	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001	0.02 U	0.02 U	0.005 U	0.005 U	0.01 U	0.01 U	0.0001 U	0.001 U	0.01 U	0.01 U	0.002	0.002	0.001 U	0.001 U	0.01 U	0.01 U

NOTES: All concentrations in mg/L except as indicated.
U = below laboratory reporting limit (associated value)
Locations shown on Figure 2-2

APPENDIX A3

2015/16 SURFACE WATER QUALITY DATABASE

2015-2016 Surface Water Quality Database -- East Helena Facility

Station ID	Sample Date	Field pH (s.u.)	Field SC (µmhos/cm)	Diss O_2 (mg/L)	Water Temp (°C)	Flow (cfs)	Lab pH (s.u.)	Lab SC (µmhos/cm)	Total Alkalinity as CaCO3	Total Suspended Solids	Total Dissolved Solids	Calcium	Magnesium	Sodium	Potassium	Bicarbonate	Chloride	Sulfate
Former PPC-BD	6/12/2015	6.9	1020	8.38	19.6	0.022	7.4	1030	140	10 U	767	122	26	47	6	170	7	394
Former PPC-BD	10/14/2015	7.49	882	8.11	11.3	0.056	7.4	955	110	10 U	695	115	24	45	8	130	8	359
GP-5	6/12/2015	NM	NM	NM	NM	2.0	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
GP-5	10/14/2015	NM	NM	NM	NM	0.95	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
GP-5	6/7/2016	7.45	155	8.03	9.7	1.65	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
GP-5	10/7/2016	7.34	282	6.15	12.0	1.13	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
LOWER LAKE	6/12/2015	7.67	1246	8.44	22.7	POND	8.2	1260	74	10 U	959	148	34	67	10	90	10	566
LOWER LAKE (Dup)	6/12/2015	7.69	1247	8.46	22.7	POND	8.2	1260	74	10 U	952	149	34	67	10	89	11	569
LOWER LAKE	10/14/2015	7.78	642	8.96	11.5	POND	8	667	110	10 U	465	84	18	25	6	140	6	210
LOWER LAKE	6/7/2016	7.91	859	7.35	25.3	POND	8.0	867	97	35	664	110	22	35	8	120	8	363
LOWER LAKE	10/7/2016	7.97	1043	15.79	7.8	POND	8.1	1120	97	51	862	147	34	44	7	120	11	483
PPC-10	6/12/2015	7.21	159	8.94	13.2	108	7.9	163	52	18	115	18	4	7	2	63	2	17
PPC-10	10/14/2015	7.69	304	11.62	8.9	23.5	8.1	321	90	10 U	211	35	8	15	3	110	5	53
PPC-10	6/7/2016	7.88	131	10.1	14.7	101	8.0	135	42	13	95	15	3	5	1	51	1	18
PPC-10	10/7/2016	7.61	265	10.94	7.0	28.7	8.1	274	77	10 U	185	29	7	14	3	93	4	39
PPC-36A	6/12/2015	7.29	158	8.96	13.2	120	7.8	162	52	16	116	18	4	6	2	63	2	17
PPC-36A (Dup)	6/12/2015	7.28	158	8.98	13.2	120	7.9	162	51	17	112	18	4	6	2	62	2	17
PPC-36A	10/14/2015	7.77	306	10.07	9.2	27.5	8.1	318	89	10 U	208	36	8	15	3	110	4	55
PPC-36A	6/7/2016	7.86	131	10.02	15.1	113	8.0	134	42	10	99	15	3	5	1	50	1	18
PPC-36A (Dup)	6/7/2016	7.86	130	10.02	15.1	113	8.0	134	42	10	96	15	3	5	1	50	1	18
PPC-36A	10/7/2016	7.98	264	10.34	7.3	36.5	8.0	271	76	12	186	28	7	13	3	92	4	39
PPC-3A	6/12/2015	7.55	158	8.65	13.8	136	7.9	161	52	15	112	18	4	6	2	63	2	17
PPC-3A	10/14/2015	7.82	300	9.47	11.1	30.6	8.1	313	88	10 U	208	35	8	14	3	110	4	54
PPC-3A	6/7/2016	7.89	131	9.26	16.3	134	8.0	134	41	10 U	98	15	3	5	1	50	1	18
PPC-3A	10/7/2016	7.94	259	10.15	7.9	37.1	8.0	265	75	10 U	178	28	6	12	3	91	4	38
PPC-5	6/12/2015	7.47	158	8.89	13.6	136	7.9	161	52	15	110	18	4	6	2	62	2	17
PPC-5	10/14/2015	7.81	293	9.93	10.3	29.5	8.1	315	89	10 U	210	34	8	14	3	110	4	54
PPC-5 (Dup)	10/14/2015	7.81	293	9.94	10.3	29.5	8.2	314	89	10 U	203	36	8	14	3	110	4	53
PPC-5	6/7/2016	7.83	128	9.71	16.1	143	8.0	134	42	12	99	15	3	5	1	51	1	18
PPC-5	10/7/2016	7.99	263	10.50	7.9	38.2	8.0	270	77	20	184	29	7	13	3	93	4	39
PPC-5 (Dup)	10/7/2016	7.99	263	10.49	7.9	38.2	8.0	270	77	21	182	29	7	13	3	93	4	39
PPC-7	6/12/2015	7.45	156	8.63	13.4	135	7.9	162	52	14	111	19	4	6	2	63	2	17
PPC-7	10/14/2015	7.8	307	9.9	9.7	31.1	8.2	317	89	10 U	208	34	8	15	3	110	4	54
PPC-7	6/7/2016	7.86	130	9.58	16.0	139	8.0	135	41	11	95	15	3	6	2	50	1	18
PPC-7	10/7/2016	7.95	262	10.64	7.6	37.8	8.0	270	77	17	184	29	7	13	3	93	4	38
PPCB-1	6/12/2015	7.48	158	8.75	13.7	NM	7.9	161	52	16	112	19	4	6	2	63	2	17
PPCB-1	10/14/2015	7.9	300	9.94	11	31	8.2	314	90	10 U	210	36	8	14	3	110	4	56
PPCB-1	6/7/2016	8.00	132	9.71	15.9	NM	8.0	135	42	11	103	15	3	5	1	51	1	19
SG-05	6/12/2015	6.91	1034	5.42	19.7	0.015	6.8	1040	110	42	769	135	30	19	6	140	6	429
SG-16	6/12/2015	6.6	157	8.78	13.1	104	7.9	162	52	18	109	18	4	6	2	63	2	17
SG-16	10/14/2015	7.48	305	10.24	8.7	19.2	8.1	319	90	10 U	211	36	8	15	3	110	5	54
SG-16	6/7/2016	7.71	130	10.03	14.1	103	8.0	136	42	12	109	15	3	5	1	51	2	18
SG-16	10/7/2016	7.14	259	11.15	6.5	24.2	8.0	274	77	10 U	187	29	7	13	3	93	4	39
Trib-1	6/12/2015	7.95	478	5.16	19.9	0.08	7.9	471	180	11	298	57	13	24	4	210	6	47
Trib-1	6/7/2016	7.82	413	4.25	26.0	0.015	7.9	411	150	13	267	41	12	24	4	190	5	49
Trib-1	10/7/2016	7.90	626	6.47	7.3	0.04	7.5	632	150	22	438	83	16	26	5	190	6	155

NOTES: All concentrations in mg/L except as indicated.
U = below laboratory reporting limit (associated value)
NM = not measured
Metals concentrations expressed as total recoverable

Station ID	Sample Date	Bromide	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Thallium	Zinc	Ammonium as N	Nitrate + Nitrite as N
Former PPC-BD	6/12/2015	NM	0.0019	0.059	0.0008 U	0.0123	0.01 U	0.003	2.07	0.0024	8.83	0.000013	0.003	0.001 U	0.0034	0.742	NM	NM
Former PPC-BD	10/14/2015	NM	0.0052	0.065	0.0008 U	0.0038	0.01 U	0.002 U	1.0	0.0022	3.72	0.000005 U	0.002	0.001 U	0.0036	0.378	NM	NM
GP-5	6/12/2015	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
GP-5	10/14/2015	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
GP-5	6/7/2016	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
GP-5	10/7/2016	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
LOWER LAKE	6/12/2015	NM	0.0242	0.032	0.0008 U	0.0066	0.01 U	0.016	0.22	0.0167	0.12	0.0003	0.002 U	0.006	0.023	0.035	NM	NM
LOWER LAKE (Dup)	6/12/2015	NM	0.024	0.033	0.0008 U	0.00664	0.01 U	0.016	0.2	0.0169	0.12	0.000097	0.002 U	0.006	0.0236	0.035	NM	NM
LOWER LAKE	10/14/2015	NM	0.0159	0.018	0.0008 U	0.00323	0.01 U	0.008	0.45	0.0721	0.75	0.00008	0.002 U	0.002	0.002	0.072	0.07	0.04
LOWER LAKE	6/7/2016	0.09	0.0047	0.028	0.0008 U	0.00364	0.01 U	0.013	2.16	0.0259	0.89	0.00003	0.002 U	0.001	0.0033	0.064	NM	NM
LOWER LAKE	10/7/2016	0.05 U	0.0047	0.017	0.0008 U	0.00102	0.01 U	0.012	1.52	0.0364	4.18	0.000048	0.002 U	0.001 U	0.0006	0.052	NM	NM
PPC-10	6/12/2015	NM	0.0005 U	0.006	0.0008 U	0.00036	0.01 U	0.007	0.85	0.0116	0.07	0.000015	0.002 U	0.001 U	0.0002 U	0.068	NM	NM
PPC-10	10/14/2015	NM	0.0005 U	0.006	0.0008 U	0.00023	0.01 U	0.002	0.21	0.0035	0.04	0.000005 U	0.002 U	0.001 U	0.0002 U	0.059	NM	NM
PPC-10	6/7/2016	0.05 U	0.0005 U	0.004	0.0008 U	0.00026	0.01 U	0.005	0.57	0.0073	0.05	0.000007	0.002 U	0.001 U	0.0002 U	0.049	NM	NM
PPC-10	10/7/2016	0.05 U	0.0005 U	0.005	0.0008 U	0.00018	0.01 U	0.003	0.3	0.0034	0.04 UJ	0.000008	0.002 U	0.001 U	0.0002 U	0.043	NM	NM
PPC-36A	6/12/2015	NM	0.0005 U	0.006	0.0008 U	0.00033	0.01 U	0.007	0.74	0.0109	0.07	0.000015	0.002 U	0.001 U	0.0002 U	0.063	NM	NM
PPC-36A (Dup)	6/12/2015	NM	0.0005 U	0.006	0.0008 U	0.00033	0.01 U	0.006	0.73	0.011	0.07	0.000017	0.002 U	0.001 U	0.0002 U	0.062	NM	NM
PPC-36A	10/14/2015	NM	0.0005 U	0.005	0.0008 U	0.00018	0.01 U	0.002 U	0.14	0.0028	0.04	0.000005 U	0.002 U	0.001 U	0.0002 U	0.055	NM	NM
PPC-36A	6/7/2016	0.05 U	0.0005 U	0.004	0.0008 U	0.00023	0.01 U	0.004	0.53	0.0071	0.05	0.000007	0.002 U	0.001 U	0.0002 U	0.049	NM	NM
PPC-36A (Dup)	6/7/2016	0.05 U	0.0005 U	0.004	0.0008 U	0.00024	0.01 U	0.004	0.54	0.0067	0.05	0.000007	0.002 U	0.001 U	0.0002 U	0.05	NM	NM
PPC-36A	10/7/2016	0.05 U	0.0005 U	0.006	0.0008 U	0.00029	0.01 U	0.004	0.68	0.0075	0.07 UJ	0.000020	0.002 U	0.001 U	0.0002 U	0.052	NM	NM
PPC-3A	6/12/2015	NM	0.0005 U	0.005	0.0008 U	0.00029	0.01 U	0.006	0.75	0.0095	0.07	0.000010	0.002 U	0.001 U	0.0002 U	0.06	NM	NM
PPC-3A	10/14/2015	NM	0.0005 U	0.004	0.0008 U	0.00014	0.01 U	0.002 U	0.13	0.0021	0.03	0.000005 U	0.002 U	0.001 U	0.0002 U	0.048	NM	NM
PPC-3A	6/7/2016	0.05 U	0.0005 U	0.004	0.0008 U	0.00026	0.01 U	0.004	0.52	0.0061	0.05	0.000005	0.002 U	0.001 U	0.0002 U	0.048	NM	NM
PPC-3A	10/7/2016	0.05 U	0.0005 U	0.004	0.0008 U	0.00012	0.01 U	0.002 U	0.19	0.0019	0.05 UJ	0.000005 U	0.002 U	0.001 U	0.0002 U	0.060	NM	NM
PPC-5	6/12/2015	NM	0.0005 U	0.006	0.0008 U	0.00033	0.01 U	0.006	0.68	0.0101	0.07	0.000015	0.002 U	0.001 U	0.0002 U	0.059	NM	NM
PPC-5	10/14/2015	NM	0.0005 U	0.005	0.0008 U	0.00018	0.01 U	0.002 U	0.14	0.0026	0.04	0.000005 U	0.002 U	0.001 U	0.0002 U	0.05	NM	NM
PPC-5 (Dup)	10/14/2015	NM	0.0005 U	0.005	0.0008 U	0.00016	0.01 U	0.002 U	0.15	0.0025	0.04	0.000005 U	0.002 U	0.001 U	0.0002 U	0.05	NM	NM
PPC-5	6/7/2016	0.05 U	0.0005 U	0.004	0.0008 U	0.00024	0.01 U	0.004	0.51	0.0062	0.05	0.000006	0.002 U	0.001 U	0.0002 U	0.046	NM	NM
PPC-5	10/7/2016	0.05 U	0.0005	0.006	0.0008 U	0.00037	0.01 U	0.005	1.01	0.0117	0.09 UJ	0.000039	0.002 U	0.001 U	0.0002 U	0.057	NM	NM
PPC-5 (Dup)	10/7/2016	0.05 U	0.0005 U	0.007	0.0008 U	0.00038	0.01 U	0.005	1.04	0.0118	0.09 UJ	0.000038	0.002 U	0.001 U	0.0002 U	0.057	NM	NM
PPC-7	6/12/2015	NM	0.0005 U	0.006	0.0008 U	0.00039	0.01 U	0.006	0.71	0.0105	0.07	0.000012	0.002 U	0.001 U	0.0002 U	0.066	NM	NM
PPC-7	10/14/2015	NM	0.0005 U	0.005	0.0008 U	0.0002	0.01 U	0.002 U	0.14	0.0027	0.04	0.000005 U	0.002 U	0.001 U	0.0002 U	0.055	NM	NM
PPC-7	6/7/2016	0.05 U	0.0005 U	0.004	0.0008 U	0.00022	0.01 U	0.004	0.57	0.0067	0.05	0.000005	0.002 U	0.001 U	0.0002 U	0.048	NM	NM
PPC-7	10/7/2016	0.05 U	0.0005	0.006	0.0008 U	0.00037	0.01 U	0.005	0.9	0.0102	0.08 UJ	0.000031	0.002 U	0.001 U	0.0002 U	0.057	NM	NM
PPCB-1	6/12/2015	NM	0.0005 U	0.005	0.0008 U	0.00028	0.01 U	0.005	0.67	0.01	0.06	0.000013	0.002 U	0.001 U	0.0002 U	0.057	NM	NM
PPCB-1	10/14/2015	NM	0.0005 U	0.004	0.0008 U	0.00014	0.01 U	0.002 U	0.14	0.0021	0.03	0.000005 U	0.002 U	0.001 U	0.0002 U	0.048	NM	NM
PPCB-1	6/7/2016	0.05 U	0.0005 U	0.004	0.0008 U	0.00022	0.01 U	0.004	0.52	0.0063	0.05	0.000005	0.002 U	0.001 U	0.0002 U	0.046	NM	NM
SG-05	6/12/2015	NM	0.0005 U	0.013	0.0008 U	0.0141	0.01 U	0.005	22.5	0.0044	16.8	0.00011	0.003	0.001 U	0.0004	0.753	NM	NM
SG-16	6/12/2015	NM	0.0005 U	0.006	0.0008 U	0.00041	0.01 U	0.008	0.88	0.015	0.08	0.000019	0.002 U	0.001 U	0.0002 U	0.077	NM	NM
SG-16	10/14/2015	NM	0.0005 U	0.005	0.0008 U	0.00019	0.01 U	0.002	0.17	0.0029	0.03	0.000005 U	0.002 U	0.001 U	0.0002 U	0.055	NM	NM
SG-16	6/7/2016	0.05 U	0.0005 U	0.005	0.0008 U	0.00027	0.01 U	0.005	0.63	0.0089	0.05	0.000008	0.002 U	0.001 U	0.0002 U	0.055	NM	NM
SG-16	10/7/2016	0.05 U	0.0005 U	0.005	0.0008 U	0.00016	0.01 U	0.003	0.28	0.0036	0.03 UJ	0.000009	0.002 U	0.001 U	0.0002 U	0.042	NM	NM
Trib-1	6/12/2015	NM	0.0013	0.02	0.0008 U	0.0004	0.01 U	0.003	0.25	0.0239	0.11	0.000078	0.002 U	0.001 U	0.0002 U	0.01	NM	NM
Trib-1	6/7/2016	0.05 U	0.0028	0.035	0.0008 U	0.00087	0.01 U	0.004	0.92	0.0881	0.61	0.00009	0.002 U	0.001	0.0002 U	0.016	NM	NM
Trib-1	10/7/2016	0.05 U	0.0017	0.009	0.0008 U	0.00327	0.01 U	0.005	0.76	0.052	0.2	0.00017	0.002 U	0.001 U	0.0002 U	0.091	NM	NM

NOTES: All concentrations in mg/L except as indicated.
U = below laboratory reporting limit (associated value)
NM = not measured
Metals concentrations expressed as total recoverable

APPENDIX B

MONITORING WELL COMPLETION DETAILS

Table B-1. East Helena Project Monitoring Well Network

Well Name	Status	Date Installed	Northing	Easting	Ground Surface Elevation ATD, MTSP NAD83 (ft)	Measuring Point Elev. (ft)	Total Depth Drilled (ft bgs)	Total Depth Cased (ft bgs)	Casing Size (ID) (in)	Screened Interval (ft bgs)	Extended / Lowered Due to Construction Date (ft)
Plant Site Monitoring Wells											
PZ-102	Abandoned (2015)	2011	859121.83	1361453.08	NA	3922.21	NA	NA	NA	NA	
PZ-102B	Abandoned (2015)	2011	NA	NA	NA	NA	NA	NA	NA	NA	
PZ-103	Abandoned (2015)	2011	859334.6	1361357.2	NA	3921.82	NA	NA	NA	NA	
PZ-103B	Abandoned (2015)	2011	NA	NA	NA	NA	NA	NA	NA	NA	
APSD-1	Abandoned (2014)	8/20/91	859273.19	1360490.343	3922.40	3923.57	14	11.75	2"	1.75-11.75	
APSD PW-1	Abandoned (11/19/14)	3/27/2014	859203.144	1360398.007	3926.37	3927.69	35.4	35.4	6"	10-30'	
APSD-2	Abandoned (2014)	8/20/1991	859192.229	1360432.673	3926.10	3927.99	18	18	2"	8-18	
APSD-3	Abandoned (2014)	8/21/1991	859109.471	1360408.311	3924.30	3926.32	12.5	12.5	2"	2.5-12.5	
APSD-4	Abandoned (2014)	8/21/1991	859040.353	1360311.457	3924.06	3925.36	14	14	2"	4-14	
APSD-7	Abandoned (2015)	10/12/1993	859331.745	1361320.577	3922.46	3924.04	16	16	2"	8.5-16	
APSD-8	Abandoned (2015)	10/13/1993	859084.578	1361342.543	3922.59	3923.93	15	15	2"	5-15	
APSD-9	Abandoned (2014)	10/13/1993	858914.119	1360818.026	3925.67	3927.12	16	16	2"	6-16	
APSD-10	Abandoned (2014)	10/13/1993	858976.362	1360471.312	3925.03	3926.57	16	16	2"	6-16	
APSD-11	Abandoned (2014)	10/14/1993	859035.383	1361048.295	3924.85	3926.84	16	16	2"	6-16	
APSD-12	Abandoned (2014)	10/14/1993	859202.123	1360718.496	3922.74	3924.24	16	15.5	2"	5.5-15.5	
APSD-13	Abandoned (04/07)	10/15/1993	NA	NA	3924.63	NA	23	23	2"	13-23	
APSD-14	Abandoned (1995)	10/15/1993	NA	NA	3921.00	NA	16	16	2"	6-16	
APSD-15	Abandoned (2014)	4/25/2007	859246.393	1360295.985	3920.95	3923.90	25	24.6	2"	4.6-24.6	
APSD-16	Abandoned (2014)	4/25/2007	859282.646	1360326.599	3919.14	3922.05	25	23.75	2"	3.75-23.75	
DH-1	Active	12/8/84	861173.254	1359024.208	3909.11	3910.89	50	50	4"	40-50	
DH-2	Active	12/9/84	859912.152	1358535.16	3935.28	3936.91	65.5	65.5	4"	55.5-65.5	
DH-3	Active	12/10/84	858004.288	1359987.938	3946.11	3947.48	55	54	4"	44-54	
DH-4	Active	12/14/84	859528.54	1361219.921	3916.58	3917.26	23.6	23	4"	17-23	
DH-5	Active	1/7/85	859643.098	1360795.54	3920.62	3921.18	17	17	4"	9-17	
DH-5A	Active	1/4/1985	859641.404	1360788.989	3920.62	3921.92	19.5	18	4"	8-18	
DH-6	Active	12/13/84	861528.803	1360255.14	3890.16	3889.85	25	25	4"	15-25	
DH-7	Active	12/12/84	861283.245	1361583.407	3896.83	3898.66	28.5	28.5	4"	18.5-28.5	
DH-8	Active	1/5/85	860694.887	1359407.443	3916.19	3923.38	50	49	4"	39-49	5/9/16 (2.8)
DH-9	Active	1/4/85	860572.404	1360373.328	3897.42	3918.08	17	11.5	4"	6.5-11.5	
DH-10	Abandoned (1995)	12/11/84	NA	NA	NA	NA	10	10	4"	5-10	
DH-10A	Active	1995	861458.531	1360611.538	3886.18	3886.97	10	10	2"	5-10	
DH-12	Abandoned (4/22/16)	11/3/86	860549.965	1359807.53	3911.24	3916.69	30	30	4"	20-30	
DH-13	Active	11/3/86	860562.77	1359798.13	3909.90	3923.91	45	45	4"	35-45	4/29/16 (8.3)
DH-14	Active	10/22/86	859529.595	1361227.836	3916.16	3916.06	46	46	4"	34-46	
DH-15	Active	11/1/86	861542.786	1360259.716	3888.75	3889.82	50	50	4"	41.5-50	
DH-16	Abandoned (3/9/16)	11/20/86	861010.539	1359681.601	3906.69	3905.77	30	28	4"	23-28	
DH-17	Active	11/25/86	860999.136	1359671.35	3904.60	3917.56	41	41	4"	31-41	3/23/16 (11.8)
DH-18	Active	12/2/86	860537.014	1359817.553	3910.61	3924.93	68	63.5	4"	55.5-63.5	4/29/16 (8.5)
DH-19	Abandoned (5/00)	4/22/87	NA	NA	NA	NA	30	30	4"	20-30	
DH-19R	Abandoned (5/18/16)	5/24/2000	859444.855	1360089.238	3919.97	3919.67	25	25	2"	15-25	
DH-20	Active	4/24/87	858991.089	1360131.173	3930.13	3927.09	31	31	4"	21-31	4/29/16 (7.1)
DH-21	Abandoned (3/9/16)	4/23/87	860288.609	1360000.161	3909.26	3916.98	30	29	4"	19-29	
DH-22	Active	4/27/87	859691.79	1359818.954	3930.57	3948.63	35	34	4"	24-34	14-Aug
DH-23	Active	4/28/87	860271.937	1360220.21	3916.11	3931.82	20	20	4"	10-20	
DH-24	Active	4/30/87	861414.349	1359444.728	3899.44	3899.59	35	35	4"	27-35	
DH-26	Abandoned (1989)	4/29/87	NA	NA	NA	NA	35	35	4"	25-35	

Table B-1. East Helena Project Monitoring Well Network

Well Name	Status	Date Installed	Northing	Easting	Ground Surface Elevation ATD, MTSP NAD83 (ft)	Measuring Point Elev. (ft)	Total Depth Drilled (ft bgs)	Total Depth Cased (ft bgs)	Casing Size (ID) (in)	Screened Interval (ft bgs)	Extended / Lowered Due to Construction Date (ft)
DH-27	Active	5/1/87	859925.566	1360049.181	3912.41	3946.21	30	29	4"	19-29	3/31/16 (20)
DH-28	Abandoned (200?)	12/14/87	NA	NA	NA	NA	36	36	4"	26-36	
DH-29	Abandoned (2014)	12/11/87	859222.097	1360322.896	3923.90	3925.33	14	17	2"	1.75-11.75	
DH-30	Active	11/20/1999	859936.907	1360102.276	3912.94	3943.24	22	22	2"	12-22	3/31/16 (20)
DH-31	Abandoned (3/9/16)	10/26/1999	860191.513	1360066.461	3911.78	3919.16	28	28	2"	18-28	
DH-32	Abandoned (3/10/16)	10/22/1999	860270.699	1359864.633	3915.73	3918.23	30	30	2"	20-30	
DH-33	Abandoned (3/10/16)	11/5/1999	860351.057	1359903.625	3912.06	3918.81	35	30	2"	20-30	
DH-34	Abandoned (3/9/16)	10/4/1999	860324.49	1359965.548	3909.90	3916.55	30	30	2"	20-30	
DH-35	Abandoned (3/9/16)	10/25/1999	860277.593	1360060.911	3911.97	3918.37	30	29.5	2"	19.5-29.5	
DH-36	Active	10/11/1999	860633.221	1359939.058	3905.67	3920.66	32	31	2"	21-31	
DH-37	Abandoned (3/9/16)	11/21/1999	860172.243	1359930.432	3914.05	3916.71	30	30	2"	20-30	
DH-38	Abandoned (3/10/16)	10/23/1999	860025.943	1359979.632	3912.31	3918.86	32	25	2"	15-25	
DH-39	Abandoned (04/07)	11/16/1999	NA	NA	NA	NA	35	30	2"	20-30	
DH-40	Abandoned (04/07)	11/17/1999	NA	NA	NA	NA	25	20	2"	15-20	
DH-41	Abandoned (04/07)	11/9/1999	NA	NA	NA	NA	30	27	2"	17-27	
DH-42	Active	11/7/1999	859588.92	1359941.518	3926.86	3942.63	34	34	2"	24-34	8/15/16 (11.3)
DH-43	Abandoned (04/07)	11/15/1999	NA	NA	NA	NA	40	36	2"	26-36	
DH-44	Abandoned (04/07)	11/18/1999	NA	NA	NA	NA	31.5	29.4	2"	19.5-29.5	
DH-45	Abandoned (04/07)	11/10/1999	NA	NA	NA	NA	17	15	2"	7-15	
DH-46	Abandoned (04/07)	11/23/1999	NA	NA	NA	NA	17	14	2"	4-14	
DH-47	Active	11/15/1999	859461.742	1360404.744	3919.90	3926.82	15	15	2"	5-15	7/5/16 (4.4)
DH-48	Active	10/10/1999	861495.272	1358993.426	3903.59	3905.96	34	34	2"	24-34	
DH-49	Abandoned (03/15/17)	10/9/1999	861443.082	1359299.789	3901.57	3904.07	34	34	2"	24-34	
DH-50	Active	10/7/1999	861386.979	1359574.482	3902.17	3904.76	34	34	2"	24-34	
DH-51	Active	10/5/1999	861331.977	1359703.046	3902.21	3904.34	35	34	2"	24-34	
DH-52	Active	10/20/1999	861373.862	1360878.881	3886.70	3889.18	20	17	2"	7-17	
DH-53	Active	10/18/1999	861345.403	1361120.388	3890.27	3892.87	20	17	2"	7-17	
DH-54	Active	12/1/1999	862059.028	1359473.867	3888.11	3890.27	30	27	2"	17-27	
DH-55	Active	6/17/2001	860570.538	1360948.277	3970.13	3972.76	93	93	2"	83-93	
DH-56	Active	6/14/2001	861100.154	1360353.465	3955.62	3958.17	85	85	2"	70-85	
DH-57	Active	5/16/2001	860330.666	1360259.106	3912.95	3929.53	28	28	2"	23-28	
DH-58	Active	5/30/2001	860622.068	1360152.519	3897.48	3919.33	24	24	2"	9-24	
DH-59	Active	5/23/2001	859633.795	1360061.325	3916.34	3937.44	27	25	2"	10-25	8/15/16 (20)
DH-60	Abandoned (04/07)	5/13/2001	NA	NA	NA	NA	35	35	2"	20-35	
DH-61	Active	5/9/2001	860403.577	1359295.65	3917.05	3926.84	32	30	2"	20-30	Aug-14
DH-62	Active	5/11/2001	860408.456	1359294.189	3917.00	3926.95	75	75	2"	65-75	Aug-14
DH-63	Active	5/31/2001	861508.883	1359152.552	3903.20	3905.37	39	39	2"	24-39	
DH-64	Active	5/22/2001	861384.47	1359478.976	3901.74	3904.02	55	55	2"	45-55	
DH-65	Active	6/15/2001	861208.922	1360882.127	3943.36	3945.85	70	70	2"	60-70	
DH-66	Active	7/23/2002	861006.862	1359336.128	3911.43	3919.28	52	48	2"	38-48	5/9/16 (2.8)
DH-67	Active	8/11/2002	861659.368	1359098.23	3897.77	3899.77	48.5	46	2"	36-46	
DH-68	Active	4/2/2008	859815.882	1361074.918	3940.38	3943.28	50	50	2"	40-50	
DH-69	Active	4/1/2008	859901.318	1360786.616	3931.85	3934.40	40	40	2"	30-40	
DH-70	Active	3/27/2008	859740.324	1360349.535	3916.18	3933.91	30	30	2"	24-30	4/4/16 (15.5)
DH-71	Active	3/28/2008	859878.406	1359643.263	3922.71	3944.88	34.5	34	2"	25-34	
DH-72	Active	8/25/2010	859629.267	1360071.922	3916.02	3939.67	50	50	2"	40-50	8/15/16 (20)
DH-73	Active	8/21/2010	860575.499	1360397.122	3897.87	3918.08	48	48	2"	38-48	

Table B-1. East Helena Project Monitoring Well Network

Well Name	Status	Date Installed	Northing	Easting	Ground Surface Elevation ATD, MTSP NAD83 (ft)	Measuring Point Elev. (ft)	Total Depth Drilled (ft bgs)	Total Depth Cased (ft bgs)	Casing Size (ID) (in)	Screened Interval (ft bgs)	Extended / Lowered Due to Construction Date (ft)
DH-74	Active	8/24/2010	860944.183	1360682.187	3998.99	4001.49	128	128	2"	118-128	
DH-75	Active	8/23/2010	860943.818	1360687.835	3998.90	4001.55	146	146	2"	136-146	
DH-76	Active	8/19/2010	860175.348	1360889.78	3992.23	3994.28	136	124	2"	104-124	
DH-77	Active	9/8/2014	860292.48	1259639.25	3924.99	3932.20	52	48	2"	38-48	
DH-78	Active	9/17/2014	860849	1359368.35	3918.85	3921.12	47	45	2"	35-45	5/9/16 (2.4)
DH-79	Active	6/25/2015	860422.215	1359937.191	3913.15	3928.80	45.5	42	2"	32-42	3/31/16 (13.0)
DH-80	Active	6/24/2015	859665.447	1360005.892	3916.04	3942.36	32	30	2"	20-30	8/15/16 (20) 8/23/16
DH-81	Abandoned (5/4/16)	7/15/2015	859352.188	1360152.25	3924.23	3926.66	32	30	2"	20-30	
DH-82	Active	7/8/2015	861377.161	1359161.969	3905.01	3908.18	55	49	2"	39-49	
DH-83	Active	7/8/2015	860783.429	1359388.46	3916.00	3922.14	56	54.5	2"	49.5-54.5	5/9/16 (3.4)
TW-1	Active	8/7/2006	860384.034	1359940.835	3912.22	3930.10	47	43	4"	25-40	3/31/16 (11.7)
TW-2	Active	NA	NA	NA	NA	3931.44	NA	NA	NA	NA	
East Bench Wells/Piezometers											
DH-11	Abandoned (2015)	1/5/85	859950.404	1361579.582	3910.23	3912.36	29	29	4"	19-29	
East-PZ-1	Active	NA	NA	NA	NA	3911.93	NA	NA	NA	NA	
East-PZ-2	Active	NA	NA	NA	NA	3924.58	NA	NA	NA	NA	
East-PZ-3	Abandoned (2013)	NA	858670.97	1361666.00	NA	3927.30	NA	NA	NA	NA	
East-PZ-4	Active	NA	NA	NA	NA	3935.66	NA	NA	NA	NA	
East-PZ-5	Abandoned (2013)	NA	857670.39	1361862.50	NA	3937.95	NA	NA	NA	NA	
East-PZ-6	Active	NA	NA	NA	NA	3943.83	NA	NA	NA	NA	
East-PZ-7	Active	NA	NA	NA	NA	3928.83	NA	NA	NA	NA	
PZ-33A	Abandoned (2015)	NA	861145.75	1361480.23	NA	3894.51	NA	NA	NA	NA	
PZ-33B	Abandoned (2015)	NA	861144.75	1361484.5	NA	3894.26	NA	NA	NA	NA	
PZ-36A	Active	NA	NA	NA	NA	3858.96	NA	NA	NA	NA	
PZ-36B	Active	NA	NA	NA	NA	3858.75	NA	NA	NA	NA	
PZ-36C	Active	4/14/2010	864554.645	1358718.763	3853.38	3859.60	25	25	2"	20-25	
PZ-9A	Active	NA	NA	NA	NA	3850.70	NA	NA	NA	NA	
PZ-9B	Active	NA	NA	NA	NA	3849.43	NA	NA	NA	NA	
ASIW-1	Active	8/20/1991	859803.157	1362121.493	NA	3915.99	73	73	4"	53-73	
ASIW-2	Active	5/6/1993	860471.83	1363184.587	NA	3909.13	95	95	4"	10-95	
Aire Liquide N	Abandoned (2015)	NA	859173.55	1361517.37	NA	3920.62	NA	NA	NA	NA	
Aire Liquide S	Abandoned (2015)	NA	859080.24	1361533.47	NA	3922.05	NA	NA	NA	NA	
Upper Lake Marsh											
ULM-PZ-1	Active	NA	857497.97	1360521.68	NA	3924.40	NA	NA	NA	NA	
ULM-PZ-2	Active	NA	857491.57	1360953.39	NA	3925.41	NA	NA	NA	NA	
PPCRPZ-1	Abandoned (2015)	NA	858505.66	1361257.86	NA	3923.92	NA	NA	NA	NA	
PPCRPZ-2	Active	NA	858388.35	1360904.92	NA	3919.76	NA	NA	NA	NA	
PPCRPZ-3	Abandoned (2015)	NA	858172.93	1361351.22	NA	3924.59	NA	NA	NA	NA	
PPCRPZ-4	Abandoned (2015)	NA	857967.86	1361064.82	NA	3922.73	NA	NA	NA	NA	
PPCRPZ-5	Abandoned (2015)	NA	857361.45	1361226.21	NA	3926.58	NA	NA	NA	NA	
PPCRPZ-6	Abandoned (2015)	NA	857000.56	1361280.44	NA	3928.47	NA	NA	NA	NA	
PPCRPZ-7	Abandoned (2015)	NA	857033.74	1361539.94	NA	3928.02	NA	NA	NA	NA	
ULTP-1	Active	NA	NA	NA	NA	3919.63	NA	NA	NA	NA	
ULTP-2	Active	NA	NA	NA	NA	3921.23	NA	NA	NA	NA	
GPPZ-6	Abandoned (2015)	NA	858200.88	1361048.05	NA	3923.36	NA	NA	NA	NA	
GPPZ-12	Abandoned (2015)	NA	857622.12	1360941.61	NA	3927.82	NA	NA	NA	NA	
GPPZ-14	Abandoned (2015)	NA	857650.64	1361569.05	NA	3927.18	NA	NA	NA	NA	

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GPPZ-18	Abandoned (2015)	NA	857005.18	1360924.13	NA	3926.56	NA	NA	NA	NA	
East Helena Area Monitoring Wells											
EH-50	Active	11/6/86	862197.417	1358820.717	3888.92	3889.39	45	45	4"	25-45	
EH-51	Active	10/24/86	862188.704	1359831.135	3879.02	3880.09	30	30	4"	10-30	
EH-52	Active	11/7/86	862193.38	1360755.059	3880.50	3880.50	13	13	4"	5-13	
EH-53	Active	11/11/86	863389.199	1358271.548	3871.74	3872.82	35	35	4"	25-35	
EH-54	Active	11/20/86	863347.116	1359825.052	3869.75	3869.66	18	18	4"	8-18	
EH-57	Active	5/4/87	862620.151	1357739.199	3884.98	3885.05	35	35	4"	25-35	
EH-57A	Active	11/23/87	862627.623	1357733.753	3884.85	3885.45	45	45	4"	35-45	
EH-58	Active	11/23/87	861987.109	1361555.923	3886.85	3888.15	35	31	4"	21-31	
EH-59	Active	5/6/87	862767.731	1361025.966	3877.00	3876.57	18	18	4"	8-18	
EH-60	Active	12/1/87	862095.091	1359298.502	3888.84	3888.46	29	29	4"	22-28	
EH-61	Active	11/30/87	862097.583	1359284.816	3889.36	3889.77	45	45	4"	36-45	
EH-62	Active	11/20/87	863375.344	1358815.695	3870.79	3875.07	46.5	46.5	4"	25-45	
EH-63	Active	6/20/2001	862684.214	1359430.15	3878.81	3878.32	35	35	2"	20-35	
EH-64	Active	6/21/2001	862712.645	1359203.585	3880.26	3882.67	35	35	2"	20-35	
EH-65	Active	6/22/2001	862704.706	1358792.645	3880.20	3879.96	35	35	2"	20-35	
EH-66	Active	4/10/2008	864408.628	1358108.047	3866.53	3869.48	40	38.5	2"	28.5-38.5	
EH-67	Active	5/4/2008	864407.638	1358457.283	3866.58	3869.46	37	37	2"	27-37	
EH-68	Active	4/8/2008	863878.859	1360334.193	3868.14	3867.60	26.5	25	2"	15-25	
EH-69	Active	4/9/2008	863792.843	1360855.33	3869.44	3869.10	36.4	36	2"	26-36	
EH-70	Active	8/17/2010	864973.644	1357080.497	3860.95	3863.48	50	50	2"	40-50	
EH-100	Active	11/5/1986	862198.915	1358803.612	3889.09	3889.83	60	60	4"	52-60	
EH-101	Active	11/5/1987	862186.785	1359844.454	3878.84	3879.95	45	45	4"	34-45	
EH-102	Active	11/7/86	862176.255	1360753.823	3880.91	3880.45	35	35	4"	25-35	
EH-103	Active	7/25/2002	862097.057	1359305.836	3888.34	3890.54	74.5	74.5	2"	59.5-74.5	
EH-104	Active	7/27/2002	862314.386	1358285.239	3888.04	3887.83	52	48	2"	38-48	
EH-106	Active	9/11/2002	862711.659	1358339.836	3882.25	3882.07	50	46	2"	31-46	
EH-107	Active	8/9/2002	862702.22	1358804.709	3880.27	3880.15	82	78	2"	68-78	
EH-109	Active	8/21/2002	862430.518	1358741.015	3885.88	3885.67	71	65	2"	50-65	
EH-110	Active	8/12/2002	862410.664	1359202.453	3884.27	3884.05	59	55	2"	40-55	
EH-111	Active	9/14/2002	863065.551	1358124.387	3876.72	3876.50	54	49	2"	39-49	
EH-112	Active	9/12/2002	863055.289	1358512.351	3876.10	3875.78	52	41	2"	31-41	
EH-113	Active	10/24/2002	863391.933	1357975.088	3871.64	3871.34	46	44	2"	34-44	
EH-114	Active	10/10/2002	863129.475	1357772.473	3876.45	3878.07	55	52	2"	42-52	
EH-115	Active	10/22/2002	862719.54	1357965.751	3883.59	3883.29	53	49	2"	39-49	
EH-116	Active	11/8/2005	863346.313	1357813.694	3872.71	3874.52	50	48	2"	38-48	
EH-117	Active	11/9/2005	863492.921	1357817.818	3869.49	3871.33	50	43	2"	33-43	
EH-118	Active	4/30/2008	863061.633	1357373.685	3877.57	3879.95	57	50	2"	40-50	
EH-119	Active	4/24/2008	863619.351	1357265.802	3871.17	3873.75	70	68	2"	58-68	
EH-120	Active	5/1/2008	864331.969	1357412.648	3863.19	3865.78	67	65	2"	55-65	
EH-121	Active	4/21/2008	864411.865	1358130.539	3867.00	3869.49	71.5	69	2"	59-69	
EH-122	Active	5/3/2008	864417.039	1358472.365	3865.63	3868.08	67	65	2"	60-65	
EH-123	Active	4/7/2009	863029.072	1356634.019	3883.20	3885.71	68	60	2"	50-60	
EH-124	Active	4/7/2009	863930.121	1356669.205	3872.10	3874.46	75	74	2"	64-74	
EH-125	Active	4/6/2009	864980.173	1357092.684	3860.96	3863.22	70	69	2"	59-69	
EH-126	Active	4/6/2009	865517.528	1356005.51	3867.80	3870.00	85	73	2"	63-73	

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EH-127	Active	4/7/2009	865363.286	1357812.997	3858.40	3860.75	73	73	2"	63-73	
EH-128	Active	6/3/2009	863373.274	1355906.353	3889.50	3892.17	50	44	2"	34-44	
EH-129	Active	6/1/2009	865651.422	1355427.799	3867.45	3870.21	90	90	2"	80-90	
EH-130	Active	6/11/2009	866019.744	1356643.922	3855.98	3858.55	79	78	2"	68-78	
EH-131	Active	6/10/2009	867034.375	1356914.735	3831.57	3834.44	86.5	84	2"	74-84	
EH-132	Active	6/3/2009	864042.081	1355363.119	3891.41	3893.90	80	80	2"	70-80	
EH-133	Active	6/2/2009	864767.997	1355357.545	3881.59	3884.36	95	95	2"	85-95	
EH-134	Active	6/1/2009	865645.213	1355428.256	3867.52	3870.21	64	64	2"	54-64	
EH-135	Active	6/2/2009	865690.326	1357387.691	3849.54	3852.25	65	65	2"	55-65	
EH-136	Active	6/10/2009	866627.617	1357251.616	3836.09	3838.59	79	74	2"	64-74	
EH-137	Active	6/11/2009	867049.515	1357898.383	3837.16	3839.66	89	85	2"	75-85	
EH-138	Active	10/20/2010	867180.7802	1355649.183	3840.10	3839.70	85	85	2"	55-85	
EH-139	Active	10/21/2010	867199.1877	1354638.014	3840.20	3839.78	65.5	57	2"	47-57	
EH-140	Active	4/19/2011	867962.262	1356224.787	3808.61	3812.08	95	86	2"	56-86	
EH-141	Active	4/20/2011	868713.295	1354782.704	3810.66	3813.32	90	90	2"	60-90	
EH-142	Active	4/17/2011	870077.471	1353868.600	3802.22	3804.68	120	120	2"	80-120	
EH-143	Active	4/16/2011	870683.749	1354372.763	3801.02	3803.37	125	125	2"	100-125	
EH-144D	Active	11/30/2012	874170.144	1354086.122	3776.98	3778.86	169	169	2"	143.5-168.5	
EH-144S	Active	12/3/2012	874170.357	1354091.18	3776.98	3778.70	103	103	2"	83-103	
EH-144M	Active	12/5/2012	874170.205	1354096.294	3776.98	3778.95	128	128	2"	118-128	
EH-145D	Active	9/26/2016	873225.38	1355535.01	3787.90	3789.60	247	241	2"	211-241	
EH-145S	Active	9/28/2016	873230.40	1355543.75	3787.97	3790.09	187	187	2"	167-187	
EH-200	Active	4/12/2010	862019.981	1353067.956	3950.83	3953.33	100	51	2"	38-48	
EH-201	Active	4/13/2010	861477.627	1353970.9	3970.98	3973.48	119	119	2"	99-119	
EH-202	Active	4/13/2010	861252.398	1357116.45	3927.94	3930.56	90	90	2"	70-90	
EH-203	Active	6/9/2010	860235.578	1356625.924	4001.42	4003.92	150	145	2"	125-145	
EH-204	Active	6/9/2010	860662.714	1358706.318	3923.19	3925.69	65	65	2"	55-65	
EH-205	Active	6/10/2010	861654.247	1358689.779	3898.16	3900.66	36	34	2"	24-34	
EH-206	Active	6/8/2010	862971.127	1356015.496	3895.60	3898.10	53	53	2"	33-53	
EH-208	Active	6/11/2010	863932.222	1354404.282	3908.08	3910.58	85	85	2"	60-85	
EH-209	Active	6/12/2010	864743.929	1353104.707	3895.84	3898.34	116	116	2"	96-116	
EH-210	Active	8/19/2010	861655.326	1358677.396	3898.54	3901.19	60	60	2"	50-60	
EH-211	Active	4/21/2011	862223.936	1356747.917	3903.21	3905.75	50	50	2"	40-50	
EH-212	Active	4/20/2011	862222.628	1356753.360	3903.16	3905.90	75	72	2"	57-72	
CAMU Monitoring Wells											
MW-1	Active	6/26/97	858773.371	1358769.475	3951.62	3953.05	68	68	2"	58-68	
MW-2	Active	6/27/1997	859193.354	1358748.559	3944.21	3945.97	66	66	2"	56.0-66.0	
MW-3	Active	6/30/1997	859198.543	1359135.104	3939.44	3940.95	50	48	2"	38.5-48.0	
MW-4	Active	5/10/2000	858804.194	1359152.731	3944.62	3947.06	72	64	2"	54-64	
MW-5	Active	5/12/2000	858416.418	1358932.959	3953.29	3956.18	71	65	2"	55-65	
MW-6	Active	5/14/2000	858877.988	1359559.188	3935.52	3938.14	40	40	2"	30-40	
MW-7	Active	5/18/2000	858778.722	1358180.49	3961.37	3963.67	60	57	2"	44-57	
MW-8	Active	9/26/2006	857963.951	1359403.65	3956.50	3958.65	70	64.5	2"	44.5-64.5	
MW-9	Active	9/27/2006	857979.158	1358981.702	3962.59	3959.01	70	70	2"	50-70	10/16
MW-10	Active	9/28/2006	858555.918	1359551.985	3943.42	3946.28	70	62	2"	42-62	
MW-11	Active	5/3/2007	857961.186	1358519.466	3970.41	3973.33	70	69.6	2"	49.5-69.5	
Sparge Pilot Test Wells											

Table B-1. East Helena Project Monitoring Well Network

Well Name	Status	Date Installed	Northing	Easting	Ground Surface Elevation ATD, MTSP NAD83 (ft)	Measuring Point Elev. (ft)	Total Depth Drilled (ft bgs)	Total Depth Cased (ft bgs)	Casing Size (ID) (in)	Screened Interval (ft bgs)	Extended / Lowered Due to Construction Date (ft)
PBTW-1	Active	8/14/2001	861057.613	1359665.397	3905.46	3914.59	46	46	2"	29-46	3/23/16 (7.2)
PBTW-2	Active	8/15/2001	861167.511	1359625.146	3904.27	3906.73	54	54	2"	30-54	
SPAR-1	Abandoned (03/15/17)	4/27/2000	861337.8	1359581.303	3902.38	3904.80	40	38.8	2"	37-39	
SPAR-2	Abandoned (03/15/17)	4/28/2000	861343.14	1359580.277	3901.79	3904.97	41	39	2"	36-39	
SPAR-3	Abandoned (03/15/17)	5/22/2000	861388.259	1359457.37	3901.59	3904.23	40	37	2"	35-37	
STW-1	Abandoned (03/15/17)	4/26/2000	861264.293	1359590.432	3903.14	3905.58	40	38	2"	33-38	
STW-2	Abandoned (03/15/17)	4/25/2000	861348.056	1359574.958	3901.69	3904.28	40	39	2"	34-39	
STW-3	Abandoned (03/15/17)	4/29/2000	861347.359	1359588.307	3902.13	3904.79	40	39.5	2"	34.5-39.5	
STW-4	Abandoned (03/15/17)	5/2/2000	861357.189	1359564.476	3901.57	3904.07	40	37	2"	32-37	
STW-5	Abandoned (03/15/17)	5/1/2000	861362.025	1359577.708	3901.11	3903.81	40	39	2"	34-39	
STW-6	Abandoned (03/15/17)	4/30/2000	861359.936	1359592.165	3901.52	3904.17	40	39	2"	34-39	
STW-7	Abandoned (03/15/17)	7/17/2001	861318.866	1359585.858	3903.25	3905.54	40	40	2"	25-40	
STW-8	Abandoned (03/15/17)	7/18/2001	861328.49	1359584.509	3902.93	3903.06	40	40	2"	35-40	
STW-9	Abandoned (03/15/17)	7/19/2001	861352.623	1359579.176	3901.80	3904.05	40	40	2"	35-40	
Permeable Reactive Barrier Wells											
PRB-1	Active	2006	861021.094	1359490.903	3908.33	3918.37	55	50	2"	35-50	4/11/16 (7.4)
PRB-2	Active	2006	861116.532	1359756.318	3902.84	3905.34	55	52	2"	37-52	
PRB-3	Active	2006	860985.534	1359421.246	3910.46	3919.19	55	51	2"	36-51	5/9/16 (3.0)
Speiss/Dross Slurry Wall Wells											
SDMW-1	Active	8/29/2007	860516.314	1359965.598	3914.74	3925.11	45	45.6	2"	25.6-45.6	3/31/16 (11.2)
SDMW-2	Active	8/28/2007	860449.978	1359853.948	3914.86	3928.09	42	42.5	2"	22.5-42.5	4/4/16 (14.2)
SDMW-3	Active	9/10/2007	860205.66	1359862.077	3914.60	3935.14	39.5	39	2"	19-39	4/4/16 (10.3)
SDMW-4	Active	8/24/2007	860219.838	1360147.66	3914.66	3936.10	43.5	39	2"	19-39	5/9/16 (3.9)
SDMW-5	Active	9/5/2007	860448.42	1359753.028	3918.79	3929.86	49.5	49	2"	29-49	
Stormwater Tank Wells											
SP-3 (STP)	Active	8/16/1991	861489.126	1358279.768	3905.912	3905.91	27	27	2"	17-27	
SP-4 (STP)	Active	8/16/1991	861279.557	1358890.11	3908.162	3908.16	30	30	2"	20-30	
SP-5 (STP)	Active	8/19/1991	861580.328	1358915.02	3903.523	3903.52	27	27	2"	17-27	
SC-1	Active	11/16/1987	NA	NA	3886.10	3890.42	85	85	2"	75-85	
IW-01	Active	NA	NA	NA	3888.28	NA	NA	NA	NA	NA	
IW-02	Active	NA	NA	NA	3871.08	NA	NA	NA	NA	NA	
EPA Wells											
EPA01	Active	NA	861046.3449	1359565.838	NA	3906.76	NA	NA	NA	NA	4/11/2016 (9.2)
EPA02	Active	NA	861040.0035	1359602.875	NA	3906.33	NA	NA	NA	NA	4/11/2016 (9.8)
EPA05	Active	NA	861103.4421	1359723.587	NA	3903.99	NA	NA	NA	NA	4/18/2016 (7.0)
EPA07	Active	NA	861085.5812	1359702.005	NA	3904.38	NA	NA	NA	NA	4/18/2016 (10.0)
EPA08	Active	NA	861041.6397	1359588.715	NA	3906.50	NA	NA	NA	NA	4/11/2016 (9.6)
EPA09	Active	NA	861051.6551	1359585.573	NA	3906.37	NA	NA	NA	NA	4/11/2016 (9.4)
T3A	Active	NA	861048.4908	1359594.908	NA	3906.19	NA	NA	NA	NA	4/11/2016 (9.7)
T3B	Active	NA	861049.3533	1359594.417	NA	3906.11	NA	NA	NA	NA	4/11/2016 (9.7)
T3C	Active	NA	861050.4069	1359593.729	NA	3906.15	NA	NA	NA	NA	4/11/2016 (9.7)

NA = not available

APPENDIX C

SURFACE WATER FLOW AND STAGE MONITORING DATA

APPENDIX C1

2015/16 STREAMFLOW MEASUREMENT FORMS

PPC-3A	**6/12/2015**					
Dist	Width	Depth	Area	Velocity	Discharge	%Discharge
34.2	REW					
33	1.35	1.06	1.431	0.57	0.81567	1%
31.5	1.5	1.3	1.95	1.39	2.7105	2%
30	1.5	1.51	2.265	1.68	3.8052	3%
28.5	1.5	1.7	2.55	2.45	6.2475	5%
27	1.5	1.97	2.955	2.93	8.65815	6%
25.5	1.5	2.04	3.06	3.3	10.098	7%
24	1.5	1.9	2.85	3.78	10.773	8%
22.5	1.5	2.22	3.33	3.68	12.2544	9%
21	1.5	2.15	3.225	3.9	12.5775	9%
19.5	1.5	2.1	3.15	4	12.6	9%
18	1.5	1.9	2.85	3.88	11.058	8%
16.5	1.5	1.65	2.475	3.83	9.47925	7%
15	1.5	1.65	2.475	3.95	9.77625	7%
13.5	1.5	1.54	2.31	3.69	8.5239	6%
12	1.5	1.44	2.16	3.24	6.9984	5%
10.5	1.5	1.1	1.65	3.05	5.0325	4%
9	1.5	0.91	1.365	2.72	3.7128	3%
7.5	1.25	0.48	0.6	1.88	1.128	1%
6.5	LEW					0%
					136	**CFS**

Trib 1	**6/12/2015**					
Dist	Width	Depth	Area	Velocity	Discharge	%Discharge
1.8	REW					
2.5	0.6	0.15	0.09	0	0	0%
3	0.5	0.16	0.08	0	0	0%
3.5	0.5	0.22	0.11	0	0	0%
4	0.5	0.23	0.115	0.02	0.0023	0%
4.5	0.5	0.32	0.16	0.02	0.0032	0%
5	0.5	0.41	0.205	0.04	0.0082	0%
5.5	0.5	0.45	0.225	0.06	0.0135	0%
6	0.5	0.53	0.265	0.07	0.01855	0%
6.5	0.5	0.52	0.26	0.06	0.0156	0%
7	0.5	0.44	0.22	0.04	0.0088	0%
7.5	0.5	0.37	0.185	0.04	0.0074	0%
8	0.5	0.33	0.165	0.01	0.00165	0%
8.5	0.5	0.25	0.125	0	0	0%
9	0.5	0.2	0.1	0.01	0.001	0%
9.5	0.6	0.15	0.09	0	0	0%
10.2	LEW					
					0.080	**CFS**

PPC-5	**6/12/2015**					
Dist	Width	Depth	Area	Velocity	Discharge	%Discharge
41.8	REW					
41	1.4	0.68	0.952	0.73	0.69496	1%
39	2	0.58	1.16	1.52	1.7632	1%
37	2	0.68	1.36	1.08	1.4688	1%
35	2	0.64	1.28	1.1	1.408	1%
33	2	0.71	1.42	1.2	1.704	1%
31	2	0.81	1.62	1.13	1.8306	1%
29	2	0.7	1.4	1.93	2.702	2%
27	2	0.91	1.82	2.17	3.9494	3%
25	2	0.73	1.46	3.1	4.526	3%
23	2	0.84	1.68	2.23	3.7464	3%
21	2	1.03	2.06	1.61	3.3166	2%
19	2	1	2	3.21	6.42	5%
17	2	1.18	2.36	3.85	9.086	7%
15	2	1.38	2.76	3.77	10.4052	8%
13	2	1.28	2.56	4.75	12.16	9%
11	2	1.52	3.04	4.59	13.9536	10%
9	2	1.75	3.5	4.27	14.945	11%
7	2	1.61	3.22	4.15	13.363	10%
5	2	1.68	3.36	4.42	14.8512	11%
3	1.75	1.62	2.835	3.31	9.38385	7%
1.5	1.2	1.75	2.1	2.29	4.809	4%
0.6	LEW					0%
					136	**CFS**

PPC-7	**6/12/2015**					
Dist	Width	Depth	Area	Velocity	Discharge	%Discharge
32.7	REW					
32	0.85	0.15	0.1275	0	0	0%
31	1	0.32	0.32	0.38	0.1216	1%
30	1	0.84	0.84	0.43	0.3612	2%
29	1.5	1.12	1.68	0.9	1.512	10%
27	2	1.41	2.82	1.76	4.9632	33%
25	2	1.58	3.16	2.88	9.1008	61%
23	2	1.84	3.68	2.67	9.8256	66%
21	2	1.97	3.94	3.3	13.002	88%
19	2	1.91	3.82	3.05	11.651	78%
17	2	1.8	3.6	3.83	13.788	93%
15	2	1.88	3.76	3.9	14.664	99%
13	2	1.75	3.5	3.84	13.44	90%
11	2	1.76	3.52	3.75	13.2	89%
9	2	1.58	3.16	3.43	10.8388	73%
7	2	1.45	2.9	3.05	8.845	60%
5	2	1.29	2.58	2.55	6.579	44%
3	1.55	1.07	1.6585	2.01	3.333585	22%
1.9	LEW					
					135	**CFS**

PPC-36A	**6/12/2015**					
Dist	Width	Depth	Area	Velocity	Discharge	%Discharge
29	LEW					
28	1.25	0.43	0.5375	0.47	0.252625	0%
26.5	1.5	1.02	1.53	1.12	1.7136	1%
25	1.5	1.39	2.085	1.47	3.06495	3%
23.5	1.5	1.65	2.475	1.92	4.752	4%
22	1.5	1.81	2.715	2.17	5.89155	5%
20.5	1.5	1.7	2.55	2.56	6.528	5%
19	1.5	1.77	2.655	2.8	7.434	6%
17.5	1.5	1.82	2.73	3.17	8.6541	7%
16	1.5	1.52	2.28	3.36	7.6608	6%
14.5	1.5	1.88	2.82	3.62	10.2084	8%
13	1.5	1.78	2.67	3.91	10.4397	9%
11.5	1.5	2	3	3.71	11.13	9%
10	1.5	2.07	3.105	3.36	10.4328	9%
8.5	1.5	2	3	3.08	9.24	8%
7	1.5	1.83	2.745	3.16	8.6742	7%
5.5	1.5	1.72	2.58	3.03	7.8174	7%
4	1.5	1.21	1.815	2.66	4.8279	4%
2.5	1.25	0.58	0.725	2.02	1.4645	1%
1.5	REW					
					120	**CFS**

PPC-10	**6/12/2015**					
Dist	Width	Depth	Area	Velocity	Discharge	%Discharge
30.4	REW					
29	1.2	0.42	0.504	0.37	0.18648	0%
28	1.25	0.9	1.125	2.03	2.28375	2%
26.5	1.5	1.01	1.515	2.53	3.83295	3%
25	1.5	0.97	1.455	2.75	4.00125	3%
23.5	1.5	0.68	1.02	2.75	2.805	2%
22	1.5	0.77	1.155	2.72	3.1416	3%
20.5	1.5	0.87	1.305	2.7	3.5235	3%
19	1.5	0.96	1.44	2.97	4.2768	4%
17.5	1.5	1.13	1.695	2.98	5.0511	4%
16	1.5	1.43	2.145	3.27	7.01415	6%
14.5	1.5	1.71	2.565	3.46	8.8749	7%
13	1.5	2.13	3.195	3.4	10.863	9%
11.5	1.5	2.5	3.75	2.24	8.4	7%
10	1.5	2.05	3.075	2.99	9.19425	8%
8.5	1.5	1.73	2.595	3.76	9.7572	8%
7	1.5	1.52	2.28	3.83	8.7324	7%
5.5	1.5	1.25	1.875	4.44	8.325	7%
4	1.65	1.23	2.0295	3.74	7.59033	6%
2.2	LEW					
					108	**CFS**
Velocity based on average of 0.2 and 0.8 depth measurements						

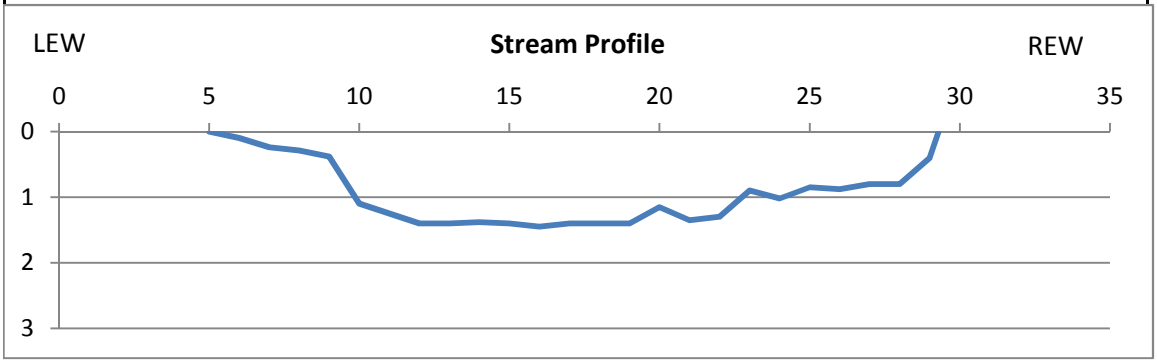
SG-16	**6/12/2015**					
Dist	Width	Depth	Area	Velocity	Discharge	%Discharge
40.9	REW					
39	1.95	0.4	0.78	1.9	1.482	1%
37	2	0.49	0.98	2.02	1.9796	2%
35	2	0.5	1	2.19	2.19	2%
33	2	0.67	1.34	2.26	3.0284	3%
31	2	0.8	1.6	2.4	3.84	4%
29	2	0.91	1.82	2.3	4.186	4%
27	2	1	2	2.26	4.52	4%
25	2	1.07	2.14	2.59	5.5426	5%
23	2	1.07	2.14	2.79	5.9706	6%
21	2	1.11	2.22	2.84	6.3048	6%
19	2	1.2	2.4	2.95	7.08	7%
17	2	1.2	2.4	3.02	7.248	7%
15	2	1.32	2.64	3.08	8.1312	8%
13	2	1.33	2.66	3.11	8.2726	8%
11	2	1.48	2.96	2.86	8.4656	8%
9	2	1.62	3.24	2.68	8.6832	8%
7	2	1.68	3.36	2.23	7.4928	7%
5	2	1.56	3.12	2.21	6.8952	7%
3	1.5	1.46	2.19	0.8	1.752	2%
2	0.75	1.23	0.9225	0.6	0.5535	1%
1.5	LEW					
					104	**CFS**

GP-5	**6/12/2015**					
Dist	Width	Depth	Area	Velocity	Discharge	%Discharge
2.2	LEW					
2.5	0.3	0.43	0.129	0.49	0.06321	1%
2.8	0.3	0.55	0.165	1.43	0.23595	3%
3.1	0.3	0.67	0.201	0.99	0.19899	2%
3.4	0.3	0.5	0.15	1.72	0.258	3%
3.7	0.3	0.49	0.147	1.7	0.2499	3%
4	0.3	0.38	0.114	1.35	0.1539	2%
4.3	0.3	0.62	0.186	0.75	0.1395	2%
4.6	0.3	0.6	0.18	0.96	0.1728	2%
4.9	0.3	0.57	0.171	1.96	0.33516	4%
5.2	0.3	0.52	0.156	0.88	0.13728	2%
5.5	0.3	0.35	0.105	0.9	0.0945	1%
5.8	REW					
					2.0	**CFS**

PPC-3A **10/14/2015**

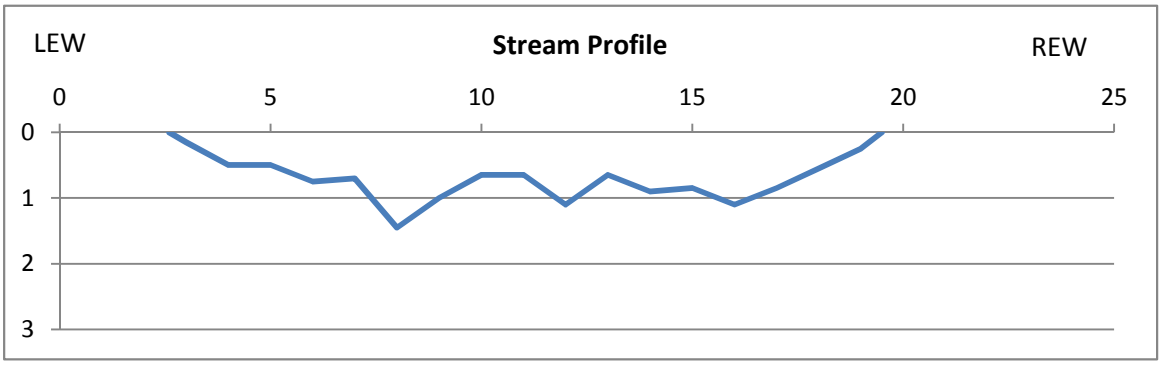
Dist	Width	Depth	Area	Velocity	Discharge	%Discharge
29.3	REW	0				
29	0.65	0.4	0.26	0.06	0.016	0.1%
28	1	0.8	0.8	0.04	0.032	0.1%
27	1	0.8	0.8	0.35	0.280	0.9%
26	1	0.88	0.88	0.74	0.651	2.1%
25	1	0.85	0.85	0.96	0.816	2.7%
24	1	1.02	1.02	0.99	1.010	3.3%
23	1	0.9	0.9	1.15	1.035	3.4%
22	1	1.3	1.3	1.07	1.391	4.6%
21	1	1.35	1.35	1.21	1.634	5.3%
20	1	1.15	1.15	1.38	1.587	5.2%
19	1	1.4	1.4	1.25	1.750	5.7%
18	1	1.4	1.4	1.5	2.100	6.9%
17	1	1.4	1.4	1.58	2.212	7.2%
16	1	1.45	1.45	1.57	2.277	7.5%
15	1	1.4	1.4	1.8	2.520	8.2%
14	1	1.38	1.38	1.72	2.374	7.8%
13	1	1.4	1.4	1.68	2.352	7.7%
12	1	1.4	1.4	1.75	2.450	8.0%
11	1	1.25	1.25	1.47	1.838	6.0%
10	1	1.1	1.1	1.35	1.485	4.9%
9	1	0.38	0.38	1.01	0.384	1.3%
8	1	0.29	0.29	0.74	0.215	0.7%
7	1	0.24	0.24	0.49	0.118	0.4%
6	1	0.1	0.1	0.33	0.033	0.1%
5	LEW	0				0.0%

30.6 cfs



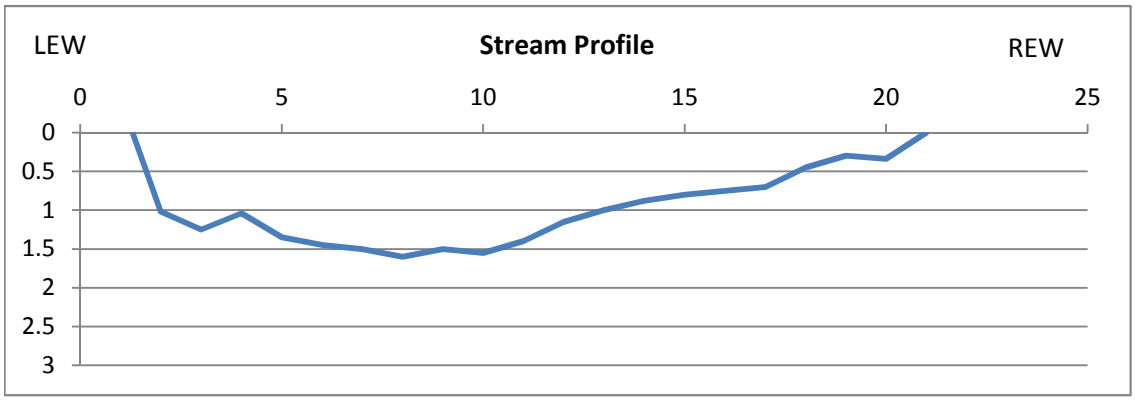
PPCB-1 **10/14/2015**

Dist	Width	Depth	Area	Velocity	Discharge	%Discharge
2.6	LEW	0				
3	0.7	0.15	0.105	0	0	0.0%
4	1	0.5	0.5	0.45	0.225	0.7%
5	1	0.5	0.5	1.49	0.745	2.4%
6	1	0.75	0.75	0.24	0.18	0.6%
7	1	0.7	0.7	2.75	1.925	6.2%
8	1	1.45	1.45	2.7	3.915	12.6%
9	1	1	1	3.05	3.05	9.8%
10	1	0.65	0.65	2.1	1.365	4.4%
11	1	0.65	0.65	2.9	1.885	6.1%
12	1	1.1	1.1	1.22	1.342	4.3%
13	1	0.65	0.65	2.81	1.8265	5.9%
14	1	0.9	0.9	3.39	3.051	9.8%
15	1	0.85	0.85	3.61	3.0685	9.9%
16	1	1.1	1.1	2.92	3.212	10.4%
17	1	0.85	0.85	3.9	3.315	10.7%
18	1	0.55	0.55	3.05	1.6775	5.4%
19	0.75	0.25	0.1875	1.12	0.21	0.7%
19.5	REW	0				
					31.0	cfs



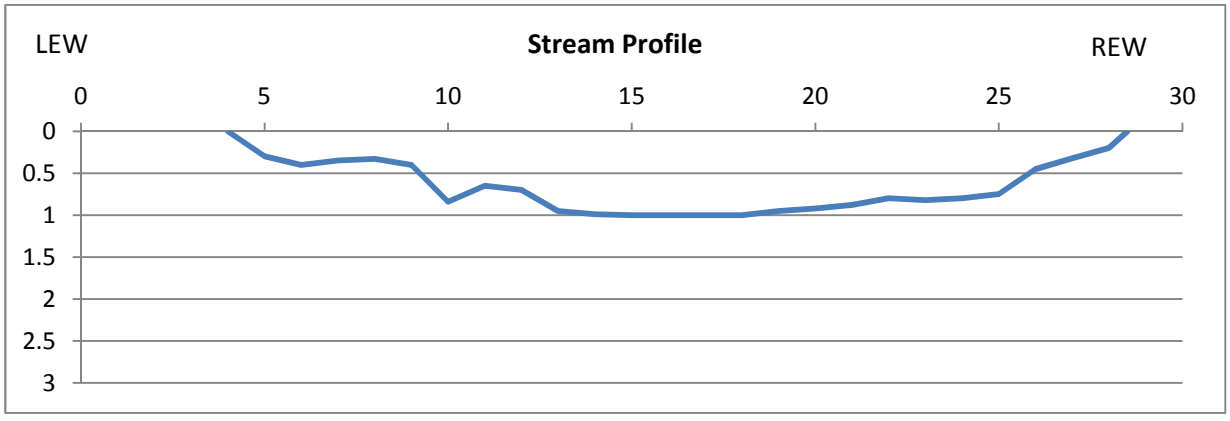
PPC-5 **10/14/2015**

Dist	Width	Depth	Area	Velocity	Discharge	%Discharge
21	REW	0				
20	1	0.34	0.34	0.45	0.153	0.5%
19	1	0.3	0.3	0.33	0.099	0.3%
18	1	0.45	0.45	0.99	0.4455	1.5%
17	1	0.7	0.7	0.44	0.308	1.0%
16	1	0.75	0.75	1.11	0.8325	2.8%
15	1	0.8	0.8	1.26	1.008	3.4%
14	1	0.88	0.88	1.54	1.3552	4.6%
13	1	1	1	1.45	1.45	4.9%
12	1	1.15	1.15	1.52	1.748	5.9%
11	1	1.4	1.4	1.87	2.618	8.9%
10	1	1.55	1.55	2	3.1	10.5%
9	1	1.5	1.5	2.25	3.375	11.5%
8	1	1.6	1.6	1.77	2.832	9.6%
7	1	1.5	1.5	1.75	2.625	8.9%
6	1	1.45	1.45	1.62	2.349	8.0%
5	1	1.35	1.35	1.45	1.9575	6.6%
4	1	1.04	1.04	1.33	1.3832	4.7%
3	1	1.25	1.25	0.88	1.1	3.7%
2	0.85	1.02	0.867	0.83	0.71961	2.4%
1.3	LEW	0				
					29.5	cfs



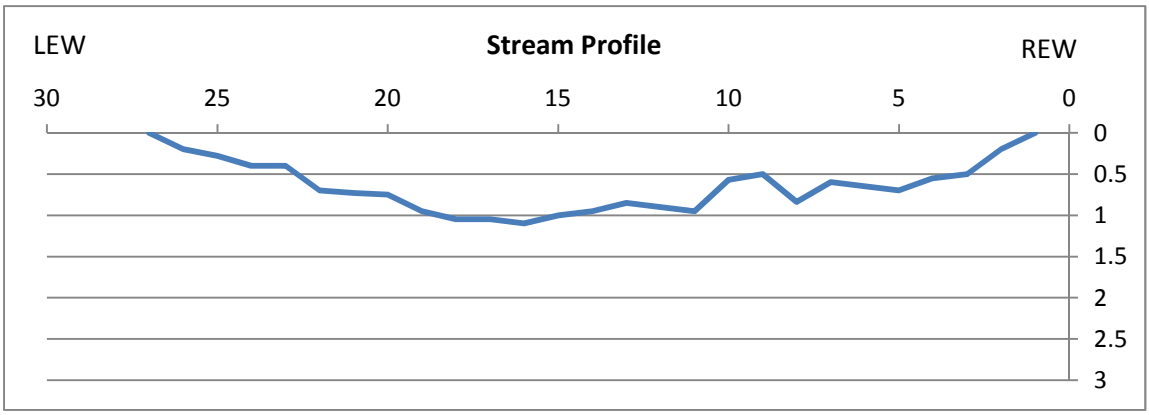
PPC-7 **10/14/2015**

Dist	Width	Depth	Area	Velocity	Discharge	%Discharge
28.5	LEW	0				
28	0.75	0.2	0.15	0.66	0.099	0.3%
27	1	0.32	0.32	1.02	0.326	1.0%
26	1	0.45	0.45	1.3	0.585	1.9%
25	1	0.75	0.75	1.5	1.125	3.6%
24	1	0.8	0.8	1.72	1.376	4.4%
23	1	0.82	0.82	1.82	1.492	4.8%
22	1	0.8	0.8	1.93	1.544	5.0%
21	1	0.88	0.88	2.19	1.927	6.2%
20	1	0.92	0.92	2.24	2.061	6.6%
19	1	0.95	0.95	2.25	2.138	6.9%
18	1	1	1	2.4	2.400	7.7%
17	1	1	1	2.22	2.220	7.1%
16	1	1	1	2.2	2.200	7.1%
15	1	1	1	2.26	2.260	7.3%
14	1	0.99	0.99	2.15	2.129	6.8%
13	1	0.95	0.95	2.05	1.948	6.3%
12	1	0.7	0.7	2.23	1.561	5.0%
11	1	0.65	0.65	1.82	1.183	3.8%
10	1	0.84	0.84	1.65	1.386	4.5%
9	1	0.4	0.4	1.31	0.524	1.7%
8	1	0.33	0.33	1.11	0.366	1.2%
7	1	0.35	0.35	0.57	0.200	0.6%
6	1	0.4	0.4	0.12	0.048	0.2%
5	1	0.3	0.3	0.15	0.045	0.1%
4	LEW	0				
					31.1	cfs



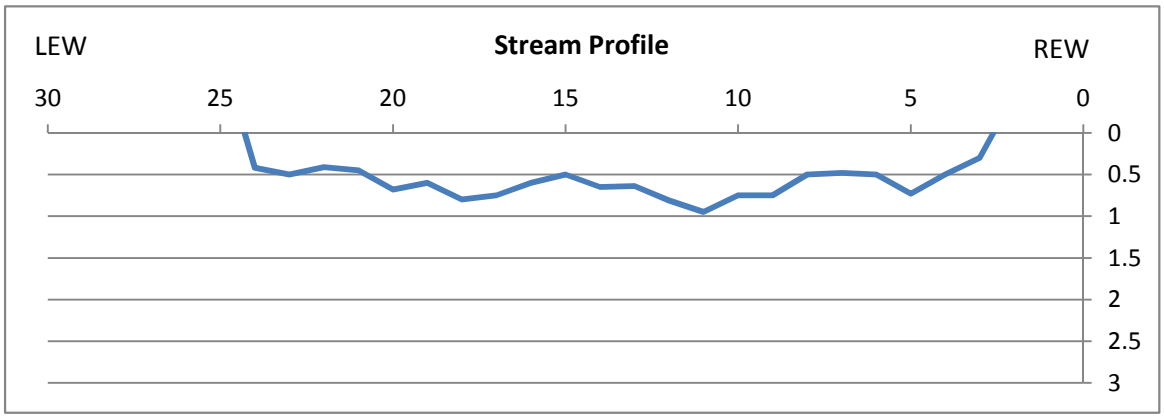
PPC-36A 10/14/2015

Dist	Width	Depth	Area	Velocity	Discharge	%Discharge
27	LEW	0				
26	1	0.2	0.2	0.18	0.036	0.1%
25	1	0.28	0.28	0.19	0.0532	0.2%
24	1	0.4	0.4	0.5	0.2	0.7%
23	1	0.4	0.4	0.9	0.36	1.3%
22	1	0.7	0.7	1.23	0.861	3.1%
21	1	0.73	0.73	1.66	1.2118	4.4%
20	1	0.75	0.75	1.68	1.26	4.6%
19	1	0.95	0.95	1.75	1.6625	6.0%
18	1	1.05	1.05	1.84	1.932	7.0%
17	1	1.05	1.05	1.7	1.785	6.5%
16	1	1.1	1.1	1.58	1.738	6.3%
15	1	1	1	1.54	1.54	5.6%
14	1	0.95	0.95	1.94	1.843	6.7%
13	1	0.85	0.85	1.91	1.6235	5.9%
12	1	0.9	0.9	1.78	1.602	5.8%
11	1	0.95	0.95	1.85	1.7575	6.4%
10	1	0.57	0.57	1.82	1.0374	3.8%
9	1	0.5	0.5	1.7	0.85	3.1%
8	1	0.84	0.84	1.55	1.302	4.7%
7	1	0.6	0.6	1.84	1.104	4.0%
6	1	0.65	0.65	1.65	1.0725	3.9%
5	1	0.7	0.7	1.44	1.008	3.7%
4	1	0.55	0.55	1.5	0.825	3.0%
3	1	0.5	0.5	1.39	0.695	2.5%
2	1	0.2	0.2	0.67	0.134	0.5%
1	REW	0				
					27.5	cfs



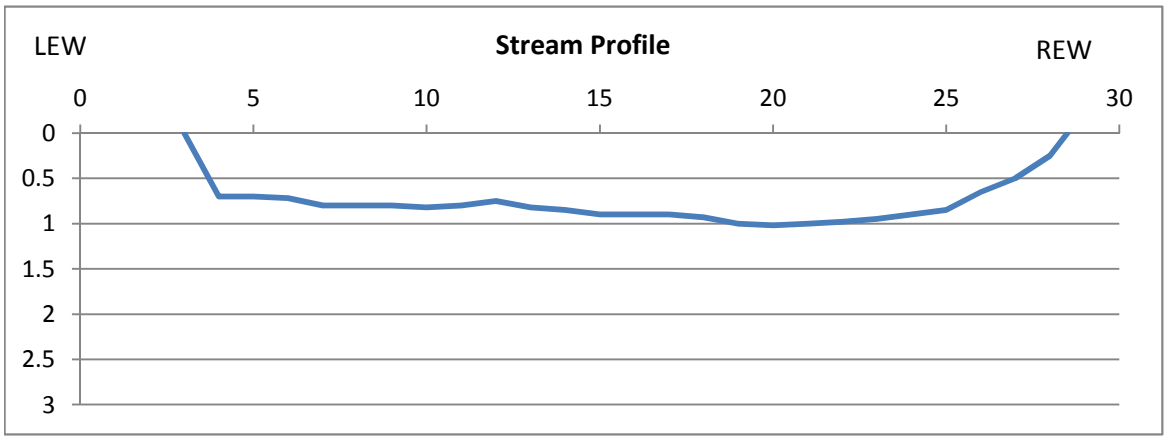
PPC-10 **10/14/2015**

Dist	Width	Depth	Area	Velocity	Discharge	%Discharge
2.6	REW	0				
3	0.7	0.3	0.21	0.49	0.1029	0.4%
4	1	0.5	0.5	2.02	1.01	4.3%
5	1	0.73	0.73	1.79	1.3067	5.6%
6	1	0.5	0.5	2.28	1.14	4.8%
7	1	0.48	0.48	2.4	1.152	4.9%
8	1	0.5	0.5	2.73	1.365	5.8%
9	1	0.75	0.75	2.63	1.9725	8.4%
10	1	0.75	0.75	2.78	2.085	8.9%
11	1	0.95	0.95	1.43	1.3585	5.8%
12	1	0.81	0.81	1.28	1.0368	4.4%
13	1	0.64	0.64	1.84	1.1776	5.0%
14	1	0.65	0.65	1.31	0.8515	3.6%
15	1	0.5	0.5	2.07	1.035	4.4%
16	1	0.6	0.6	2.35	1.41	6.0%
17	1	0.75	0.75	2.05	1.5375	6.5%
18	1	0.8	0.8	1.24	0.992	4.2%
19	1	0.6	0.6	1.5	0.9	3.8%
20	1	0.68	0.68	1.66	1.1288	4.8%
21	1	0.45	0.45	1.49	0.6705	2.9%
22	1	0.41	0.41	1.7	0.697	3.0%
23	1	0.5	0.5	0.69	0.345	1.5%
24	0.65	0.42	0.273	0.89	0.24297	1.0%
24.3	LEW	0				
					23.5	cfs



SG-16 **10/14/2015**

Dist	Width	Depth	Area	Velocity	Discharge	%Discharge
28.5	REW	0				
28	0.75	0.25	0.1875	0.01	0.002	0.0%
27	1	0.5	0.5	0.18	0.090	0.5%
26	1	0.65	0.65	0.3	0.195	1.0%
25	1	0.85	0.85	0.57	0.485	2.5%
24	1	0.9	0.9	0.73	0.657	3.4%
23	1	0.95	0.95	0.86	0.817	4.3%
22	1	0.98	0.98	0.99	0.970	5.1%
21	1	1	1	1.1	1.100	5.7%
20	1	1.02	1.02	0.93	0.949	4.9%
19	1	1	1	1.12	1.120	5.8%
18	1	0.93	0.93	1.03	0.958	5.0%
17	1	0.9	0.9	1.17	1.053	5.5%
16	1	0.9	0.9	1.11	0.999	5.2%
15	1	0.9	0.9	1.26	1.134	5.9%
14	1	0.85	0.85	1.16	0.986	5.1%
13	1	0.82	0.82	1.22	1.000	5.2%
12	1	0.75	0.75	1.03	0.773	4.0%
11	1	0.8	0.8	1.23	0.984	5.1%
10	1	0.82	0.82	1.13	0.927	4.8%
9	1	0.8	0.8	1.16	0.928	4.8%
8	1	0.8	0.8	1.06	0.848	4.4%
7	1	0.8	0.8	0.96	0.768	4.0%
6	1	0.72	0.72	0.9	0.648	3.4%
5	1	0.7	0.7	0.76	0.532	2.8%
4	1	0.7	0.7	0.35	0.245	1.3%
3	LEW	0				0.0%
					19.2	cfs



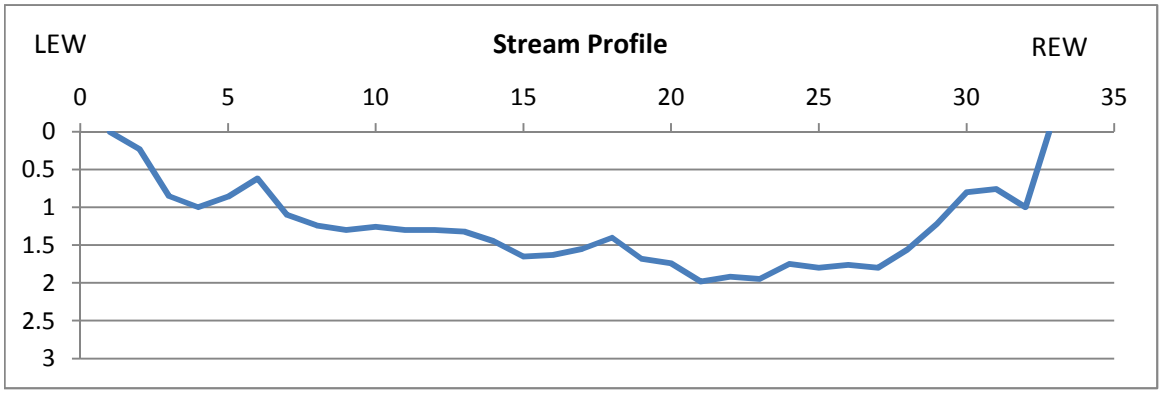
GP-5 **10/14/2015**

Dist	Width	Depth	Area	Velocity	Discharge	%Discharge
2.3	REW					
2.6	0.3	0.2	0.06	0.09	0.005	0.6%
2.9	0.3	0.4	0.12	0.16	0.019	2.0%
3.2	0.3	0.45	0.135	0.2	0.027	2.9%
3.5	0.3	0.55	0.165	0.48	0.079	8.4%
3.8	0.3	0.56	0.168	0.36	0.060	6.4%
4.1	0.3	0.55	0.165	0.81	0.134	14.1%
4.4	0.3	0.6	0.18	0.92	0.166	17.5%
4.7	0.3	0.63	0.189	0.79	0.149	15.8%
5	0.3	0.5	0.15	1.04	0.156	16.5%
5.3	0.3	0.6	0.18	0.6	0.108	11.4%
5.6	0.3	0.45	0.135	0.3	0.041	4.3%
5.9	0.25	0.24	0.06	0.02	0.001	0.1%
6.1	LEW					

0.95 cfs

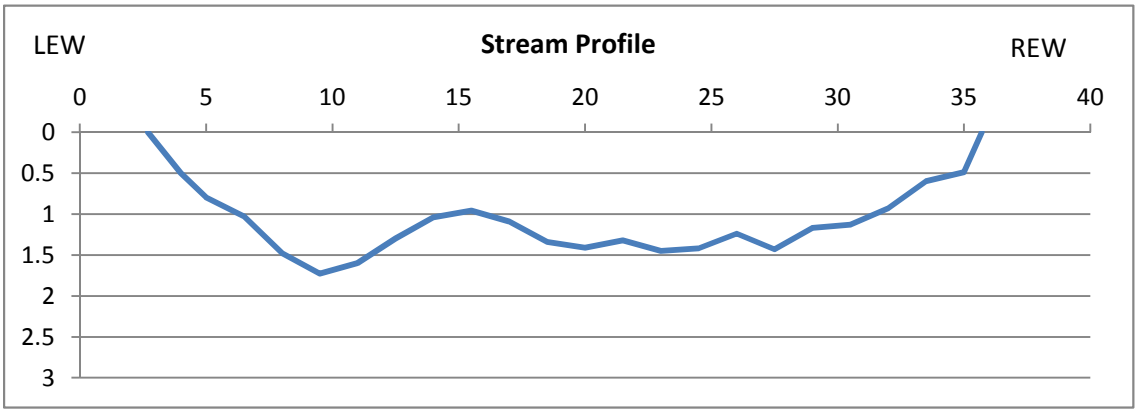
PPC-3A **6/7/2016** AEH-1606-300

Dist	Width	Depth	Area	Velocity	Discharge	%Discharge
1	LEW	0				
2	1	0.23	0.23	0.25	0.058	0.0%
3	1	0.85	0.85	3.48	2.958	2.2%
4	1	1	1	3.86	3.860	2.9%
5	1	0.86	0.86	5.6	4.816	3.6%
6	1	0.62	0.62	3.11	1.928	1.4%
7	1	1.1	1.1	4.15	4.565	3.4%
8	1	1.24	1.24	4.51	5.592	4.2%
9	1	1.3	1.3	5.3	6.890	5.1%
10	1	1.26	1.26	4.18	5.267	3.9%
11	1	1.3	1.3	4.22	5.486	4.1%
12	1	1.3	1.3	4.62	6.006	4.5%
13	1	1.32	1.32	3.35	4.422	3.3%
14	1	1.45	1.45	2.28	3.306	2.5%
15	1	1.65	1.65	4.62	7.623	5.7%
16	1	1.63	1.63	4.14	6.748	5.0%
17	1	1.55	1.55	4.56	7.068	5.3%
18	1	1.4	1.4	3.51	4.914	3.7%
19	1	1.68	1.68	3.68	6.182	4.6%
20	1	1.74	1.74	4.3	7.482	5.6%
21	1	1.98	1.98	2.95	5.841	4.4%
22	1	1.92	1.92	2.44	4.685	3.5%
23	1	1.95	1.95	2.98	5.811	4.3%
24	1	1.75	1.75	3.52	6.160	4.6%
25	1	1.8	1.8	2.63	4.734	3.5%
26	1	1.76	1.76	2.54	4.470	3.3%
27	1	1.8	1.8	2.75	4.950	3.7%
28	1	1.56	1.56	1.28	1.997	1.5%
29	1	1.22	1.22	0.3	0.366	0.3%
30	1	0.8	0.8	0.05	0.040	0.0%
31	1	0.76	0.76	0	0.000	0.0%
32	0.9	1	0.9	0	0.000	0.0%
32.8	REW	0				
					134	cfs



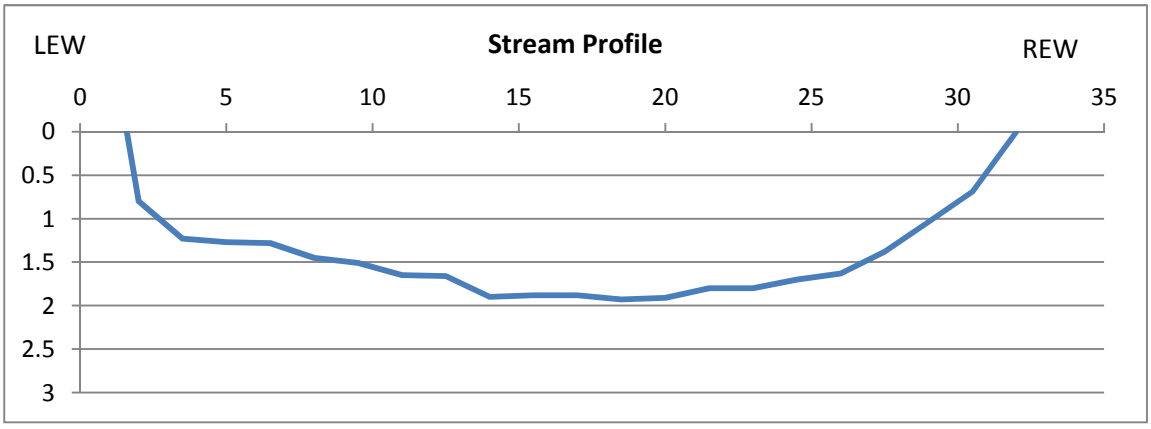
PPC-5 **6/7/2016** AEH-1606-305

Dist	Width	Depth	Area	Velocity	Discharge	%Discharge
2.7	LEW	0				
4	1.15	0.5	0.575	1.59	0.91425	0.6%
5	1.25	0.8	1	3.46	3.46	2.4%
6.5	1.5	1.03	1.545	3.01	4.65045	3.2%
8	1.5	1.48	2.22	3.14	6.9708	4.9%
9.5	1.5	1.73	2.595	3.32	8.6154	6.0%
11	1.5	1.6	2.4	3.25	7.8	5.4%
12.5	1.5	1.3	1.95	3.49	6.8055	4.7%
14	1.5	1.04	1.56	4.02	6.2712	4.4%
15.5	1.5	0.96	1.44	4.13	5.9472	4.1%
17	1.5	1.09	1.635	4.01	6.55635	4.6%
18.5	1.5	1.34	2.01	3.52	7.0752	4.9%
20	1.5	1.41	2.115	3.67	7.76205	5.4%
21.5	1.5	1.32	1.98	4.24	8.3952	5.9%
23	1.5	1.45	2.175	4.21	9.15675	6.4%
24.5	1.5	1.42	2.13	4.68	9.9684	6.9%
26	1.5	1.24	1.86	4.67	8.6862	6.1%
27.5	1.5	1.43	2.145	4.45	9.54525	6.7%
29	1.5	1.17	1.755	4.71	8.26605	5.8%
30.5	1.5	1.13	1.695	4.75	8.05125	5.6%
32	1.5	0.93	1.395	3.94	5.4963	3.8%
33.5	1.5	0.6	0.9	3.21	2.889	2.0%
35	1.1	0.49	0.539	0.4	0.2156	0.2%
35.7	REW	0				
					143	cfs



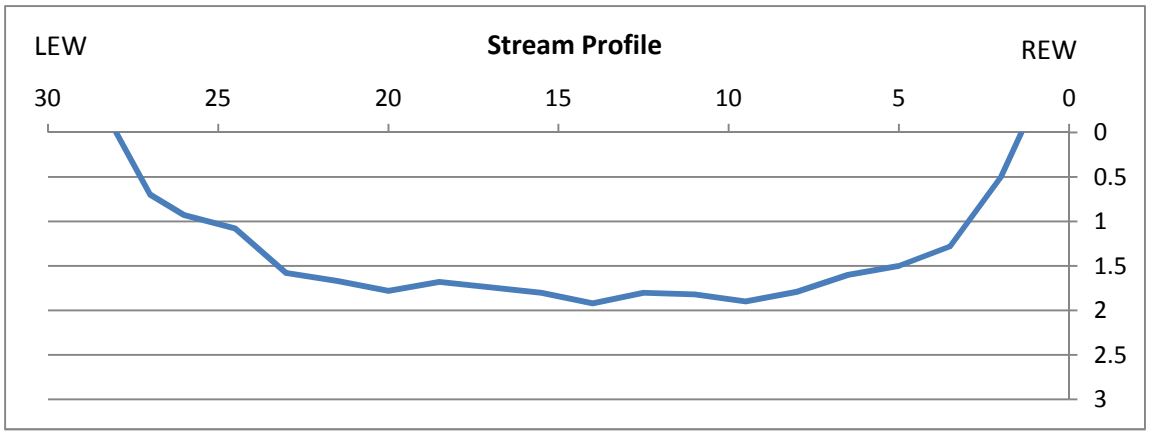
PPC-7 **6/7/2016** AEH-1606-306

Dist	Width	Depth	Area	Velocity	Discharge	%Discharge
1.6	LEW	0				
2	0.95	0.8	0.76	0.14	0.106	0.1%
3.5	1.5	1.23	1.845	1.54	2.841	2.0%
5	1.5	1.27	1.905	2.09	3.981	2.9%
6.5	1.5	1.28	1.92	2.72	5.222	3.8%
8	1.5	1.45	2.175	3.28	7.134	5.1%
9.5	1.5	1.51	2.265	4.07	9.219	6.6%
11	1.5	1.65	2.475	3.75	9.281	6.7%
12.5	1.5	1.66	2.49	3.95	9.836	7.1%
14	1.5	1.9	2.85	3.93	11.201	8.1%
15.5	1.5	1.88	2.82	3.73	10.519	7.6%
17	1.5	1.88	2.82	3.73	10.519	7.6%
18.5	1.5	1.93	2.895	3.72	10.769	7.8%
20	1.5	1.91	2.865	3.77	10.801	7.8%
21.5	1.5	1.8	2.7	3.13	8.451	6.1%
23	1.5	1.8	2.7	3.48	9.396	6.8%
24.5	1.5	1.7	2.55	3.06	7.803	5.6%
26	1.5	1.63	2.445	2.63	6.430	4.6%
27.5	1.5	1.38	2.07	1.82	3.767	2.7%
29	1.5	1.04	1.56	0.78	1.217	0.9%
30.5	1.5	0.69	1.035	0.19	0.197	0.1%
32	REW	0				
					139	cfs



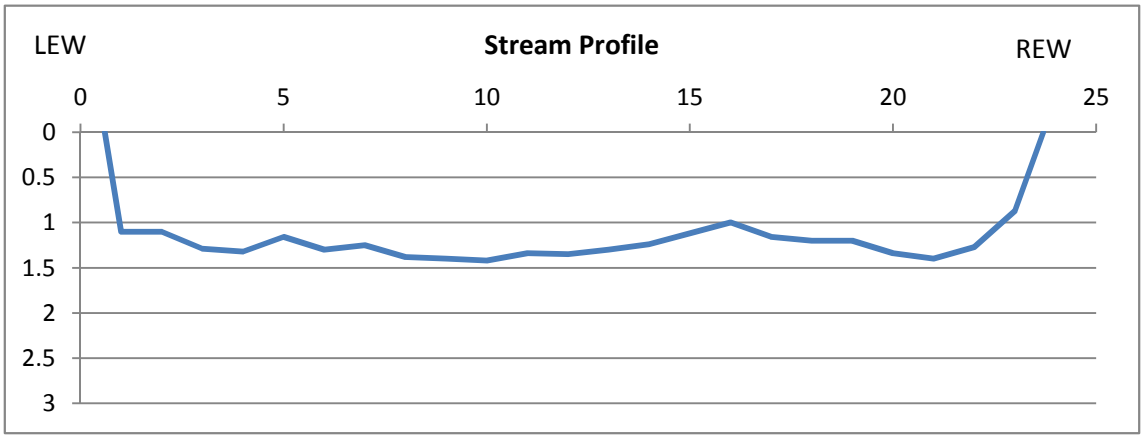
PPC-36A **6/7/2016** AEH-1606-307

Dist	Width	Depth	Area	Velocity	Discharge	%Discharge
1.4	REW	0				
2	1.05	0.5	0.525	1.36	0.714	0.6%
3.5	1.5	1.28	1.92	1.54	2.9568	2.6%
5	1.5	1.5	2.25	2.26	5.085	4.5%
6.5	1.5	1.6	2.4	2.55	6.12	5.4%
8	1.5	1.79	2.685	3.13	8.40405	7.4%
9.5	1.5	1.9	2.85	3.89	11.0865	9.8%
11	1.5	1.82	2.73	4.03	11.0019	9.7%
12.5	1.5	1.8	2.7	4.06	10.962	9.7%
14	1.5	1.92	2.88	3.74	10.7712	9.5%
15.5	1.5	1.8	2.7	3.51	9.477	8.4%
17	1.5	1.74	2.61	3.1	8.091	7.1%
18.5	1.5	1.68	2.52	2.84	7.1568	6.3%
20	1.5	1.78	2.67	2.71	7.2357	6.4%
21.5	1.5	1.67	2.505	2.16	5.4108	4.8%
23	1.5	1.58	2.37	1.81	4.2897	3.8%
24.5	1.5	1.08	1.62	1.55	2.511	2.2%
26	1.25	0.93	1.1625	1.56	1.8135	1.6%
27	1	0.7	0.7	0.47	0.329	0.3%
28	LEW	0				
					113	cfs



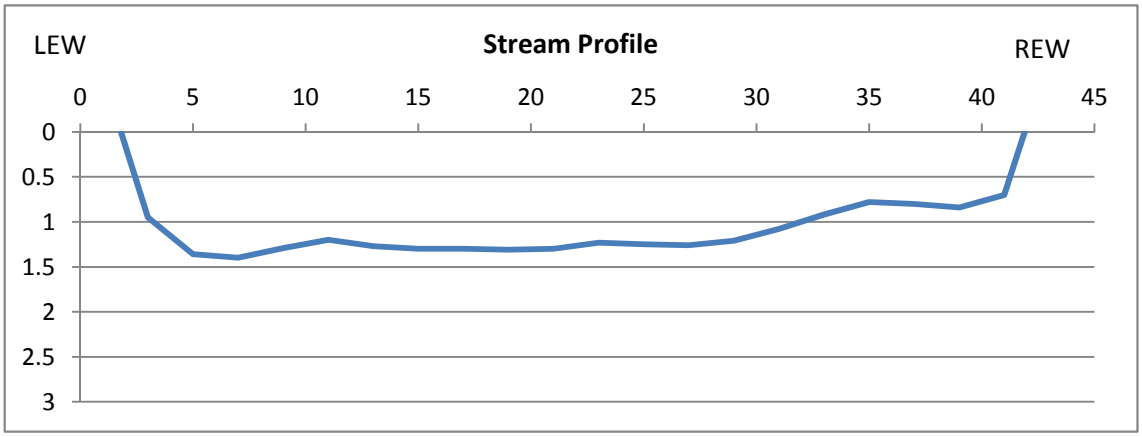
PPC-10 **6/7/2016** AEH-1606-308

Dist	Width	Depth	Area	Velocity	Discharge	%Discharge
0.6	LEW	0				
1	0.7	1.1	0.77	0.9	0.693	0.7%
2	1	1.1	1.1	3.25	3.575	3.5%
3	1	1.29	1.29	3.02	3.8958	3.9%
4	1	1.32	1.32	3.22	4.2504	4.2%
5	1	1.16	1.16	4.01	4.6516	4.6%
6	1	1.3	1.3	4.25	5.525	5.5%
7	1	1.25	1.25	4.84	6.05	6.0%
8	1	1.38	1.38	4.9	6.762	6.7%
9	1	1.4	1.4	4.95	6.93	6.9%
10	1	1.42	1.42	4.11	5.8362	5.8%
11	1	1.34	1.34	5.02	6.7268	6.7%
12	1	1.35	1.35	4.45	6.0075	6.0%
13	1	1.3	1.3	3.45	4.485	4.4%
14	1	1.24	1.24	4.4	5.456	5.4%
15	1	1.12	1.12	3.41	3.8192	3.8%
16	1	1	1	3.77	3.77	3.7%
17	1	1.16	1.16	3.68	4.2688	4.2%
18	1	1.2	1.2	3.59	4.308	4.3%
19	1	1.2	1.2	3.14	3.768	3.7%
20	1	1.34	1.34	2.9	3.886	3.9%
21	1	1.4	1.4	2.47	3.458	3.4%
22	1	1.27	1.27	1.67	2.1209	2.1%
23	0.85	0.87	0.7395	0.91	0.672945	0.7%
23.7	REW	0				
					101	cfs



SG-16 **6/7/2016** AEH-1606-309

Dist	Width	Depth	Area	Velocity	Discharge	%Discharge
1.8	LEW	0				
3	1.6	0.95	1.52	0.04	0.061	0.1%
5	2	1.36	2.72	0.75	2.040	2.0%
7	2	1.4	2.8	1.5	4.200	4.1%
9	2	1.29	2.58	2.28	5.882	5.7%
11	2	1.2	2.4	2.65	6.360	6.2%
13	2	1.27	2.54	2.7	6.858	6.6%
15	2	1.3	2.6	2.71	7.046	6.8%
17	2	1.3	2.6	2.92	7.592	7.3%
19	2	1.31	2.62	2.88	7.546	7.3%
21	2	1.3	2.6	3.1	8.060	7.8%
23	2	1.23	2.46	2.96	7.282	7.0%
25	2	1.25	2.5	2.87	7.175	6.9%
27	2	1.26	2.52	2.87	7.232	7.0%
29	2	1.21	2.42	2.73	6.607	6.4%
31	2	1.08	2.16	2.42	5.227	5.1%
33	2	0.92	1.84	2.72	5.005	4.8%
35	2	0.78	1.56	1.94	3.026	2.9%
37	2	0.8	1.6	1.98	3.168	3.1%
39	2	0.84	1.68	1.56	2.621	2.5%
41	1.45	0.7	1.015	0.41	0.416	0.4%
41.9	REW	0				0.0%
					103	cfs



GP-5 **6/7/2016** AEH-1606-310

Dist	Width	Depth	Area	Velocity	Discharge	%Discharge
0.7	LEW					
1.2	0.4	0.25	0.1	0.04	0.004	0.2%
1.5	0.3	0.65	0.195	0.14	0.027	1.7%
1.8	0.3	0.8	0.24	0.19	0.046	2.8%
2.1	0.3	0.86	0.258	0.37	0.095	5.8%
2.4	0.3	0.82	0.246	0.44	0.108	6.6%
2.7	0.3	0.98	0.294	0.42	0.123	7.5%
3	0.3	0.97	0.291	0.47	0.137	8.3%
3.3	0.3	1	0.3	0.4	0.120	7.3%
3.6	0.3	0.96	0.288	0.52	0.150	9.1%
3.9	0.3	0.93	0.279	0.52	0.145	8.8%
4.2	0.3	1	0.3	0.45	0.135	8.2%
4.5	0.3	0.94	0.282	0.47	0.133	8.0%
4.8	0.3	0.84	0.252	0.53	0.134	8.1%
5.1	0.3	0.76	0.228	0.49	0.112	6.8%
5.4	0.3	0.5	0.15	0.55	0.083	5.0%
5.7	0.3	0.53	0.159	0.37	0.059	3.6%
6	0.3	0.4	0.12	0.26	0.031	1.9%
6.3	0.3	0.23	0.069	0.09	0.006	0.4%
6.6	REW					

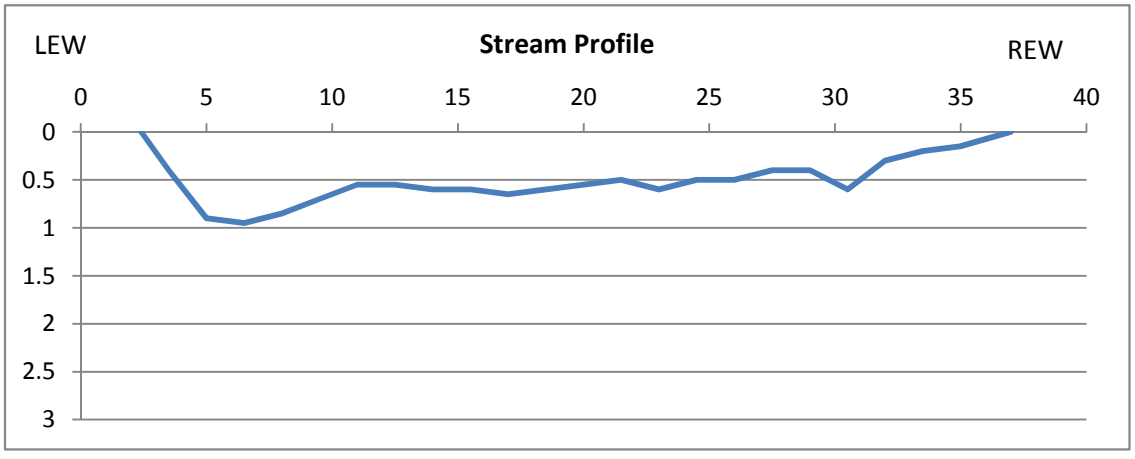
1.65 cfs

Stream Gaging- Hach Flowmeter

Project: METG-10022

Site: SG-16 Date: 10/7/2016

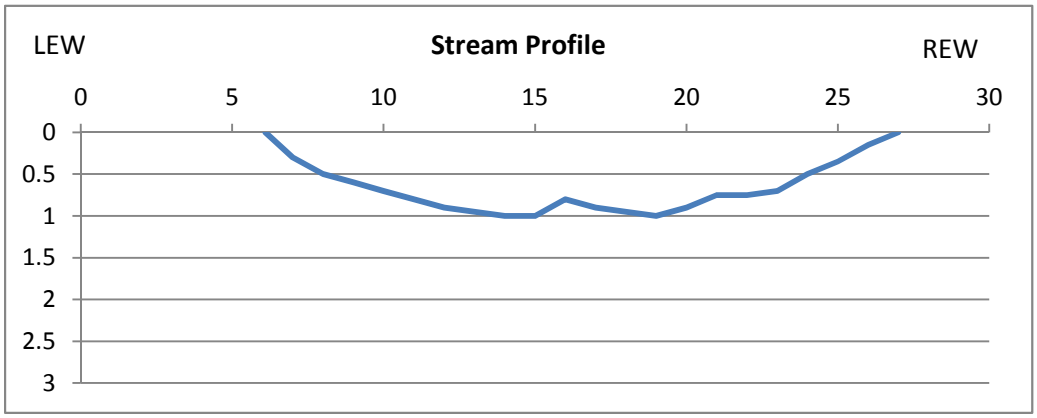
Dist	Width	Depth	Area	Velocity	Discharge	%Discharge
2.4	LEW	0				
3.5	1.3	0.4	0.52	0.23	0.1196	0%
5	1.5	0.9	1.35	0.64	0.864	4%
6.5	1.5	0.95	1.425	1.23	1.75275	7%
8	1.5	0.85	1.275	1.44	1.836	8%
9.5	1.5	0.7	1.05	1.55	1.6275	7%
11	1.5	0.55	0.825	1.54	1.2705	5%
12.5	1.5	0.55	0.825	1.67	1.37775	6%
14	1.5	0.6	0.9	1.67	1.503	6%
15.5	1.5	0.6	0.9	1.63	1.467	6%
17	1.5	0.65	0.975	1.88	1.833	8%
18.5	1.5	0.6	0.9	1.81	1.629	7%
20	1.5	0.55	0.825	1.71	1.41075	6%
21.5	1.5	0.5	0.75	1.67	1.2525	5%
23	1.5	0.6	0.9	1.2	1.08	4%
24.5	1.5	0.5	0.75	1.49	1.1175	5%
26	1.5	0.5	0.75	1.26	0.945	4%
27.5	1.5	0.4	0.6	1.6	0.96	4%
29	1.5	0.4	0.6	0.96	0.576	2%
30.5	1.5	0.6	0.9	1.01	0.909	4%
32	1.5	0.3	0.45	0.72	0.324	1%
33.5	1.5	0.2	0.3	0.82	0.246	1%
35	1.75	0.15	0.2625	0.43	0.112875	0%
37	REW	0				
				Total CFS:	**24.21**	



Stream Gaging- Hach Flowmeter

Project: METG-10022

Site:	PPC-10			Date:	10/7/2016	
Dist	Width	Depth	Area	Velocity	Discharge	%Discharge
6.1	LEW	0				
7	0.95	0.3	0.285	0.16	0.0456	0%
8	1	0.5	0.5	0.38	0.19	1%
9	1	0.6	0.6	0.48	0.288	1%
10	1	0.7	0.7	0.76	0.532	2%
11	1	0.8	0.8	1.27	1.016	4%
12	1	0.9	0.9	1.68	1.512	5%
13	1	0.95	0.95	2.64	2.508	9%
14	1	1	1	2.64	2.64	9%
15	1	1	1	2.72	2.72	9%
16	1	0.8	0.8	2.94	2.352	8%
17	1	0.9	0.9	2.84	2.556	9%
18	1	0.95	0.95	3.73	3.5435	12%
19	1	1	1	2.42	2.42	8%
20	1	0.9	0.9	2.06	1.854	6%
21	1	0.75	0.75	1.5	1.125	4%
22	1	0.75	0.75	1.41	1.0575	4%
23	1	0.7	0.7	1.54	1.078	4%
24	1	0.5	0.5	1.32	0.66	2%
25	1	0.35	0.35	1.35	0.4725	2%
26	1	0.15	0.15	1.01	0.1515	1%
27	REW	0				
				Total CFS:	**28.72**	

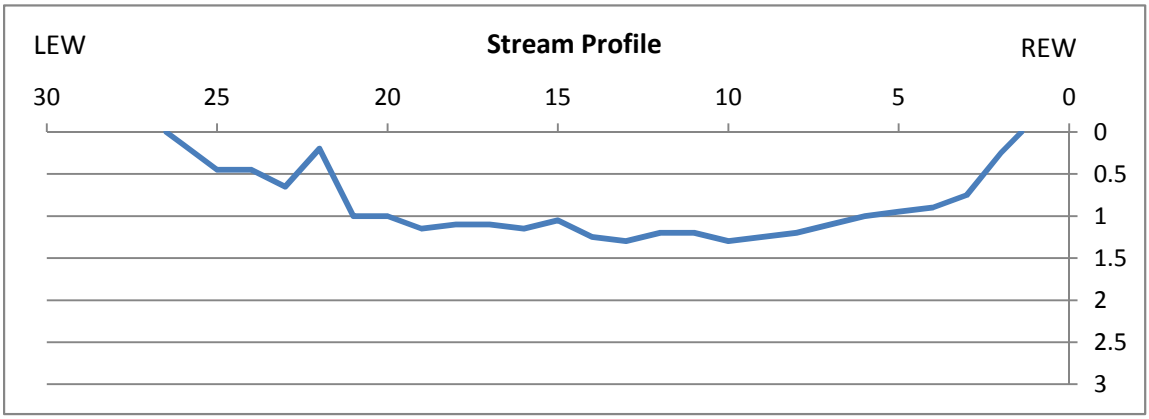


Stream Gaging- Hach Flowmeter

Project: METG-10022

Site: PPC-36A Date: 10/7/2016

Dist	Width	Depth	Area	Velocity	Discharge	%Discharge
1.4	REW	0				
2	0.8	0.25	0.2	0.6	0.12	0%
3	1	0.75	0.75	1.24	0.93	3%
4	1	0.9	0.9	1.21	1.089	3%
5	1	0.95	0.95	1.41	1.3395	4%
6	1	1	1	1.5	1.5	4%
7	1	1.1	1.1	1.62	1.782	5%
8	1	1.2	1.2	1.74	2.088	6%
9	1	1.25	1.25	1.92	2.4	7%
10	1	1.3	1.3	1.93	2.509	7%
11	1	1.2	1.2	2.18	2.616	7%
12	1	1.2	1.2	2.01	2.412	7%
13	1	1.3	1.3	1.9	2.47	7%
14	1	1.25	1.25	1.8	2.25	6%
15	1	1.05	1.05	1.8	1.89	5%
16	1	1.15	1.15	1.71	1.9665	5%
17	1	1.1	1.1	1.66	1.826	5%
18	1	1.1	1.1	1.66	1.826	5%
19	1	1.15	1.15	1.71	1.9665	5%
20	1	1	1	1.46	1.46	4%
21	1	1	1	1.16	1.16	3%
22	1	0.2	0.2	1.04	0.208	1%
23	1	0.65	0.65	0.71	0.4615	1%
24	1	0.45	0.45	0.3	0.135	0%
25	1	0.45	0.45	0.19	0.0855	0%
26	1	0.15	0.15	0.07	0.0105	0%
26.5	LEW	0				
				Total CFS:	**36.50**	

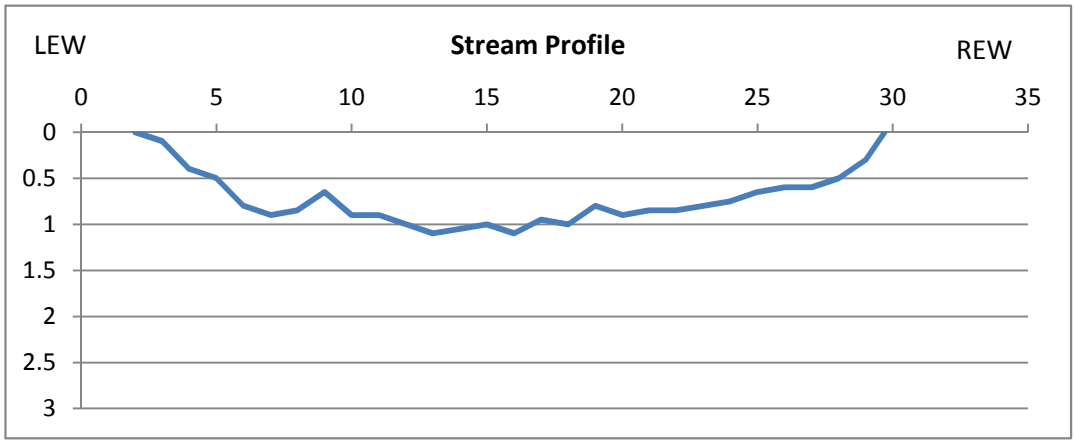


Stream Gaging- Hach Flowmeter

Project: METG-10022

Site: PPC-7 Date: 10/7/2016

Dist	Width	Depth	Area	Velocity	Discharge	%Discharge
2	REW	0				
3	1	0.1	0.1	0	0	0%
4	1	0.4	0.4	0.67	0.268	1%
5	1	0.5	0.5	0.9	0.45	1%
6	1	0.8	0.8	1.23	0.984	3%
7	1	0.9	0.9	1.27	1.143	3%
8	1	0.85	0.85	1.48	1.258	3%
9	1	0.65	0.65	1.55	1.0075	3%
10	1	0.9	0.9	1.75	1.575	4%
11	1	0.9	0.9	1.86	1.674	4%
12	1	1	1	1.88	1.88	5%
13	1	1.1	1.1	2.14	2.354	6%
14	1	1.05	1.05	2	2.1	6%
15	1	1	1	2.25	2.25	6%
16	1	1.1	1.1	1.86	2.046	5%
17	1	0.95	0.95	2.17	2.0615	5%
18	1	1	1	2.21	2.21	6%
19	1	0.8	0.8	2.24	1.792	5%
20	1	0.9	0.9	2.19	1.971	5%
21	1	0.85	0.85	2.15	1.8275	5%
22	1	0.85	0.85	2.21	1.8785	5%
23	1	0.8	0.8	2.26	1.808	5%
24	1	0.75	0.75	1.87	1.4025	4%
25	1	0.65	0.65	1.72	1.118	3%
26	1	0.6	0.6	1.6	0.96	3%
27	1	0.6	0.6	1.67	1.002	3%
28	1	0.5	0.5	1.02	0.51	1%
29	0.85	0.3	0.255	0.96	0.2448	1%
29.7	LEW	0				
				Total CFS:	**37.78**	

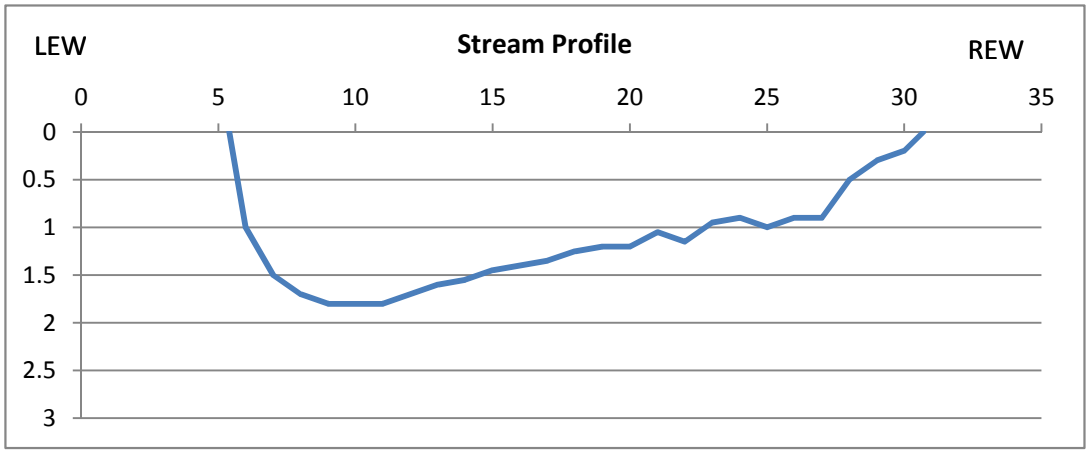


Stream Gaging- Hach Flowmeter

Project: METG-10022

Site: PPC-5 Date: 10/7/2016

Dist	Width	Depth	Area	Velocity	Discharge	%Discharge
5.4	LEW	0				
6	0.8	1	0.8	0	0	0%
7	1	1.5	1.5	0.16	0.24	1%
8	1	1.7	1.7	1.04	1.768	5%
9	1	1.8	1.8	1.04	1.872	5%
10	1	1.8	1.8	1.43	2.574	7%
11	1	1.8	1.8	1.31	2.358	6%
12	1	1.7	1.7	1.46	2.482	6%
13	1	1.6	1.6	1.48	2.368	6%
14	1	1.55	1.55	1.5	2.325	6%
15	1	1.45	1.45	1.63	2.3635	6%
16	1	1.4	1.4	1.55	2.17	6%
17	1	1.35	1.35	1.68	2.268	6%
18	1	1.25	1.25	1.6	2	5%
19	1	1.2	1.2	1.53	1.836	5%
20	1	1.2	1.2	1.38	1.656	4%
21	1	1.05	1.05	1.92	2.016	5%
22	1	1.15	1.15	1.4	1.61	4%
23	1	0.95	0.95	1.53	1.4535	4%
24	1	0.9	0.9	1.51	1.359	4%
25	1	1	1	1.25	1.25	3%
26	1	0.9	0.9	1.23	1.107	3%
27	1	0.9	0.9	0.84	0.756	2%
28	1	0.5	0.5	0.57	0.285	1%
29	1	0.3	0.3	0.3	0.09	0%
30	1	0.2	0.2	0	0	0%
30.7	REW	0				
				Total CFS:	**38.21**	

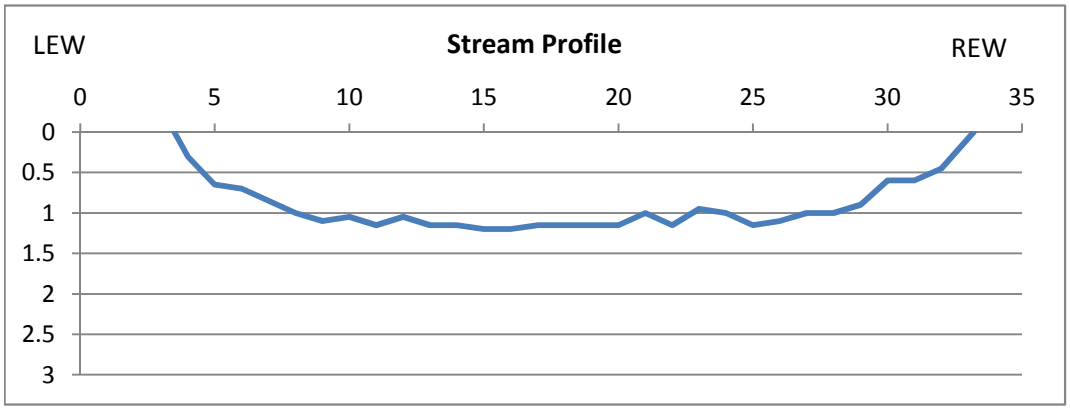


Stream Gaging- Hach Flowmeter

Project: METG-10022

Site: PPC-3A Date: 10/7/2016

Dist	Width	Depth	Area	Velocity	Discharge	%Discharge
3.5	LEW	0				
4	0.75	0.3	0.225	0.09	0.02025	0%
5	1	0.65	0.65	0.42	0.273	1%
6	1	0.7	0.7	0.89	0.623	2%
7	1	0.85	0.85	0.99	0.8415	2%
8	1	1	1	1.23	1.23	3%
9	1	1.1	1.1	1.26	1.386	4%
10	1	1.05	1.05	1.29	1.3545	4%
11	1	1.15	1.15	1.48	1.702	5%
12	1	1.05	1.05	1.43	1.5015	4%
13	1	1.15	1.15	1.44	1.656	4%
14	1	1.15	1.15	1.54	1.771	5%
15	1	1.2	1.2	1.51	1.812	5%
16	1	1.2	1.2	1.72	2.064	6%
17	1	1.15	1.15	1.73	1.9895	5%
18	1	1.15	1.15	1.61	1.8515	5%
19	1	1.15	1.15	1.73	1.9895	5%
20	1	1.15	1.15	1.44	1.656	4%
21	1	1	1	1.54	1.54	4%
22	1	1.15	1.15	1.27	1.4605	4%
23	1	0.95	0.95	1.47	1.3965	4%
24	1	1	1	1.51	1.51	4%
25	1	1.15	1.15	1.46	1.679	5%
26	1	1.1	1.1	1.52	1.672	5%
27	1	1	1	1.4	1.4	4%
28	1	1	1	1.32	1.32	4%
29	1	0.9	0.9	0.83	0.747	2%
30	1	0.6	0.6	0.9	0.54	1%
31	1	0.6	0.6	0.21	0.126	0%
32	1.1	0.45	0.495	0	0	0%
33.2	REW	0				
				Total CFS:	**37.11**	



Stream Gaging- Hach Flowmeter

Project: METG-10022

Site: GP-5 Date: 10/7/2016

Dist	Width	Depth	Area	Velocity	Discharge	%Discharge
1.3	REW					
1.6	0.3	0.2	0.06	0	0	0%
1.9	0.3	0.3	0.09	0	0	0%
2.2	0.3	0.3	0.09	0.86	0.0774	7%
2.5	0.3	0.4	0.12	0.57	0.0684	6%
2.8	0.3	0.35	0.105	1.01	0.10605	9%
3.1	0.3	0.35	0.105	2.65	0.27825	25%
3.4	0.3	0.45	0.135	2.43	0.32805	29%
3.7	0.3	0.4	0.12	2.29	0.2748	24%
4	0.3	0.2	0.06	0	0	0%
4.3	0.25	0.15	0.0375	0	0	0%
4.5	LEW					
				Total CFS:	**1.13**	

Stream Gaging- Hach Flowmeter

Project: METG-10022

Site: TRIB-1 Date: 10/7/2016

Dist	Width	Depth	Area	Velocity	Discharge	%Discharge
0.8	LEW					
1.1	0.3	0.2	0.06	0.18	0.0108	3%
1.4	0.3	0.2	0.06	0.18	0.0108	3%
1.7	0.3	0.15	0.045	0.24	0.0108	3%
2	0.3	0.1	0.03	0.13	0.0039	1%
2.3	0.3	0.1	0.03	0.04	0.0012	0%
2.6	REW					
				Total CFS:	**0.04**	

APPENDIX C2

2015/16 SURFACE WATER ELEVATION SURVEY DATA

Site ID	Sample Date	Parameter	Units	Value
Former PPC-BD	4/20/2015	Water Elevation (ft) (Fld)	ft AMSL	3905.35
Former PPC-BD	5/14/2015	Water Elevation (ft) (Fld)	ft AMSL	3905.32
Former PPC-BD	6/12/2015	Water Elevation (ft) (Fld)	ft AMSL	3905.30
Former PPC-BD	7/15/2015	Water Elevation (ft) (Fld)	ft AMSL	3904.90
Former PPC-BD	8/11/2015	Water Elevation (ft) (Fld)	ft AMSL	3904.86
Former PPC-BD	9/10/2015	Water Elevation (ft) (Fld)	ft AMSL	3905.03
Former PPC-BD	10/9/2015	Water Elevation (ft) (Fld)	ft AMSL	3905.20
Former PPC-BD	11/18/2015	Water Elevation (ft) (Fld)	ft AMSL	3905.22
Former PPC-BD	4/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3904.58
Former PPC-BD	5/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3905.30
Former PPC-BD	7/21/2016	Water Elevation (ft) (Fld)	ft AMSL	3904.15
GP-1	4/20/2015	Water Elevation (ft) (Fld)	ft AMSL	3792.69
GP-1	5/14/2015	Water Elevation (ft) (Fld)	ft AMSL	3793.10
GP-1	6/12/2015	Water Elevation (ft) (Fld)	ft AMSL	3797.75
GP-1	7/15/2015	Water Elevation (ft) (Fld)	ft AMSL	3796.17
GP-1	8/11/2015	Water Elevation (ft) (Fld)	ft AMSL	3795.64
GP-1	9/11/2015	Water Elevation (ft) (Fld)	ft AMSL	3794.56
GP-1	10/9/2015	Water Elevation (ft) (Fld)	ft AMSL	3793.38
GP-1	11/18/2015	Water Elevation (ft) (Fld)	ft AMSL	3794.64
GP-1	4/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3792.59
GP-1	5/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3795.29
GP-1	7/21/2016	Water Elevation (ft) (Fld)	ft AMSL	3794.99
GP-1	8/23/2016	Water Elevation (ft) (Fld)	ft AMSL	3793.25
GP-1	9/23/2016	Water Elevation (ft) (Fld)	ft AMSL	3792.66
GP-1	10/28/2016	Water Elevation (ft) (Fld)	ft AMSL	3793.48
GP-2	4/20/2015	Water Elevation (ft) (Fld)	ft AMSL	3788.43
GP-2	5/14/2015	Water Elevation (ft) (Fld)	ft AMSL	3788.56
GP-2	6/12/2015	Water Elevation (ft) (Fld)	ft AMSL	3789.01
GP-2	7/15/2015	Water Elevation (ft) (Fld)	ft AMSL	3788.38
GP-2	8/11/2015	Water Elevation (ft) (Fld)	ft AMSL	3788.33
GP-2	9/11/2015	Water Elevation (ft) (Fld)	ft AMSL	3788.75
GP-2	10/9/2015	Water Elevation (ft) (Fld)	ft AMSL	3788.14
GP-2	11/18/2015	Water Elevation (ft) (Fld)	ft AMSL	3787.51
GP-2	4/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3787.72
GP-2	5/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3788.26
GP-2	7/21/2016	Water Elevation (ft) (Fld)	ft AMSL	3788.50
GP-2	8/23/2016	Water Elevation (ft) (Fld)	ft AMSL	3788.06
GP-2	9/23/2016	Water Elevation (ft) (Fld)	ft AMSL	3787.78
GP-2	10/28/2016	Water Elevation (ft) (Fld)	ft AMSL	3787.82
GP-3	4/20/2015	Water Elevation (ft) (Fld)	ft AMSL	3761.15
GP-3	5/14/2015	Water Elevation (ft) (Fld)	ft AMSL	3761.31
GP-3	6/12/2015	Water Elevation (ft) (Fld)	ft AMSL	3762.06
GP-3	7/15/2015	Water Elevation (ft) (Fld)	ft AMSL	3761.93
GP-3	8/11/2015	Water Elevation (ft) (Fld)	ft AMSL	3762.58
GP-3	9/11/2015	Water Elevation (ft) (Fld)	ft AMSL	3764.26
GP-3	10/9/2015	Water Elevation (ft) (Fld)	ft AMSL	3764.68
GP-3	11/18/2015	Water Elevation (ft) (Fld)	ft AMSL	3763.46
GP-3	4/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3758.62
GP-3	5/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3759.51
GP-3	7/21/2016	Water Elevation (ft) (Fld)	ft AMSL	3763.53
GP-3	8/23/2016	Water Elevation (ft) (Fld)	ft AMSL	3763.41
GP-3	9/23/2016	Water Elevation (ft) (Fld)	ft AMSL	3763.67
GP-3	10/28/2016	Water Elevation (ft) (Fld)	ft AMSL	3763.66

Site ID	Sample Date	Parameter	Units	Value
GP-4	4/20/2015	Water Elevation (ft) (Fld)	ft AMSL	3785.58
GP-4	5/14/2015	Water Elevation (ft) (Fld)	ft AMSL	3783.92
GP-4	6/12/2015	Water Elevation (ft) (Fld)	ft AMSL	3787.04
GP-4	7/15/2015	Water Elevation (ft) (Fld)	ft AMSL	3785.98
GP-4	8/11/2015	Water Elevation (ft) (Fld)	ft AMSL	3785.18
GP-4	9/11/2015	Water Elevation (ft) (Fld)	ft AMSL	3783.52
GP-4	10/9/2015	Water Elevation (ft) (Fld)	ft AMSL	3782.53
GP-4	11/18/2015	Water Elevation (ft) (Fld)	ft AMSL	3781.48
GP-4	4/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3787.19
GP-4	5/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3784.65
GP-4	7/21/2016	Water Elevation (ft) (Fld)	ft AMSL	3785.05
GP-4	8/23/2016	Water Elevation (ft) (Fld)	ft AMSL	3783.33
GP-4	9/23/2016	Water Elevation (ft) (Fld)	ft AMSL	3782.96
GP-4	10/28/2016	Water Elevation (ft) (Fld)	ft AMSL	3785.40
GP-5	4/20/2015	Water Elevation (ft) (Fld)	ft AMSL	3799.87
GP-5	5/14/2015	Water Elevation (ft) (Fld)	ft AMSL	3800.65
GP-5	6/12/2015	Water Elevation (ft) (Fld)	ft AMSL	3800.68
GP-5	7/15/2015	Water Elevation (ft) (Fld)	ft AMSL	3800.56
GP-5	8/11/2015	Water Elevation (ft) (Fld)	ft AMSL	3800.47
GP-5	9/11/2015	Water Elevation (ft) (Fld)	ft AMSL	3800.16
GP-5	10/9/2015	Water Elevation (ft) (Fld)	ft AMSL	3800.23
GP-5	11/18/2015	Water Elevation (ft) (Fld)	ft AMSL	3800.26
GP-5	4/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3800.31
GP-5	5/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3800.37
GP-5	6/7/2016	Water Elevation (ft) (Fld)	ft AMSL	3800.36
GP-5	7/21/2016	Water Elevation (ft) (Fld)	ft AMSL	3800.20
GP-5	8/23/2016	Water Elevation (ft) (Fld)	ft AMSL	3800.13
GP-5	9/23/2016	Water Elevation (ft) (Fld)	ft AMSL	3800.16
GP-5	10/28/2016	Water Elevation (ft) (Fld)	ft AMSL	3800.19
GP-5A	4/20/2015	Water Elevation (ft) (Fld)	ft AMSL	3806.89
GP-5A	5/14/2015	Water Elevation (ft) (Fld)	ft AMSL	3814.13
GP-5A	6/12/2015	Water Elevation (ft) (Fld)	ft AMSL	3814.28
GP-5A	7/15/2015	Water Elevation (ft) (Fld)	ft AMSL	3810.86
GP-5A	8/11/2015	Water Elevation (ft) (Fld)	ft AMSL	3810.69
GP-5A	9/11/2015	Water Elevation (ft) (Fld)	ft AMSL	3810.35
GP-5A	10/9/2015	Water Elevation (ft) (Fld)	ft AMSL	3810.29
GP-5A	11/18/2015	Water Elevation (ft) (Fld)	ft AMSL	3809.90
GP-5A	4/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3810.72
GP-5A	5/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3814.32
GP-5A	7/21/2016	Water Elevation (ft) (Fld)	ft AMSL	3810.76
GP-5A	8/23/2016	Water Elevation (ft) (Fld)	ft AMSL	3810.49
GP-5A	9/23/2016	Water Elevation (ft) (Fld)	ft AMSL	3810.97
GP-5A	10/28/2016	Water Elevation (ft) (Fld)	ft AMSL	3811.14
HVIC-1	4/20/2015	Water Elevation (ft) (Fld)	ft AMSL	3797.30
HVIC-1	5/14/2015	Water Elevation (ft) (Fld)	ft AMSL	3800.03
HVIC-1	6/12/2015	Water Elevation (ft) (Fld)	ft AMSL	3800.19
HVIC-1	7/15/2015	Water Elevation (ft) (Fld)	ft AMSL	3799.76
HVIC-1	8/11/2015	Water Elevation (ft) (Fld)	ft AMSL	3799.68
HVIC-1	9/11/2015	Water Elevation (ft) (Fld)	ft AMSL	3799.46
HVIC-1	5/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3799.54
HVIC-1	7/21/2016	Water Elevation (ft) (Fld)	ft AMSL	3800.34
HVIC-1	8/23/2016	Water Elevation (ft) (Fld)	ft AMSL	3800.24
HVIC-1	9/23/2016	Water Elevation (ft) (Fld)	ft AMSL	3799.36

Site ID	Sample Date	Parameter	Units	Value
LOWER LAKE	4/20/2015	Water Elevation (ft) (Fld)	ft AMSL	3910.24
LOWER LAKE	5/14/2015	Water Elevation (ft) (Fld)	ft AMSL	3910.10
LOWER LAKE	6/12/2015	Water Elevation (ft) (Fld)	ft AMSL	3910.31
LOWER LAKE	7/15/2015	Water Elevation (ft) (Fld)	ft AMSL	3910.33
LOWER LAKE	8/11/2015	Water Elevation (ft) (Fld)	ft AMSL	3910.17
LOWER LAKE	9/10/2015	Water Elevation (ft) (Fld)	ft AMSL	3910.66
LOWER LAKE	10/9/2015	Water Elevation (ft) (Fld)	ft AMSL	3911.49
LOWER LAKE	11/18/2015	Water Elevation (ft) (Fld)	ft AMSL	3911.68
LOWER LAKE	4/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3910.43
LOWER LAKE	5/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3911.01
LOWER LAKE	6/7/2016	Water Elevation (ft) (Fld)	ft AMSL	3906.24
LOWER LAKE	7/21/2016	Water Elevation (ft) (Fld)	ft AMSL	3907.39
LOWER LAKE	8/23/2016	Water Elevation (ft) (Fld)	ft AMSL	3906.00
LOWER LAKE	9/23/2016	Water Elevation (ft) (Fld)	ft AMSL	3904.17
Lower Lake	10/28/2016	Water Elevation (ft) (Fld)	ft AMSL	3905.11
PPC-10	4/20/2015	Water Elevation (ft) (Fld)	ft AMSL	3819.78
PPC-10	5/14/2015	Water Elevation (ft) (Fld)	ft AMSL	3819.75
PPC-10	6/12/2015	Water Elevation (ft) (Fld)	ft AMSL	3822.76
PPC-10	7/15/2015	Water Elevation (ft) (Fld)	ft AMSL	3822.20
PPC-10	8/11/2015	Water Elevation (ft) (Fld)	ft AMSL	3822.05
PPC-10	9/11/2015	Water Elevation (ft) (Fld)	ft AMSL	3820.09
PPC-10	10/9/2015	Water Elevation (ft) (Fld)	ft AMSL	3821.08
PPC-10	11/18/2015	Water Elevation (ft) (Fld)	ft AMSL	3821.14
PPC-10	4/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3820.71
PPC-10	5/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3821.26
PPC-10	6/7/2016	Water Elevation (ft) (Fld)	ft AMSL	3818.25
PPC-10	7/21/2016	Water Elevation (ft) (Fld)	ft AMSL	3817.58
PPC-10	8/23/2016	Water Elevation (ft) (Fld)	ft AMSL	3817.35
PPC-10	9/23/2016	Water Elevation (ft) (Fld)	ft AMSL	3817.55
PPC-10	10/28/2016	Water Elevation (ft) (Fld)	ft AMSL	3817.51
PPC-36A	4/20/2015	Water Elevation (ft) (Fld)	ft AMSL	3854.99
PPC-36A	5/14/2015	Water Elevation (ft) (Fld)	ft AMSL	3855.05
PPC-36A	6/12/2015	Water Elevation (ft) (Fld)	ft AMSL	3855.25
PPC-36A	7/15/2015	Water Elevation (ft) (Fld)	ft AMSL	3854.84
PPC-36A	8/11/2015	Water Elevation (ft) (Fld)	ft AMSL	3854.67
PPC-36A	9/11/2015	Water Elevation (ft) (Fld)	ft AMSL	3854.66
PPC-36A	10/9/2015	Water Elevation (ft) (Fld)	ft AMSL	3854.71
PPC-36A	11/18/2015	Water Elevation (ft) (Fld)	ft AMSL	3854.88
PPC-36A	4/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3854.92
PPC-36A	5/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3855.30
PPC-36A	6/7/2016	Water Elevation (ft) (Fld)	ft AMSL	3855.38
PPC-36A	7/21/2016	Water Elevation (ft) (Fld)	ft AMSL	3854.71
PPC-36A	8/23/2016	Water Elevation (ft) (Fld)	ft AMSL	3854.56
PPC-36A	9/23/2016	Water Elevation (ft) (Fld)	ft AMSL	3854.90
PPC-36A	10/28/2016	Water Elevation (ft) (Fld)	ft AMSL	3854.68
PPC-3A	4/20/2015	Water Elevation (ft) (Fld)	ft AMSL	3927.47
PPC-3A	5/14/2015	Water Elevation (ft) (Fld)	ft AMSL	3927.52
PPC-3A	6/12/2015	Water Elevation (ft) (Fld)	ft AMSL	3928.02
PPC-3A	7/15/2015	Water Elevation (ft) (Fld)	ft AMSL	3927.39
PPC-3A	8/11/2015	Water Elevation (ft) (Fld)	ft AMSL	3927.09
PPC-3A	9/10/2015	Water Elevation (ft) (Fld)	ft AMSL	3927.16
PPC-3A	10/9/2015	Water Elevation (ft) (Fld)	ft AMSL	3927.14
PPC-3A	11/18/2015	Water Elevation (ft) (Fld)	ft AMSL	3927.31

Site ID	Sample Date	Parameter	Units	Value
PPC-3A	4/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3927.45
PPC-3A	5/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3927.94
PPC-3A	6/7/2016	Water Elevation (ft) (Fld)	ft AMSL	3927.92
PPC-3A	7/21/2016	Water Elevation (ft) (Fld)	ft AMSL	3927.16
PPC-3A	8/23/2016	Water Elevation (ft) (Fld)	ft AMSL	3926.95
PPC-3A	9/23/2016	Water Elevation (ft) (Fld)	ft AMSL	3927.15
PPC-3A	10/28/2016	Water Elevation (ft) (Fld)	ft AMSL	3927.18
PPC-5	4/20/2015	Water Elevation (ft) (Fld)	ft AMSL	3900.43
PPC-5	5/14/2015	Water Elevation (ft) (Fld)	ft AMSL	3900.56
PPC-5	6/12/2015	Water Elevation (ft) (Fld)	ft AMSL	3899.57
PPC-5	7/15/2015	Water Elevation (ft) (Fld)	ft AMSL	3898.73
PPC-5	8/11/2015	Water Elevation (ft) (Fld)	ft AMSL	3898.41
PPC-5	9/10/2015	Water Elevation (ft) (Fld)	ft AMSL	3898.41
PPC-5	10/9/2015	Water Elevation (ft) (Fld)	ft AMSL	3900.12
PPC-5	11/18/2015	Water Elevation (ft) (Fld)	ft AMSL	3900.41
PPC-5	4/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3900.54
PPC-5	5/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3900.76
PPC-5	6/7/2016	Water Elevation (ft) (Fld)	ft AMSL	3901.08
PPC-5	7/21/2016	Water Elevation (ft) (Fld)	ft AMSL	3900.20
PPC-5	9/23/2016	Water Elevation (ft) (Fld)	ft AMSL	3900.51
PPC-5	10/28/2016	Water Elevation (ft) (Fld)	ft AMSL	3900.37
PPC-7	4/20/2015	Water Elevation (ft) (Fld)	ft AMSL	3882.23
PPC-7	5/14/2015	Water Elevation (ft) (Fld)	ft AMSL	3882.39
PPC-7	6/12/2015	Water Elevation (ft) (Fld)	ft AMSL	3882.64
PPC-7	7/15/2015	Water Elevation (ft) (Fld)	ft AMSL	3882.21
PPC-7	8/11/2015	Water Elevation (ft) (Fld)	ft AMSL	3881.93
PPC-7	9/10/2015	Water Elevation (ft) (Fld)	ft AMSL	3882.00
PPC-7	10/9/2015	Water Elevation (ft) (Fld)	ft AMSL	3881.99
PPC-7	11/18/2015	Water Elevation (ft) (Fld)	ft AMSL	3882.17
PPC-7	4/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3882.23
PPC-7	5/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3882.78
PPC-7	6/7/2016	Water Elevation (ft) (Fld)	ft AMSL	3882.79
PPC-7	7/21/2016	Water Elevation (ft) (Fld)	ft AMSL	3881.95
PPC-7	8/23/2016	Water Elevation (ft) (Fld)	ft AMSL	3881.83
PPC-7	9/23/2016	Water Elevation (ft) (Fld)	ft AMSL	3882.12
PPC-7	10/28/2016	Water Elevation (ft) (Fld)	ft AMSL	3881.97
PPC-8	4/20/2015	Water Elevation (ft) (Fld)	ft AMSL	3867.43
PPC-8	5/14/2015	Water Elevation (ft) (Fld)	ft AMSL	3867.78
PPC-8	6/12/2015	Water Elevation (ft) (Fld)	ft AMSL	3868.01
PPC-8	7/15/2015	Water Elevation (ft) (Fld)	ft AMSL	3867.26
PPC-8	8/11/2015	Water Elevation (ft) (Fld)	ft AMSL	3867.66
PPC-8	9/10/2015	Water Elevation (ft) (Fld)	ft AMSL	3867.79
PPC-8	10/9/2015	Water Elevation (ft) (Fld)	ft AMSL	3867.41
PPC-8	11/18/2015	Water Elevation (ft) (Fld)	ft AMSL	3867.78
PPC-8	4/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3868.04
PPC-8	5/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3868.45
PPC-8	7/21/2016	Water Elevation (ft) (Fld)	ft AMSL	3867.75
PPC-8	8/23/2016	Water Elevation (ft) (Fld)	ft AMSL	3867.72
PPC-8	9/23/2016	Water Elevation (ft) (Fld)	ft AMSL	3868.07
PPC-8	10/28/2016	Water Elevation (ft) (Fld)	ft AMSL	3867.82
PPC-9A	4/20/2015	Water Elevation (ft) (Fld)	ft AMSL	3842.63
PPC-9A	5/14/2015	Water Elevation (ft) (Fld)	ft AMSL	3842.75
PPC-9A	6/12/2015	Water Elevation (ft) (Fld)	ft AMSL	3843.01

Site ID	Sample Date	Parameter	Units	Value
PPC-9A	7/15/2015	Water Elevation (ft) (Fld)	ft AMSL	3842.59
PPC-9A	8/11/2015	Water Elevation (ft) (Fld)	ft AMSL	3845.25
PPC-9A	9/11/2015	Water Elevation (ft) (Fld)	ft AMSL	3845.23
PPC-9A	10/9/2015	Water Elevation (ft) (Fld)	ft AMSL	3845.34
PPC-9A	11/18/2015	Water Elevation (ft) (Fld)	ft AMSL	3845.50
PPC-9A	4/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3845.59
PPC-9A	5/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3845.88
PPC-9A	7/21/2016	Water Elevation (ft) (Fld)	ft AMSL	3845.33
PPC-9A	8/23/2016	Water Elevation (ft) (Fld)	ft AMSL	3845.15
PPC-9A	9/23/2016	Water Elevation (ft) (Fld)	ft AMSL	3845.58
PPC-9A	10/28/2016	Water Elevation (ft) (Fld)	ft AMSL	3845.24
PPCB-1	4/20/2015	Water Elevation (ft) (Fld)	ft AMSL	3907.38
PPCB-1	5/14/2015	Water Elevation (ft) (Fld)	ft AMSL	3907.44
PPCB-1	6/12/2015	Water Elevation (ft) (Fld)	ft AMSL	3908.03
PPCB-1	7/15/2015	Water Elevation (ft) (Fld)	ft AMSL	3907.08
PPCB-1	8/11/2015	Water Elevation (ft) (Fld)	ft AMSL	3907.21
PPCB-1	9/10/2015	Water Elevation (ft) (Fld)	ft AMSL	3907.22
PPCB-1	10/9/2015	Water Elevation (ft) (Fld)	ft AMSL	3907.22
PPCB-1	11/18/2015	Water Elevation (ft) (Fld)	ft AMSL	3907.41
PPCB-1	4/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3907.47
PPCB-1	5/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3908.15
PPCB-1	6/7/2016	Water Elevation (ft) (Fld)	ft AMSL	3907.90
PPCB-1	7/21/2016	Water Elevation (ft) (Fld)	ft AMSL	3907.49
PPCB-1	8/23/2016	Water Elevation (ft) (Fld)	ft AMSL	3907.37
SG-05	4/20/2015	Water Elevation (ft) (Fld)	ft AMSL	3910.45
SG-05	5/14/2015	Water Elevation (ft) (Fld)	ft AMSL	3910.37
SG-05	6/12/2015	Water Elevation (ft) (Fld)	ft AMSL	3910.39
SG-05	7/15/2015	Water Elevation (ft) (Fld)	ft AMSL	3907.46
SG-05	8/11/2015	Water Elevation (ft) (Fld)	ft AMSL	3906.65
SG-16	4/20/2015	Water Elevation (ft) (Fld)	ft AMSL	3766.24
SG-16	5/14/2015	Water Elevation (ft) (Fld)	ft AMSL	3766.12
SG-16	6/12/2015	Water Elevation (ft) (Fld)	ft AMSL	3766.38
SG-16	7/15/2015	Water Elevation (ft) (Fld)	ft AMSL	3766.06
SG-16	8/11/2015	Water Elevation (ft) (Fld)	ft AMSL	3765.14
SG-16	9/11/2015	Water Elevation (ft) (Fld)	ft AMSL	3765.74
SG-16	10/9/2015	Water Elevation (ft) (Fld)	ft AMSL	3765.99
SG-16	11/18/2015	Water Elevation (ft) (Fld)	ft AMSL	3765.94
SG-16	4/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3766.21
SG-16	5/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3766.77
SG-16	6/7/2016	Water Elevation (ft) (Fld)	ft AMSL	3766.66
SG-16	7/21/2016	Water Elevation (ft) (Fld)	ft AMSL	3765.82
SG-16	8/23/2016	Water Elevation (ft) (Fld)	ft AMSL	3765.70
SG-16	9/23/2016	Water Elevation (ft) (Fld)	ft AMSL	3766.09
SG-16	10/28/2016	Water Elevation (ft) (Fld)	ft AMSL	3765.78
Trib-1	4/20/2015	Water Elevation (ft) (Fld)	ft AMSL	3918.34
Trib-1	6/12/2015	Water Elevation (ft) (Fld)	ft AMSL	3918.31
Trib-1	11/18/2015	Water Elevation (ft) (Fld)	ft AMSL	3917.70
Trib-1	4/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3918.10
Trib-1	5/12/2016	Water Elevation (ft) (Fld)	ft AMSL	3917.93
Trib-1	6/7/2016	Water Elevation (ft) (Fld)	ft AMSL	3917.81
Trib-1	7/21/2016	Water Elevation (ft) (Fld)	ft AMSL	3917.35
Trib-1	9/23/2016	Water Elevation (ft) (Fld)	ft AMSL	3917.35
Trib-1	10/28/2016	Water Elevation (ft) (Fld)	ft AMSL	3917.65

APPENDIX D

GROUNDWATER LEVEL MONITORING DATA

APPENDIX D1

MONTHLY MANUAL GROUNDWATER LEVEL DATA

2015 DEPTH TO GROUNDWATER AND GROUNDWATER ELEVATION SUMMARY - EAST HELENA FACILITY

		Depth to Water												Water Elevation										
SiteID	MP Elevation	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Min	Max	Mean	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Min	Max	Mean
AIRLIQNORTH	3920.62	10.86	10.88	10.89	10.85	11.95	NM	NM	NM	NM	10.85	11.95	11.09	3909.76	3909.74	3909.73	3909.77	3908.67	NM	NM	NM	NM	3908.67	3909.77	3909.53
AIRLIQSOUTH	3922.05	12.04	12.02	12.05	11.82	12.89	NM	NM	NM	NM	11.82	12.89	12.16	3910.01	3910.03	3910.00	3910.23	3909.16	NM	NM	NM	NM	3909.16	3910.23	3909.89
APSD-7	3924.04	15.41	15.48	15.54	15.51	15.63	15.74	16.25	15.04	13.88	13.88	16.25	15.39	3908.63	3908.56	3908.50	3908.53	3908.41	3908.30	3907.79	3909.00	3910.16	3907.79	3910.16	3908.65
APSD-8	3923.93	13.9	13.95	14.03	14.08	14.10	14.31	15.82	13.34	14.15	13.34	15.82	14.19	3910.03	3909.98	3909.90	3909.85	3909.83	3909.62	3908.11	3910.59	3909.78	3908.11	3910.59	3909.75
ASIW-1	3915.99	19.33	19.38	19.32	19.03	16.87	16.45	18.49	18.77	18.18	16.45	19.38	18.42	3896.66	3896.61	3896.67	3896.96	3899.12	3899.54	3897.50	3897.22	3897.81	3896.61	3899.54	3897.57
ASIW-2	3909.13	38.2	38.71	39.23	40.68	40.02	39.86	NM	38.28	38.13	38.13	40.68	39.14	3870.93	3870.42	3869.90	3868.45	3869.11	3869.27	NM	3870.85	3871.00	3868.45	3871.00	3869.99
DH-1	3910.89	43.45	43.48	43.72	43.88	44.07	44.32	NM	44.21	44.40	43.45	44.40	43.94	3867.44	3867.41	3867.17	3867.01	3866.82	3866.57	NM	3866.68	3866.49	3866.49	3867.44	3866.95
DH-10A	3886.97	8.68	8.83	8.65	7.38	8.23	8.68	8.95	8.87	9.37	7.38	9.37	8.63	3878.29	3878.14	3878.32	3879.59	3878.74	3878.29	3878.02	3878.095	3877.60	3877.60	3879.59	3878.34
DH-11	3912.36	13.99	14.2	14.04	13.75	13.74	NM	NM	NM	NM	13.74	14.20	13.94	3898.37	3898.16	3898.32	3898.61	3898.62	NM	NM	NM	NM	3898.16	3898.62	3898.41
DH-12	3916.69	NM	DRY	DRY	NM	DRY	DRY	NM	DRY	NM	NA	NA	NA	NM	DRY	DRY	NM	DRY	DRY	NM	DRY	NM	NA	NA	NA
DH-13	3915.87	40.86	41.3	41.62	41.15	41.02	41.25	41.56	41.28	41.59	40.86	41.62	41.29	3875.01	3874.57	3874.25	3874.72	3874.85	3874.62	3874.31	3874.593	3874.28	3874.25	3875.01	3874.58
DH-14	3916.06	10.98	11.11	11.07	10.93	11.30	11.29	11.18	10.94	10.99	10.93	11.30	11.09	3905.08	3904.95	3904.99	3905.13	3904.76	3904.77	3904.88	3905.115	3905.07	3904.76	3905.13	3904.97
DH-15	3889.82	18.07	18.51	18.68	17.53	17.75	18.04	NM	18.17	NM	17.53	18.68	18.11	3871.75	3871.31	3871.14	3872.29	3872.07	3871.78	NM	3871.646	NM	3871.14	3872.29	3871.71
DH-16	3905.77	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NA	NA	NA	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NA	NA	NA
DH-17	3904.84	34.05	34.6	34.93	34.45	34.27	34.49	NM	34.60	35.11	34.05	35.11	34.56	3870.79	3870.24	3869.91	3870.39	3870.57	3870.35	NM	3870.239	3869.73	3869.73	3870.79	3870.28
DH-18	3916.45	39.49	39.66	39.80	39.85	39.81	40.04	39.95	40.03	40.08	39.49	40.08	39.86	3876.96	3876.79	3876.65	3876.60	3876.64	3876.41	3876.50	3876.42	3876.37	3876.37	3876.96	3876.59
DH-19R	3919.67	19.6	19.77	19.80	19.46	19.70	19.75	NM	18.86	18.71	18.71	19.80	19.46	3900.07	3899.90	3899.87	3900.21	3899.97	3899.92	NM	3900.81	3900.96	3899.87	3900.96	3900.21
DH-2	3936.91	62.71	62.7	62.84	62.87	63.02	63.23	DRY	63.16	63.09	62.70	63.23	62.95	3874.20	3874.21	3874.07	3874.04	3873.89	3873.68	DRY	3873.753	3873.82	3873.68	3874.21	3873.96
DH-20	3920.04	9.85	9.91	9.75	9.82	9.84	10.18	NM	8.59	8.55	8.55	10.18	9.56	3910.19	3910.13	3910.29	3910.22	3910.20	3909.86	NM	3911.45	3911.49	3909.86	3911.49	3910.48
DH-21	3916.98	DRY	35.31	35.34	DRY	35.38	DRY	DRY	DRY	DRY	35.31	35.38	35.34	DRY	3881.67	3881.64	DRY	3881.60	DRY	DRY	DRY	DRY	3881.60	3881.67	3881.64
DH-22	3941.28	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NA	NA	NA	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NA	NA	NA
DH-23	3915.93	15.1	15.22	15.29	15.10	Access	Access	31.31	31.34	31.60	15.10	31.60	22.14	3900.83	3900.71	3900.64	3900.83	Access	Access	3900.51	3900.48	3900.22	3900.22	3900.83	3900.60
DH-24	3899.59	31.75	32.2	32.67	32.20	31.95	32.13	NM	32.22	32.77	31.75	32.77	32.24	3867.84	3867.39	3866.92	3867.39	3867.64	3867.46	3899.59	3867.37	3866.82	3866.82	3899.59	3870.93
DH-27	3912.77	18.52	18.7	18.75	18.26	18.68	18.67	NM	18.01	18.19	18.01	18.75	18.47	3894.25	3894.07	3894.02	3894.51	3894.09	3894.10	3912.77	3894.76	3894.58	3894.02	3912.77	3896.35
DH-3	3947.48	30.9	30.49	30.93	31.15	32.41	33.08	32.85	32.45	32.13	30.49	33.08	31.82	3916.58	3916.99	3916.55	3916.33	3915.07	3914.40	3914.63	3915.03	3915.35	3914.40	3916.99	3915.66
DH-30	3914.33	19.31	19.49	19.56	19.04	19.43	19.40	19.17	18.73	18.93	18.73	19.56	19.23	3895.02	3894.84	3894.77	3895.29	3894.90	3894.93	3895.16	3895.60	3895.40	3894.77	3895.60	3895.10
DH-31	3919.16	34.98	34.95	34.96	34.97	34.95	35.01	DRY	35.06	34.99	34.95	35.06	34.98	3884.18	3884.21	3884.20	3884.19	3884.21	3884.15	DRY	3884.10	3884.17	3884.10	3884.21	3884.17
DH-32	3918.23	DRY	32.19	32.21	DRY	32.23	DRY	DRY	DRY	DRY	32.19	32.23	32.21	DRY	3886.04	3886.02	DRY	3886.00	DRY	DRY	DRY	DRY	3886.00	3886.04	3886.02
DH-33	3918.81	DRY	36.67	36.69	DRY	36.69	DRY	DRY	DRY	DRY	36.67	36.69	36.68	DRY	3882.14	3882.12	DRY	3882.12	DRY	DRY	DRY	DRY	3882.12	3882.14	3882.13
DH-34	3916.55	35.7	35.96	36.22	DRY	35.85	36.44	DRY	36.03	35.84	35.70	36.44	36.01	3880.85	3880.59	3880.33	DRY	3880.70	3880.11	DRY	3880.52	3880.71	3880.11	3880.85	3880.54
DH-35	3918.37	35.55	35.51	35.48	35.55	35.51	35.57	DRY	35.63	35.56	35.48	35.63	35.55	3882.82	3882.86	3882.89	3882.82	3882.86	3882.80	DRY	3882.74	3882.81	3882.74	3882.89	3882.82
DH-36	3907.98	DRY	33.2	33.18	DRY	Access	DRY	DRY	DRY	DRY	33.18	33.20	33.19	DRY	3874.78	3874.80	DRY	NM	DRY	DRY	DRY	DRY	3874.78	3874.80	3874.79
DH-37	3916.71	32.51	32.47	32.45	32.54	32.47	32.65	DRY	DRY	DRY	32.45	32.65	32.52	3884.20	3884.24	3884.26	3884.17	3884.24	3884.06	DRY	DRY	DRY	3884.06	3884.26	3884.20
DH-38	3918.86	31.2	31.15	31.12	31.19	31.12	31.22	DRY	31.21	31.15	31.12	31.22	31.17	3887.66	3887.71	3887.74	3887.67	3887.74	3887.64	DRY	3887.65	3887.71	3887.64	3887.74	3887.69
DH-4	3917.26	12.11	12.21	12.20	11.99	12.45	12.72	12.27	12.05	12.08	11.99	12.72	12.23	3905.15	3905.05	3905.06	3905.27	3904.81	3904.54	3904.99	3905.21	3905.18	3904.54	3905.27	3905.03
DH-42	3931.61	35.13	35.29	35.37	35.04	35.36	35.38	NM	34.66	34.63	34.63	35.38	35.11	3896.48	3896.32	3896.24	3896.57	3896.25	3896.23	NM	3896.95	3896.98	3896.23	3896.98	3896.51
DH-47	3922.33	12.1	12.14	12.25	12.33	12.13	12.36	NM	9.97	10.88	9.97	12.36	11.77	3910.23	3910.19	3910.08	3910.00	3910.20	3909.97	NM	3912.36	3911.45	3909.97	3912.36	3910.56
DH-48	3905.96	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NA	NA	NA	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NA	NA	NA
DH-49	3904.07	DRY	36.64	DRY	DRY	DRY	DRY	DRY	DRY	DRY	36.64	36.64	36.64	DRY	3867.43	DRY	DRY	DRY	DRY	DRY	DRY	DRY	3867.43	3867.43	3867.43
DH-5	3921.18	16.01	16.03	16.03	15.84	16.02	16.12	15.95	15.65	15.68	15.65	16.12	15.93	3905.17	3905.15	3905.15	3905.34	3905.16	3905.06	3905.23	3905.53	3905.50	3905.06	3905.53	3905.26
DH-50	3904.76	36.09	36.27	36.31	36.32	36.33	36.41	DRY	36.36	36.33	36.09	36.41	36.30	3868.67	3868.49	3868.45	3868.44	3868.43	3868.35	Dry	3868.40	3868.43	3868.35	3868.67	3868.45
DH-51	3904.34	35.01	35.61	35.95	35.41	35.26	35.50	DRY	35.51	36.11	35.01	36.11	35.55	3869.33	3868.73	3868.39	3868.93	3869.08	3868.84	Dry	3868.83	3868.23	3868.23	3869.33	3868.80
DH-52	3889.18	6.7	6.96	6.80	5.78	6.62	6.98	NM	7.10	7.39	5.78	7.39	6.79	3882.48	3882.22	3882.38	3883.40	3882.56	3882.20	NM	3882.08	3881.79	3881.79	3883.40	3882.39
DH-53	3892.87	9.48	9.75	9.53	8.76	9.44	9.78	NM	9.94	10.25	8.76	10.25	9.62	3883.39	3883.12	3883.34	3884.11	3883.43	3883.09	NM	3882.93	3882.62	3882.62	3884.11	3883.25
DH-54	3890.27	25.02	25.56	25.84	25.44	25.16	25.53	25.57	25.42	26.02	25.02	26.02	25.51	3865.25	3864.71	3864.43	3864.83	3865.11	3864.74	3864.70	3864.85	3864.25	3864.25	3865.25	3864.76
DH-55	3972.76	80.39	80.26	80.05	79.45	80.05	80.36	NM	80.40	80.50	79.45	80.50	80.18	3892.37	3892.50	3892.71	3893.31	3892.71	3892.40	NM	3892.36	3892.26	3892.26	3893.31	3892.57
DH-56	3958.17	82.51	82.75	82.95	81.39	81.92	82.49	NM	82.75	83.24	81.39	83.24	82.50	3875.66	3875.42	3875.22	3876.78	3876.25	3875.68	NM	3875.42	3874.93	3874.93	3876.78	3875.67
DH-57	3915.26	DRY	30.89	30.88	DRY	30.91	NM	43.53	42.46	43.03	30.88	43.53	36.95	DRY	3884.37	3884.38	DRY	3884.35	Access	3886.00	3887.07	3886.50	3884.35	3887.07	3885.45
DH-58	3899.64	22.11	22.53	22.80	21.40	NM	41.91	NM	41.92	42.19	21.40	42.19	30.69	3877.53	3877.11	3876.84	3878.24	Access	3877.46	NM	3877.45	3877.18	3876.84	3878.24	3877.40
DH-59	3917.74	21.31	21.42	21.54	21.20	21.50	21.49	21.31	20.76	20.78	20.76	21.54	21.26	3896.43	3896.32	3896.20	3896.54	3896.24	3896.25	3896.43	3896.98	3896.96	3896.20	3896.98	3896.48
DH-5A	3921.92	16.64	16.63	16.64	16.42	16.64	16.73	NM	16.27	16.31	16.27	16.73	16.54	3905.28	3905.29	3905.28	3905.50	3905.28	3905.19	NM	3905.65	3905.61	3905.19	3905.65	3905.38
DH-6	3889.85	18.09	18.55	18.71	17.55	17.77	18.07	NM	18.20	NM	17.55	18.71	18.13	3871.76	3871.30	3871.14	3872.30	3872.08	3871.78	NM	3871.65	NM	3871.14	3872.30	3871.72
DH-61	3923.76	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NA	NA	NA	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NA	NA	NA
DH-62	3923.48	52.31	52.31	52.34	52.69	52.79	53.05	56.56	56.71	56.74	52.31	56.74	53.94	3871.17	3871.17	3871.14	3870.79	3870.69	3870.43	3870.44	3870.29	3870.26	3870.26	3871.17	3870.71
DH-63	3905.37	38.98	39.55	39.93	39.56	39.29	39.45	NM	39.50	40.05	38.98	40.05	39.54	3866.39	3865.82	3865.44	3865.81	3866.08	3865.92	NM	3865.87	3865.32	3865.32	3866.39	3865.84
DH-64	3904.02	35.76	36.35	36.75	36.25	36.07	36.28	NM	36.31	36.89	35.76	36.89	36.33	3868.26	3867.67	3867.27	3867.77	3867.95	3867.74	NM	3867.71	3867.13	3867.13	3868.26	3867.69
DH-65	3945.85	63.29	63.33	63.11	61.55	62.80	63.32	NM	63.49	63.78	61.55	63.78	63.08	3882.56	3882.52	3882.74	3884.30	3883.05	3882.53	NM	3882.36	3882.07	3882.07	3884.30	3882.76
DH-66	3916.15	47.05	47.14	47.55	47.35	46.91	47.15	47.54	47.25	47.69	46.91	47.69	47.29	3869.10	3869.01	3868.60	3868.80	3869.24	3869.00	3868.61	3868.90	3868.46	3868.46	3869.24	3868.85
DH-67	3899.77	34.33	34.87	35.23	34.83	34.59	34.75	NM	34.84	35.38	34.33	35.38	34.85	3865.44	3864.90	3864.54	3864.94	3865.18	3865.02	NM	3864.93	3864.39	3864.39	3865.44	3864.91

2015 DEPTH TO GROUNDWATER AND GROUNDWATER ELEVATION SUMMARY - EAST HELENA FACILITY

		Depth to Water												Water Elevation										
SiteID	MP Elevation	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Min	Max	Mean	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Min	Max	Mean
DH-68	3943.28	42.92	42.86	42.83	42.62	42.82	42.91	NM	42.80	42.82	42.62	42.92	42.82	3900.36	3900.42	3900.45	3900.66	3900.46	3900.37	NM	3900.48	3900.46	3900.36	3900.66	3900.46
DH-69	3934.40	34.16	34.09	34.69	33.87	34.03	34.17	NM	33.99	NM	33.87	34.69	34.14	3900.24	3900.31	3899.71	3900.53	3900.37	3900.23	NM	3900.41	NM	3899.71	3900.53	3900.26
DH-7	3898.66	22.77	23.04	22.88	21.75	21.70	21.50	NM	21.31	21.96	21.31	23.04	22.11	3875.89	3875.62	3875.78	3876.91	3876.96	3877.16	NM	3877.35	3876.70	3875.62	3877.35	3876.55
DH-70	3918.94	16.46	16.48	16.51	16.32	16.37	16.36	16.33	15.97	16.15	15.97	16.51	16.33	3902.48	3902.46	3902.43	3902.62	3902.57	3902.58	3902.61	3902.97	3902.79	3902.43	3902.97	3902.61
DH-71	3938.63	48.71	48.8	48.94	48.75	48.95	48.99	NM	54.93	54.63	48.71	54.93	50.34	3889.92	3889.83	3889.69	3889.88	3889.68	3889.64	NM	3889.95	3890.25	3889.64	3890.25	3889.85
DH-72	3918.51	20.41	20.58	20.76	20.47	20.64	20.71	20.62	20.02	20.02	20.02	20.76	20.47	3898.10	3897.93	3897.75	3898.04	3897.87	3897.80	3897.89	3898.49	3898.49	3897.75	3898.49	3898.04
DH-73	3899.82	19.17	19.5	19.63	19.60	NM	38.13	NM	38.13	38.37	19.17	38.37	27.50	3880.65	3880.32	3880.19	3880.22	Access	3880.57	NM	3880.57	3880.33	3880.19	3880.65	3880.41
DH-74	4001.49	118.79	118.67	118.48	116.62	117.90	118.62	119.21	118.89	119.24	116.62	119.24	118.49	3882.70	3882.82	3883.01	3884.87	3883.59	3882.87	3882.28	3882.60	3882.25	3882.25	3884.87	3883.00
DH-75	4001.55	119.23	119.19	119.00	117.14	118.36	119.10	119.63	119.36	119.73	117.14	119.73	118.97	3882.32	3882.36	3882.55	3884.41	3883.19	3882.45	3881.92	3882.19	3881.82	3881.82	3884.41	3882.58
DH-76	3994.28	98.13	98.11	98.01	97.91	97.98	98.19	98.27	98.16	98.16	97.91	98.27	98.10	3896.15	3896.17	3896.27	3896.37	3896.30	3896.09	3896.01	3896.12	3896.12	3896.01	3896.37	3896.18
DH-77	3930.05	50.03	50.23	50.39	50.23	50.19	50.41	NM	52.42	52.53	50.03	52.53	50.80	3880.02	3879.82	3879.66	3879.82	3879.86	3879.64	NM	3879.78	3879.67	3879.64	3880.02	3879.79
DH-78	3918.85	48.33	48.89	49.32	49.03	48.67	48.95	NM	49.05	49.48	48.33	49.48	48.97	3870.52	3869.96	3869.53	3869.82	3870.18	3869.90	NM	3869.80	3869.37	3869.37	3870.52	3869.88
DH-79	3916.04	NM	NM	NM	NM	39.50	39.79	NM	NM	39.97	39.50	39.97	39.75	NM	NM	NM	NM	3876.54	3876.25	NM	NM	3876.07	3876.07	3876.54	3876.29
DH-8	3920.63	48.16	48.07	48.13	48.21	48.06	48.18	48.28	48.21	48.24	48.06	48.28	48.17	3872.47	3872.56	3872.50	3872.42	3872.57	3872.45	3872.35	3872.42	3872.39	3872.35	3872.57	3872.45
DH-80	3919.52	NM	NM	NM	NM	23.68	23.67	NM	22.95	23.00	22.95	23.68	23.33	NM	NM	NM	NM	3895.84	3895.85	NM	3896.57	3896.52	3895.84	3896.57	3896.20
DH-81	3926.66	NM	NM	NM	NM	20.19	20.25	NM	19.07	18.95	18.95	20.25	19.62	NM	NM	NM	NM	3906.47	3906.41	NM	3907.59	3907.71	3906.41	3907.71	3907.05
DH-82	3908.18	NM	NM	NM	NM	41.38	41.51	NM	41.64	42.20	41.38	42.20	41.68	NM	NM	NM	NM	3866.80	3866.67	NM	3866.54	3865.98	3865.98	3866.80	3866.50
DH-83	3918.83	NM	NM	NM	NM	47.54	47.77	NM	47.82	48.11	47.54	48.11	47.81	NM	NM	NM	NM	3871.29	3871.06	NM	3871.01	3870.72	3870.72	3871.29	3871.02
DH-9	3896.56	DRY	DRY	DRY	DRY	NM	DRY	DRY	DRY	DRY	NA	NA	NA	DRY	DRY	DRY	DRY	NM	DRY	DRY	DRY	DRY	NA	NA	NA
East-PZ-1	3911.93	33.94	34.94	34.59	33.88	33.29	32.41	32.30	32.21	32.59	32.21	34.94	33.35	3877.99	3876.99	3877.34	3878.05	3878.64	3879.52	3879.63	3879.72	3879.34	3876.99	3879.72	3878.58
East-PZ-2	3924.58	23.97	24.12	24.12	23.67	14.22	13.48	21.66	22.51	17.91	13.48	24.12	20.63	3900.61	3900.46	3900.46	3900.91	3910.36	3911.10	3902.92	3902.07	3906.67	3900.46	3911.10	3903.95
East-PZ-4	3935.66	19.45	19.52	19.49	19.20	19.98	20.47	20.68	20.59	20.62	19.20	20.68	20.00	3916.21	3916.14	3916.17	3916.46	3915.68	3915.19	3914.98	3915.07	3915.04	3914.98	3916.46	3915.66
East-PZ-6	3943.83	23.56	23.68	23.61	23.27	24.05	24.51	24.43	24.32	24.35	23.27	24.51	23.98	3920.27	3920.15	3920.22	3920.56	3919.78	3919.32	3919.40	3919.51	3919.48	3919.32	3920.56	3919.85
East-PZ-7	3928.83	17.11	17.15	17.12	16.88	15.56	15.47	18.20	18.24	16.25	15.47	18.24	16.89	3911.72	3911.68	3911.71	3911.95	3913.27	3913.36	3910.63	3910.59	3912.58	3910.59	3913.36	3911.94
EH-100	3889.83	29.55	30.06	30.32	30.02	29.63	29.66	30.00	29.99	30.54	29.55	30.54	29.97	3860.28	3859.77	3859.51	3859.81	3860.20	3860.17	3859.83	3859.84	3859.29	3859.29	3860.28	3859.85
EH-101	3879.95	18.04	18.49	18.05	15.60	15.65	15.85	16.25	16.98	18.82	15.60	18.82	17.08	3861.91	3861.46	3861.90	3864.35	3864.30	3864.10	3863.70	3862.97	3861.13	3861.13	3864.35	3862.87
EH-102	3880.45	10.77	10.96	10.60	9.54	9.57	9.61	9.64	9.78	10.71	9.54	10.96	10.13	3869.68	3869.49	3869.85	3870.91	3870.88	3870.84	3870.81	3870.67	3869.74	3869.49	3870.91	3870.31
EH-103	3890.54	26.57	27.11	27.39	27.07	26.70	26.76	27.18	26.98	27.61	26.57	27.61	27.04	3863.97	3863.43	3863.15	3863.47	3863.84	3863.78	3863.36	3863.56	3862.93	3862.93	3863.97	3863.50
EH-104	3887.83	36.41	37.09	37.43	37.53	37.04	36.85	37.08	37.15	37.77	36.41	37.77	37.15	3851.42	3850.74	3850.40	3850.30	3850.79	3850.98	3850.75	3850.68	3850.06	3850.06	3851.42	3850.68
EH-106	3882.07	30.72	31.41	31.67	31.40	30.90	30.79	30.89	31.15	31.87	30.72	31.87	31.20	3851.35	3850.66	3850.40	3850.67	3851.17	3851.28	3851.18	3850.92	3850.20	3850.20	3851.35	3850.87
EH-107	3880.15	24.35	24.96	24.86	23.45	23.15	23.33	23.70	24.18	25.86	23.15	25.86	24.20	3855.80	3855.19	3855.29	3856.70	3857.00	3856.82	3856.45	3855.97	3854.29	3854.29	3857.00	3855.95
EH-109	3885.67	26.72	27.28	27.52	27.20	26.74	26.78	27.13	27.14	27.75	26.72	27.75	27.14	3858.95	3858.39	3858.15	3858.47	3858.93	3858.89	3858.54	3858.53	3857.92	3857.92	3858.95	3858.53
EH-110	3884.05	22.04	22.54	22.83	22.48	22.13	22.19	22.52	22.48	23.05	22.04	23.05	22.47	3862.01	3861.51	3861.22	3861.57	3861.92	3861.86	3861.53	3861.57	3861.00	3861.00	3862.01	3861.58
EH-111	3876.50	30.67	31.65	32.17	31.62	30.92	30.73	31.05	31.17	32.44	30.67	32.44	31.38	3845.83	3844.85	3844.33	3844.88	3845.58	3845.77	3845.45	3845.33	3844.06	3844.06	3845.83	3845.12
EH-112	3875.78	28.97	30.34	30.92	28.85	28.00	27.92	28.55	29.34	31.41	27.92	31.41	29.37	3846.81	3845.44	3844.86	3846.93	3847.78	3847.86	3847.23	3846.44	3844.37	3844.37	3847.86	3846.42
EH-113	3871.34	28.31	29.61	30.15	28.14	27.45	27.21	27.90	28.68	30.54	27.21	30.54	28.67	3843.03	3841.73	3841.19	3843.20	3843.89	3844.13	3843.44	3842.66	3840.80	3840.80	3844.13	3842.68
EH-114	3878.07	33.8	34.76	35.26	34.94	34.33	34.14	34.15	34.72	35.60	33.80	35.60	34.63	3844.27	3843.31	3842.81	3843.13	3843.74	3843.93	3843.92	3843.35	3842.47	3842.47	3844.27	3843.44
EH-115	3883.29	36.3	37.13	37.59	37.52	36.97	36.79	36.99	37.13	37.94	36.30	37.94	37.15	3846.99	3846.16	3845.70	3845.77	3846.32	3846.50	3846.30	3846.16	3845.35	3845.35	3846.99	3846.14
EH-116	3874.52	31.61	32.65	33.15	32.24	31.57	31.46	31.88	32.35	33.54	31.46	33.54	32.27	3842.91	3841.87	3841.37	3842.28	3842.95	3843.06	3842.64	3842.17	3840.98	3840.98	3843.06	3842.25
EH-117	3871.33	29.33	30.54	31.07	29.35	28.15	28.48	29.15	29.86	31.49	28.15	31.49	29.71	3842.00	3840.79	3840.26	3841.98	3843.18	3842.85	3842.18	3841.47	3839.84	3839.84	3843.18	3841.62
EH-118	3879.95	37.28	38.15	38.65	38.53	37.88	37.82	37.87	38.23	39.04	37.28	39.04	38.16	3842.67	3841.80	3841.30	3841.42	3842.07	3842.13	3842.08	3841.72	3840.91	3840.91	3842.67	3841.79
EH-119	3873.75	34.28	35.24	35.70	35.32	34.62	34.43	34.37	35.18	36.05	34.28	36.05	35.02	3839.47	3838.51	3838.05	3838.43	3839.13	3839.32	3839.38	3838.57	3837.70	3837.70	3839.47	3838.73
EH-120	3865.78	31.82	33.03	33.77	30.01	29.45	29.93	31.06	32.25	34.32	29.45	34.32	31.74	3833.96	3832.75	3832.01	3835.77	3836.33	3835.85	3834.72	3833.53	3831.46	3831.46	3836.33	3834.04
EH-121	3869.49	31.3	32.56	32.22	26.90	26.74	27.90	29.70	31.50	34.29	26.74	34.29	30.35	3838.19	3836.93	3837.27	3842.59	3842.75	3841.59	3839.79	3837.99	3835.20	3835.20	3842.75	3839.15
EH-122	3868.08	27.63	28.95	28.23	21.64	22.35	24.00	25.95	27.92	29.93	21.64	29.93	26.29	3840.45	3839.13	3839.85	3846.44	3845.73	3844.08	3842.13	3840.16	3838.15	3838.15	3846.44	3841.80
EH-123	3885.71	43.51	44.27	44.73	44.86	44.35	44.21	44.38	44.58	45.25	43.51	45.25	44.46	3842.20	3841.44	3840.98	3840.85	3841.36	3841.50	3841.33	3841.13	3840.46	3840.46	3842.20	3841.25
EH-124	3874.46	37.88	38.73	39.20	38.86	38.15	38.00	38.29	38.62	39.48	37.88	39.48	38.58	3836.58	3835.73	3835.26	3835.60	3836.31	3836.46	3836.17	3835.84	3834.98	3834.98	3836.58	3835.88
EH-125	3863.22	36.55	37.94	38.37	34.22	33.67	34.21	35.54	36.96	39.29	33.67	39.29	36.31	3826.67	3825.28	3824.85	3829.00	3829.55	3829.01	3827.68	3826.26	3823.93	3823.93	3829.55	3826.92
EH-126	3870.00	55.6	57.31	58.06	55.33	54.21	54.05	54.71	55.87	57.92	54.05	58.06	55.90	3814.40	3812.69	3811.94	3814.67	3815.79	3815.95	3815.29	3814.13	3812.08	3811.94	3815.95	3814.11
EH-127	3860.75	32.14	33.84	33.80	27.48	27.28	28.67	30.91	32.85	35.75	27.28	35.75	31.41	3828.61	3826.91	3826.95	3833.27	3833.47	3832.08	3829.84	3827.90	3825.00	3825.00	3833.47	3829.34
EH-128	3892.17	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NA	NA	NA	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NA	NA	NA
EH-129	3870.21	56.22	57.99	58.79	56.45	55.19	54.90	55.38	56.50	58.52	54.90	58.79	56.66	3813.99	3812.22	3811.42	3813.76	3815.02	3815.31	3814.83	3813.71	3811.69	3811.42	3815.31	3813.55
EH-130	3858.55	46.74	48.34	48.86	44.81	44.10	44.32	45.38	46.75	49.06	44.10	49.06	46.48	3811.81	3810.21	3809.69	3813.74	3814.45	3814.23	3813.17	3811.80	3809.49	3809.49	3814.45	3812.06
EH-131	3834.44	35.41	37.04	37.22	32.32	31.72	32.19	33.35	34.70	37.09	31.72	37.22	34.56	3799.03	3797.40	3797.22	3802.12	3802.72	3802.25	3801.09	3799.74	3797.35	3797.22	3802.72	3799.88
EH-132	3893.90	60.09	60.74	61.21	61.25	60.76	60.65	60.66	60.81	61.26	60.09	61.26	60.83	3833.81	3833.16	3832.69	3832.65	3833.14	3833.25	3833.24	3833.09	3832.64	3832.64	3833.81	3833.07
EH-133	3884.36	56.4	57.18	57.63	57.84	57.31	57.08	57.08	57.24	57.76	56.40	57.84	57.28	3827.96	3827.18	3826.73	3826.52	3827.05	3827.28	3827.28	3827.12	3826.60	3826.52	3827.96	3827.08
EH-134	3870.21	56.13	57.92	58.69	56.39	55.16	54.86	55.30	56.54	58.37	54.86	58.69	56.60	3814.08	3812.29	3811.52	3813.82	3815.05	3815.35	3814.91	3813.67	3811.84	3811.52	3815.35	3813.62
EH-135	3852.25	31	32.58	32.95	27.44	27.28	28.08	29.85	31.62	34.28	27.28	34.28	30.56	3821.25	3819.67	3819.30	3824.81	3824.97	3824.17	3822.40	3820.63	3817.97	3817.97	3824.97	3821.68
EH-136	3838.59	32.46	34.33	34.49	28.48	28.31	29.14	30.90	32.60	35.50	28.31	35.50	31.80	3806.13	3804.26	3804.10	3810.11	3810.28	3809.45	3807.69	3805.99	3803.09	3803.09	3810.28	3806.78

2015 DEPTH TO GROUNDWATER AND GROUNDWATER ELEVATION SUMMARY - EAST HELENA FACILITY

		Depth to Water												Water Elevation										
SiteID	MP Elevation	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Min	Max	Mean	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Min	Max	Mean
EH-137	3839.66	39.02	40.75	40.74	34.99	34.12	35.30	37.12	38.77	41.36	34.12	41.36	38.02	3800.64	3798.91	3798.92	3804.67	3805.54	3804.36	3802.54	3800.89	3798.30	3798.30	3805.54	3801.64
EH-138	3839.70	46.73	48.18	48.28	44.87	43.76	43.63	44.06	45.23	46.76	43.63	48.28	45.72	3792.97	3791.52	3791.42	3794.83	3795.94	3796.07	3795.64	3794.47	3792.94	3791.42	3796.07	3793.98
EH-139	3839.78	52.53	54.21	54.39	51.99	49.93	49.50	49.50	50.71	52.31	49.50	54.39	51.67	3787.25	3785.57	3785.39	3787.79	3789.85	3790.28	3790.28	3789.07	3787.47	3785.39	3790.28	3788.10
EH-140	3812.08	25.28	26.67	26.68	22.80	21.73	21.93	22.55	23.50	25.25	21.73	26.68	24.04	3786.80	3785.41	3785.40	3789.28	3790.35	3790.15	3789.53	3788.58	3786.83	3785.40	3790.35	3788.04
EH-141	3813.32	33.79	35.08	34.67	31.11	30.01	29.99	30.35	31.33	32.86	29.99	35.08	32.13	3779.53	3778.24	3778.65	3782.21	3783.31	3783.33	3782.97	3781.99	3780.46	3778.24	3783.33	3781.19
EH-142	3804.68	34.32	35.5	34.96	31.94	30.85	30.84	31.05	31.91	33.76	30.84	35.50	32.79	3770.36	3769.18	3769.72	3772.74	3773.83	3773.84	3773.63	3772.77	3770.92	3769.18	3773.84	3771.89
EH-143	3803.37	35.04	36.23	35.71	32.98	31.80	31.80	31.95	32.63	34.47	31.80	36.23	33.62	3768.33	3767.14	3767.66	3770.39	3771.57	3771.57	3771.42	3770.74	3768.90	3767.14	3771.57	3769.75
EH-144D	3778.86	23.22	24.45	24.20	22.61	21.41	21.23	20.91	21.15	22.61	20.91	24.45	22.42	3755.64	3754.41	3754.66	3756.25	3757.45	3757.63	3757.95	3757.71	3756.25	3754.41	3757.95	3756.44
EH-144M	3778.95	25.55	26.78	26.60	25.46	24.27	23.95	23.66	23.60	24.96	23.60	26.78	24.98	3753.40	3752.17	3752.35	3753.49	3754.68	3755.00	3755.29	3755.35	3753.99	3752.17	3755.35	3753.97
EH-144S	3778.70	26.9	28.11	27.92	27.08	25.93	25.56	25.24	25.09	26.33	25.09	28.11	26.46	3751.80	3750.59	3750.78	3751.62	3752.77	3753.14	3753.46	3753.61	3752.37	3750.59	3753.61	3752.24
EH-200	3953.33	29.55	29.6	29.60	29.33	29.41	29.49	29.51	29.33	29.50	29.33	29.60	29.48	3923.78	3923.73	3923.73	3924.00	3923.92	3923.84	3923.82	3924.00	3923.83	3923.73	3924.00	3923.85
EH-201	3973.48	98.83	98.6	98.50	98.45	98.45	98.50	98.55	98.35	98.39	98.35	98.83	98.51	3874.65	3874.88	3874.98	3875.03	3875.03	3874.98	3874.93	3875.13	3875.09	3874.65	3875.13	3874.97
EH-202	3930.56	65.87	65.76	65.96	66.08	66.30	66.48	NM	66.42	66.41	65.76	66.48	66.16	3864.69	3864.80	3864.60	3864.48	3864.26	3864.08	NM	3864.14	3864.15	3864.08	3864.80	3864.40
EH-203	4003.92	106.03	105.67	105.70	105.81	105.81	106.00	NM	105.95	105.72	105.67	106.03	105.84	3897.89	3898.25	3898.22	3898.11	3898.11	3897.92	NM	3897.97	3898.20	3897.89	3898.25	3898.08
EH-204	3925.69	56.07	55.96	56.14	56.28	56.53	56.68	56.73	56.77	57.07	55.96	57.07	56.47	3869.62	3869.73	3869.55	3869.41	3869.16	3869.01	3868.96	3868.92	3868.62	3868.62	3869.73	3869.22
EH-205	3900.66	35.38	35.91	36.17	36.52	36.40	36.53	36.67	36.52	36.61	35.38	36.67	36.30	3865.28	3864.75	3864.49	3864.14	3864.26	3864.13	3863.99	3864.14	3864.05	3863.99	3865.28	3864.36
EH-206	3898.10	48.74	49.06	49.23	49.57	49.41	49.49	49.67	49.75	50.02	48.74	50.02	49.44	3849.36	3849.04	3848.87	3848.53	3848.69	3848.61	3848.43	3848.35	3848.08	3848.08	3849.36	3848.66
EH-208	3910.58	57.03	56.91	57.29	57.83	58.30	58.66	58.57	58.25	58.07	56.91	58.66	57.88	3853.55	3853.67	3853.29	3852.75	3852.28	3851.92	3852.01	3852.33	3852.51	3851.92	3853.67	3852.70
EH-209	3898.34	44	43.88	44.05	44.56	44.95	45.19	45.46	45.15	44.97	43.88	45.46	44.69	3854.34	3854.46	3854.29	3853.78	3853.39	3853.15	3852.88	3853.19	3853.37	3852.88	3854.46	3853.65
EH-210	3901.19	37.68	37.81	38.00	38.32	38.30	38.57	38.59	38.51	38.52	37.68	38.59	38.26	3863.51	3863.38	3863.19	3862.87	3862.89	3862.62	3862.60	3862.68	3862.67	3862.60	3863.51	3862.93
EH-211	3905.75	50.25	50.32	50.39	50.63	50.64	50.83	50.91	50.93	50.96	50.25	50.96	50.65	3855.50	3855.43	3855.36	3855.12	3855.11	3854.92	3854.84	3854.82	3854.79	3854.79	3855.50	3855.10
EH-212	3905.90	50.33	50.39	50.48	50.72	50.72	50.91	50.99	51.02	51.03	50.33	51.03	50.73	3855.57	3855.51	3855.42	3855.18	3855.18	3854.99	3854.91	3854.88	3854.87	3854.87	3855.57	3855.17
EH-50	3889.39	28.97	29.5	29.74	29.50	29.07	29.11	29.46	29.40	29.98	28.97	29.98	29.41	3860.42	3859.89	3859.65	3859.89	3860.32	3860.28	3859.93	3859.99	3859.41	3859.41	3860.42	3859.98
EH-51	3880.09	17.79	18.24	17.80	15.31	15.37	15.56	15.96	16.68	18.49	15.31	18.49	16.80	3862.30	3861.85	3862.29	3864.78	3864.72	3864.53	3864.13	3863.41	3861.60	3861.60	3864.78	3863.29
EH-52	3880.50	9.83	8.85	8.45	7.71	7.81	7.81	7.98	8.18	9.01	7.71	9.83	8.40	3870.67	3871.65	3872.05	3872.79	3872.69	3872.69	3872.52	3872.32	3871.49	3870.67	3872.79	3872.09
EH-53	3872.82	29.12	30.43	30.60	28.40	27.53	27.59	28.41	29.33	31.41	27.53	31.41	29.20	3843.70	3842.39	3842.22	3844.42	3845.29	3845.23	3844.41	3843.49	3841.41	3841.41	3845.29	3843.61
EH-54	3869.66	8.7	9.63	8.60	6.41	6.78	7.21	7.60	8.50	11.45	6.41	11.45	8.32	3860.96	3860.03	3861.06	3863.25	3862.88	3862.45	3862.06	3861.16	3858.21	3858.21	3863.25	3861.34
EH-57	3885.05	DRY	DRY	DRY	DRY	DRY	37.90	DRY	DRY	DRY	37.90	37.90	37.90	DRY	DRY	DRY	DRY	DRY	3847.15	DRY	DRY	DRY	3847.15	3847.15	3847.15
EH-57A	3885.45	39.41	40.3	40.80	40.79	40.28	40.04	40.22	40.42	41.19	39.41	41.19	40.38	3846.04	3845.15	3844.65	3844.66	3845.17	3845.41	3845.23	3845.03	3844.26	3844.26	3846.04	3845.07
EH-58	3888.15	17.84	18.11	17.94	16.76	16.54	16.36	16.17	16.11	17.11	16.11	18.11	16.99	3870.31	3870.04	3870.21	3871.39	3871.61	3871.79	3871.98	3872.04	3871.04	3870.04	3872.04	3871.15
EH-59	3876.57	9.43	9.54	9.22	8.26	8.32	8.34	8.30	8.40	9.35	8.26	9.54	8.80	3867.14	3867.03	3867.35	3868.31	3868.25	3868.23	3868.27	3868.17	3867.22	3867.03	3868.31	3867.77
EH-60	3888.46	24.11	24.68	25.05	24.64	24.24	24.35	24.77	24.57	25.23	24.11	25.23	24.63	3864.35	3863.78	3863.41	3863.82	3864.22	3864.11	3863.69	3863.89	3863.23	3863.23	3864.35	3863.83
EH-61	3889.77	25.99	26.53	26.81	26.48	26.13	26.17	26.60	26.42	27.04	25.99	27.04	26.46	3863.78	3863.24	3862.96	3863.29	3863.64	3863.60	3863.17	3863.35	3862.73	3862.73	3863.78	3863.31
EH-62	3875.07	28.06	29.28	28.59	24.26	24.72	24.84	25.98	27.66	30.36	24.26	30.36	27.08	3847.01	3845.79	3846.48	3850.81	3850.35	3850.23	3849.09	3847.41	3844.71	3844.71	3850.81	3847.98
EH-63	3878.32	22.85	23.58	23.10	19.86	19.81	20.11	20.80	21.94	24.31	19.81	24.31	21.82	3855.47	3854.74	3855.22	3858.46	3858.51	3858.21	3857.52	3856.38	3854.01	3854.01	3858.51	3856.50
EH-64	3882.67	28.94	29.71	29.30	25.83	25.70	26.06	26.82	28.08	30.49	25.70	30.49	27.88	3853.73	3852.96	3853.37	3856.84	3856.97	3856.61	3855.85	3854.59	3852.18	3852.18	3856.97	3854.79
EH-65	3879.96	27.52	28.45	28.38	25.46	25.14	25.42	26.11	27.11	29.30	25.14	29.30	26.99	3852.44	3851.51	3851.58	3854.50	3854.82	3854.54	3853.85	3852.85	3850.66	3850.66	3854.82	3852.97
EH-66	3869.48	31.1	32.3	32.03	26.43	26.34	27.50	29.36	31.25	34.02	26.34	34.02	30.04	3838.38	3837.18	3837.45	3843.05	3843.14	3841.98	3840.12	3838.23	3835.46	3835.46	3843.14	3839.44
EH-67	3869.46	28.67	29.87	29.24	23.24	23.26	24.70	26.76	27.68	31.76	23.24	31.76	27.24	3840.79	3839.59	3840.22	3846.22	3846.20	3844.76	3842.70	3841.78	3837.70	3837.70	3846.22	3842.21
EH-68	3867.60	11.18	11.38	10.66	8.62	9.02	9.65	10.15	10.80	11.87	8.62	11.87	10.37	3856.42	3856.22	3856.94	3858.98	3858.58	3857.95	3857.45	3856.80	3855.73	3855.73	3858.98	3857.23
EH-69	3869.10	21.22	22.03	21.87	20.02	19.41	19.42	19.65	19.94	21.66	19.41	22.03	20.58	3847.88	3847.07	3847.23	3849.08	3849.69	3849.68	3849.45	3849.16	3847.44	3847.07	3849.69	3848.52
EH-70	3863.48	35.9	37.25	37.72	33.42	32.92	33.48	34.83	36.30	38.61	32.92	38.61	35.60	3827.58	3826.23	3825.76	3830.06	3830.56	3830.00	3828.65	3827.18	3824.87	3824.87	3830.56	3827.88
EHMW-3	3825.45	42.04	43.61	43.51	39.83	38.51	38.79	39.41	40.23	42.00	38.51	43.61	40.88	3783.41	3781.84	3781.94	3785.62	3786.94	3786.66	3786.04	3785.22	3783.45	3781.84	3786.94	3784.57
EHTW-3	3827.66	44.45	45.86	45.95	42.18	40.80	41.10	41.74	42.50	44.30	40.80	45.95	43.21	3783.21	3781.80	3781.71	3785.48	3786.86	3786.56	3785.92	3785.16	3783.36	3781.71	3786.86	3784.45
GPPZ-06	3923.36	8.32	8.21	8.35	8.33	NM	NM	NM	NM	NM	8.21	8.35	8.30	3915.04	3915.15	3915.01	3915.03	NM	NM	NM	NM	NM	3915.01	3915.15	3915.06
GPPZ-12	3927.82	9.58	9.51	9.69	9.98	NM	NM	NM	NM	NM	9.51	9.98	9.69	3918.24	3918.31	3918.13	3917.84	NM	NM	NM	NM	NM	3917.84	3918.31	3918.13
GPPZ-14	3927.18	10.15	10.08	10.12	10.05	NM	NM	NM	NM	NM	10.05	10.15	10.10	3917.03	3917.10	3917.06	3917.13	NM	NM	NM	NM	NM	3917.03	3917.13	3917.08
GPPZ-18	3926.56	4.55	4.51	4.69	5.13	7.71	NM	NM	NM	NM	4.51	7.71	5.32	3922.01	3922.05	3921.87	3921.43	3918.85	NM	NM	NM	NM	3918.85	3922.05	3921.24
IW-01	3888.28	NM	NM	NM	NM	NM	66.01	66.02	66.1	66.27	66.01	66.27	66.10	NM	NM	NM	NM	NM	3822.27	3822.26	3822.18	3822.01	3822.01	3822.27	3822.18
IW-02	3871.08	NM	NM	NM	NM	NM	51.06	51.22	51.18	51.61	51.06	51.61	51.27	NM	NM	NM	NM	NM	3820.02	3819.86	3819.90	3819.47	3819.47	3820.02	3819.81
MW-1	3953.05	53.16	52.82	52.96	53.11	53.18	53.38	NM	53.38	53.35	52.82	53.38	53.17	3899.89	3900.23	3900.09	3899.94	3899.87	3899.67	NM	3899.67	3899.70	3899.67	3900.23	3899.88
MW-10	3946.28	44.47	44.54	44.68	44.74	45.05	45.36	NM	45.34	45.29	44.47	45.36	44.93	3901.81	3901.74	3901.60	3901.54	3901.23	3900.92	NM	3900.94	3900.99	3900.92	3901.81	3901.35
MW-11	3973.33	63.72	63.3	63.51	63.61	63.58	63.78	63.74	63.68	63.83	63.30	63.83	63.64	3909.61	3910.03	3909.82	3909.72	3909.75	3909.55	3909.59	3909.65	3909.50	3909.50	3910.03	3909.69
MW-2	3945.97	39.38	39.51	39.61	39.55	40.01	40.35	NM	39.44	39.35	39.35	40.35	39.65	3906.59	3906.46	3906.36	3906.42	3905.96	3905.62	NM	3906.53	3906.62	3905.62	3906.62	3906.32
MW-3	3940.95	34.62	34.8	34.90	34.87	35.23	35.55	NM	34.80	34.69	34.62	35.55	34.93	3906.33	3906.15	3906.05	3906.08	3905.72	3905.40	NM	3906.15	3906.26	3905.40	3906.33	3906.02
MW-4	3947.06	48.99	48.65	48.81	49.00	49.11	49.33	NM	49.37	49.54	48.65	49.54	49.10	3898.07	3898.41	3898.25	3898.06	3897.95	3897.73	NM	3897.69	3897.52	3897.52	3898.41	3897.96
MW-5	3956.18	54.31	53.92	54.11	54.21	54.28	54.50	NM	54.47	54.60	53.92	54.60	54.30	3901.87	3902.26	3902.07	3901.97	3901.90	3901.68	NM	3901.71	3901.58	3901.58	3902.26	3901.88
MW-6	3938.14	31.07	31.23	31.33	31.34	31.74	32.07	31.91	31.15	31.08	31.07	32.07	31.44	3907.07	3906.91	3906.81	3906.80	3906.40	3906.07	3906.23	3906.99	3907.06	3906.07	3907.07	3906.71
MW-7	3963.67	57.51	56.98	57.14	57.19	57.21	57.41	NM	57.32	57.39	56.98	57.51	57.27	3906.16	3906.69	3906.53	3906.48	3906.46	3906.26	NM	3906.35	3906.28	3906.16	3906.69	3906.41

2015 DEPTH TO GROUNDWATER AND GROUNDWATER ELEVATION SUMMARY - EAST HELENA FACILITY

		Depth to Water												Water Elevation										
SiteID	MP Elevation	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Min	Max	Mean	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Min	Max	Mean
MW-8	3958.65	53.27	53.04	53.17	53.30	53.38	53.63	53.71	53.67	53.75	53.04	53.75	53.44	3905.38	3905.61	3905.48	3905.35	3905.27	3905.02	3904.94	3904.98	3904.90	3904.90	3905.61	3905.21
MW-9	3965.36	58.85	58.42	58.61	58.65	58.74	58.91	NM	58.89	58.98	58.42	58.98	58.76	3906.51	3906.94	3906.75	3906.71	3906.62	3906.45	NM	3906.47	3906.38	3906.38	3906.94	3906.61
PBTW-1	3907.85	37.47	38.06	38.40	37.93	37.75	37.95	NM	38.06	38.58	37.47	38.58	38.03	3870.38	3869.79	3869.45	3869.92	3870.10	3869.90	NM	3869.79	3869.27	3869.27	3870.38	3869.82
PBTW-2	3906.73	36.91	37.54	37.82	37.39	37.19	37.36	NM	37.50	38.02	36.91	38.02	37.47	3869.82	3869.19	3868.91	3869.34	3869.54	3869.37	NM	3869.23	3868.71	3868.71	3869.82	3869.27
PPCRPZ-01	3923.92	11.4	11.32	11.37	11.80	NM	NM	NM	NM	NM	11.32	11.80	11.47	3912.52	3912.60	3912.55	3912.12	NM	NM	NM	NM	NM	3912.12	3912.60	3912.44
PPCRPZ-02	3919.76	6.16	6.11	6.20	6.15	7.99	8.94	9.25	14.78	8.79	6.11	14.78	8.26	3913.60	3913.65	3913.56	3913.61	3911.77	3910.82	3910.51	3904.98	3910.97	3904.98	3913.65	3911.50
PPCRPZ-03	3924.59	10.03	9.89	9.95	9.83	NM	NM	NM	NM	NM	9.83	10.03	9.93	3914.56	3914.70	3914.64	3914.76	NM	NM	NM	NM	NM	3914.56	3914.76	3914.67
PPCRPZ-04	3922.73	7.11	NM	NM	NM	NM	NM	NM	NM	NM	7.11	7.11	7.11	3915.62	NM	NM	NM	NM	NM	NM	NM	NM	3915.62	3915.62	3915.62
PPCRPZ-05	3926.58	7.24	6.97	7.16	7.47	10.26	NM	NM	NM	NM	6.97	10.26	7.82	3919.34	3919.61	3919.42	3919.11	3916.32	NM	NM	NM	NM	3916.32	3919.61	3918.76
PPCRPZ-06	3928.47	7.21	7.03	7.16	NM	NM	NM	NM	NM	NM	7.03	7.21	7.13	3921.26	3921.44	3921.31	NM	NM	NM	NM	NM	NM	3921.26	3921.44	3921.33
PPCRPZ-07	3928.02	7.76	NM	NM	NM	NM	NM	NM	NM	NM	7.76	7.76	7.76	3920.26	NM	NM	NM	NM	NM	NM	NM	NM	3920.26	3920.26	3920.26
PRB-1	3910.87	40.71	41.33	41.70	41.30	41.00	41.26	NM	41.37	41.83	40.71	41.83	41.31	3870.16	3869.54	3869.17	3869.57	3869.87	3869.61	NM	3869.50	3869.04	3869.04	3870.16	3869.56
PRB-2	3905.34	34.8	35.38	35.72	35.18	35.03	35.27	NM	35.35	35.86	34.80	35.86	35.32	3870.54	3869.96	3869.62	3870.16	3870.31	3870.07	NM	3869.99	3869.48	3869.48	3870.54	3870.01
PRB-3	3916.31	46.21	46.81	47.21	46.86	46.55	46.78	NM	46.88	47.34	46.21	47.34	46.83	3870.10	3869.50	3869.10	3869.45	3869.76	3869.53	NM	3869.43	3868.97	3868.97	3870.10	3869.48
PZ-102	3922.21	13.4	13.42	13.45	13.41	NM	NM	NM	NM	NM	13.40	13.45	13.42	3908.81	3908.79	3908.76	3908.80	NM	NM	NM	NM	NM	3908.76	3908.81	3908.79
PZ-103	3921.82	NM	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA	NM	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA
PZ-33B	3894.26	8.06	8.43	8.08	6.99	7.71	8.00	NM	8.52	8.95	6.99	8.95	8.09	3886.20	3885.83	3886.18	3887.27	3886.55	3886.26	NM	3885.74	3885.31	3885.31	3887.27	3886.17
PZ-36A	3858.96	9.95	DRY	Dry	9.02	9.31	11.16	DRY	DRY	DRY	9.02	11.16	9.86	3849.01	DRY	DRY	3849.94	3849.65	3847.80	DRY	DRY	DRY	3847.80	3849.94	3849.10
PZ-36B	3858.75	11.75	DRY	Dry	8.98	9.23	9.95	DRY	DRY	DRY	8.98	11.75	9.98	3847.00	DRY	DRY	3849.77	3849.52	3848.80	DRY	DRY	DRY	3847.00	3849.77	3848.77
PZ-36C	3859.60	15.98	17.41	16.08	10.06	10.30	12.21	14.54	16.71	20.03	10.06	20.03	14.81	3843.62	3842.19	3843.52	3849.54	3849.30	3847.39	3845.06	3842.89	3839.57	3839.57	3849.54	3844.78
PZ-9A	3850.70	DRY	DRY	Dry	12.02	12.10	12.16	Dry	DRY	DRY	12.02	12.16	12.09	DRY	DRY	DRY	3838.68	3838.60	3838.54	DRY	DRY	DRY	3838.54	3838.68	3838.61
PZ-9B	3849.43	14.32	14.96	15.82	10.91	11.45	13.10	14.25	15.41	17.70	10.91	17.70	14.21	3835.11	3834.47	3833.61	3838.52	3837.98	3836.33	3835.18	3834.02	3831.73	3831.73	3838.52	3835.22
SC-1	3890.42	32.61	32.93	33.18	33.23	33.07	33.04	33.30	33.31	33.53	32.61	33.53	33.13	3857.81	3857.49	3857.24	3857.19	3857.35	3857.38	3857.12	3857.11	3856.89	3856.89	3857.81	3857.29
SDMW-1	3914.36	38.21	38.63	38.91	38.18	38.19	38.52	NM	38.52	38.76	38.18	38.91	38.49	3876.15	3875.73	3875.45	3876.18	3876.17	3875.84	NM	3875.84	3875.60	3875.45	3876.18	3875.87
SDMW-2	3914.21	35.6	37.97	38.21	37.71	37.75	37.97	NM	37.95	38.18	35.60	38.21	37.67	3878.61	3876.24	3876.00	3876.50	3876.46	3876.24	NM	3876.26	3876.03	3876.00	3878.61	3876.54
SDMW-3	3925.16	41.16	41.36	41.46	41.26	41.35	41.50	NM	41.14	41.24	41.14	41.50	41.31	3884.00	3883.80	3883.70	3883.90	3883.81	3883.66	NM	3884.02	3883.92	3883.66	3884.02	3883.85
SDMW-4	3917.69	32.31	32.38	32.42	31.87	31.80	Access	NM	47.91	45.96	31.80	47.91	36.38	3885.38	3885.31	3885.27	3885.82	3885.89	Access	NM	3884.89	3886.84	3884.89	3886.84	3885.63
SDMW-5	3925.34	48.37	48.7	48.87	48.56	48.51	48.73	NM	53.25	53.45	48.37	53.45	49.81	3876.97	3876.64	3876.47	3876.78	3876.83	3876.61	NM	3876.61	3876.41	3876.41	3876.97	3876.67
SP-3	3905.91	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NA	NA	NA	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NA	NA	NA
SP-4	3908.16	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NA	NA	NA	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NA	NA	NA
SP-5	3903.52	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NA	NA	NA	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NA	NA	NA
STW-1	3905.58	36.34	36.92	37.32	36.80	36.63	36.86	NM	36.86	37.44	36.34	37.44	36.90	3869.24	3868.66	3868.26	3868.78	3868.95	3868.72	NM	3868.72	3868.14	3868.14	3869.24	3868.69
TW-1	3918.41	NM	NM	38.15	37.93	37.76	38.41	NM	37.97	37.79	37.76	38.41	38.00	NM	NM	3880.26	3880.48	3880.65	3880.00	NM	3880.44	3880.62	3880.00	3880.65	3880.40
ULM-PZ-1	3924.40	DRY	4.97	5.08	5.41	7.12	7.63	7.11	6.99	6.58	4.97	7.63	6.36	DRY	3919.43	3919.32	3918.99	3917.28	3916.77	3917.29	3917.41	3917.82	3916.77	3919.43	3918.04
ULM-PZ-2	3925.41	6.38	6.31	6.50	6.91	NM	NM	NM	NM	NM	6.31	6.91	6.53	3919.03	3919.10	3918.91	3918.50	NM	NM	NM	NM	NM	3918.50	3919.10	3918.89

2016 DEPTH TO GROUNDWATER AND GROUNDWATER ELEVATION SUMMARY - EAST HELENA FACILITY

		Depth to Water											Water Elevation										
SiteID	MP Elevation	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Dec-16	Min	Max	Mean	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Dec-16	Min	Max	Mean
APSD-7	3924.04	DRY	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA
APSD-8	3923.93	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA
ASIW-1	3915.99	16.32	16.03	15.55	16.25	16.02	15.02	16.27	17.62	15.02	17.62	16.14	3899.67	3899.96	3900.44	3899.74	3899.97	3900.97	3899.72	3898.37	3898.37	3900.97	3899.86
ASIW-2	3909.13	37.38	37.51	43.45	37.65	36	34.8	35.09	33.10	33.10	43.45	36.87	3871.75	3871.62	3865.68	3871.48	3873.13	3874.33	3874.04	3876.03	3865.68	3876.03	3872.26
DH-1	3910.89	44.9	44.97	44.87	44.89	45.06	45.04	45.17	45.18	44.87	45.18	45.01	3865.99	3865.92	3866.02	3866.00	3865.83	3865.85	3865.72	3865.71	3865.71	3866.02	3865.88
DH-10A	3886.97	9.41	8.53	7.75	8.15	9.19	9.66	9.68	9.17	7.75	9.68	8.94	3877.56	3878.44	3879.22	3878.82	3877.78	3877.31	3877.285	3877.80	3877.29	3879.22	3878.02
DH-12	3916.69	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA
DH-13	3923.91	42.63	Access	50.65	50.52	50.84	51.28	51.6	51.89	42.63	51.89	49.92	3873.24		3873.26	3873.39	3873.07	3872.63	3872.306	3872.02	3872.02	3873.39	3872.84
DH-14	3916.06	12.04	11.99	12.15	13.81	15.34	14.61	13.75	13.72	11.99	15.34	13.43	3904.02	3904.07	3903.91	3902.25	3900.72	3901.45	3902.305	3902.34	3900.72	3904.07	3902.63
DH-15	3889.82	19.98	19.83	19.09	18.95	19.3	19.87	19.98	20.50	18.95	20.50	19.69	3869.84	3869.99	3870.73	3870.87	3870.52	3869.95	3869.836	3869.32	3869.32	3870.87	3870.13
DH-16	3905.77	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA
DH-17	3917.56	NM	NM	49.03	48.75	48.91	49.42	49.75	50.11	48.75	50.11	49.33	NM	NM	3868.53	3868.81	3868.65	3868.14	3867.813	3867.45	3867.45	3868.81	3868.23
DH-18	3924.93	40.6	NM	49.12	49.28	49.53	49.65	49.81	49.88	40.60	49.88	48.27	3875.85	NM	3875.81	3875.65	3875.40	3875.28	3875.124	3875.05	3875.05	3875.85	3875.45
DH-19R	3919.67	19.74	NM	NM	NM	NM	NM	NM	NM	19.74	19.74	19.74	3899.93	NM	NM	NM	NM	NM	NM	NM	3899.93	3899.93	3899.93
DH-2	3936.91	63.5	63.79	63.68	63.81	63.9	63.91	64.04	64.03	63.50	64.04	63.83	3873.41	3873.12	3873.23	3873.10	3873.01	3873.00	3872.87	3872.88	3872.87	3873.41	3873.08
DH-20	3927.09	10.39	18.35	18.76	19.5	19.8	19.49	18.67	18.40	10.39	19.80	17.92	3909.65	3908.74	3908.33	3907.59	3907.29	3907.60	3908.42	3908.69	3907.29	3909.65	3908.29
DH-21	3916.98	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA
DH-22	3948.63	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NA	NA	NA	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA
DH-23	3931.82	32.79	33.02	33.08	33.52	34.07	34.7	35.19	35.37	32.79	35.37	33.97	3899.03	3898.80	3898.74	3898.30	3897.75	3897.12	3896.63	3896.45	3896.45	3899.03	3897.85
DH-24	3899.59	34.12	34.34	34.07	33.67	33.81	DRY	DRY	DRY	33.67	34.34	34.00	3865.47	3865.25	3865.52	3865.92	3865.78	NM	NM	NM	3865.25	3865.92	3865.59
DH-27	3946.29	NM	NM	NM	53.8	NM	54.59	54.72	54.84	53.80	54.84	54.49	NM	NM	NM	3858.97	NM	3891.70	3891.57	3891.45	3858.97	3891.70	3883.42
DH-3	3947.48	31.79	31.94	32.04	32.89	33.21	32.59	32.11	31.95	31.79	33.21	32.32	3915.69	3915.54	3915.44	3914.59	3914.27	3914.89	3915.37	3915.53	3914.27	3915.69	3915.17
DH-30	3943.24	NM	NM	NM	50.22	NM	NM	50.83	50.97	50.22	50.97	50.67	NM	NM	NM	3893.02	NM	NM	3892.41	3892.27	3892.27	3893.02	3892.57
DH-31	3919.16	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA
DH-32	3918.23	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA
DH-33	3918.81	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA
DH-34	3916.55	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA
DH-35	3918.37	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA
DH-36	3920.66	NM	45.97	45.88	45.89	DRY	DRY	DRY	DRY	45.88	45.97	45.91	NM	3874.69	3874.78	3874.77	NM	NM	NM	NM	3874.69	3874.78	3874.75
DH-37	3916.71	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA
DH-38	3918.86	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA
DH-4	3917.26	13.05	12.91	13.07	14.67	16.47	15.78	14.86	14.84	12.91	16.47	14.46	3904.21	3904.35	3904.19	3902.59	3900.79	3901.48	3902.40	3902.42	3900.79	3904.35	3902.80
DH-42	3931.61	35.5	35.77	36.12	36.49	NM	48.44	48.55	48.67	35.50	48.67	41.36	3896.11	3895.84	3895.49	3895.12	NM	3894.19	3894.08	3893.96	3893.96	3896.11	3894.97
DH-47	3922.33	12.44	13.93	14.34	NM	21.36	21.74	21.76	21.38	12.44	21.76	18.14	3909.89	3908.40	3907.99	NM	3905.46	3905.08	3905.06	3905.44	3905.06	3909.89	3906.76
DH-48	3905.96	DRY	DRY	DRY	35.76	DRY	DRY	DRY	DRY	35.76	35.76	35.76	NM	NM	NM	3870.20	NM	NM	NM	NM	3870.20	3870.20	3870.20
DH-49	3904.07	36.6	DRY	DRY	DRY	DRY	DRY	DRY	DRY	36.60	36.60	36.60	3867.47	NM	NM	NM	NM	NM	NM	NM	3867.47	3867.47	3867.47
DH-5	3921.18	16.85	16.84	16.8	17.62	DRY	DRY	17.92	Dry	16.80	17.92	17.21	3904.33	3904.34	3904.38	3903.56	NM	NM	3903.26	NM	3903.26	3904.38	3903.98
DH-50	3904.76	36.32	36.38	36.34	36.36	36.42	DRY	DRY	DRY	36.32	36.42	36.36	3868.44	3868.38	3868.42	3868.40	3868.34	NM	NM	NM	3868.34	3868.44	3868.39
DH-51	3904.34	36.24	DRY	DRY	DRY	DRY	DRY	DRY	DRY	36.24	36.24	36.24	3868.10	NM	NM	NM	NM	NM	NM	NM	3868.10	3868.10	3868.10
DH-52	3889.18	7.01	6.41	5.71	5.69	7.27	7.45	7.27	6.75	5.69	7.45	6.70	3882.17	3882.77	3883.47	3883.49	3881.91	3881.73	3881.91	3882.43	3881.73	3883.49	3882.49
DH-53	3892.87	9.58	8.95	8.51	8.7	9.81	10	9.67	9.36	8.51	10.00	9.32	3883.29	3883.92	3884.36	3884.17	3883.06	3882.87	3883.20	3883.51	3882.87	3884.36	3883.55
DH-54	3890.27	27.2	27.37	27.01	26.74	26.75	27.25	27.37	NM	26.74	27.37	27.10	3863.07	3862.90	3863.26	3863.53	3863.52	3863.02	3862.90	NM	3862.90	3863.53	3863.17
DH-55	3972.76	80.19	79.72	79.34	79.95	81.37	81.26	81.08	80.31	79.34	81.37	80.40	3892.57	3893.04	3893.42	3892.81	3891.39	3891.50	3891.68	3892.45	3891.39	3893.42	3892.35
DH-56	3958.17	84.22	83.94	82.89	82.76	83.77	84.54	84.53	NM	82.76	84.54	83.81	3873.95	3874.23	3875.28	3875.41	3874.40	3873.63	3873.64	NM	3873.63	3875.41	3874.36
DH-57	3929.53	45.08	45.28	45.22	45.22	45.3	DRY	DRY	DRY	45.08	45.30	45.22	3884.45	3884.25	3884.31	3884.31	3884.23	NM	NM	NM	3884.23	3884.45	3884.31
DH-58	3919.33	43.28	43.28	42.52	42.6	43.21	43.85	44.03	44.52	42.52	44.52	43.41	3876.05	3876.05	3876.81	3876.73	3876.12	3875.48	3875.30	3874.81	3874.81	3876.81	3875.92
DH-59	3917.74	21.79	21.81	22.19	22.65	Access	44.6	44.78	43.70	21.79	44.78	31.65	3895.95	3895.93	3895.55	3895.09	NM	3892.84	3892.66	3893.74	3892.66	3895.95	3894.54
DH-5A	3921.92	17.37	17.39	17.37	18.16	18.95	19.43	18.5	18.64	17.37	19.43	18.23	3904.55	3904.53	3904.55	3903.76	3902.97	3902.49	3903.42	3903.28	3902.49	3904.55	3903.69
DH-6	3889.85	19.99	19.82	19.05	18.93	19.32	19.89	20.05	20.52	18.93	20.52	19.70	3869.86	3870.03	3870.80	3870.92	3870.53	3869.96	3869.80	3869.33	3869.33	3870.92	3870.15
DH-61	3926.84	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NA	NA	NA	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA

2016 DEPTH TO GROUNDWATER AND GROUNDWATER ELEVATION SUMMARY - EAST HELENA FACILITY

		Depth to Water											Water Elevation										
SiteID	MP Elevation	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Dec-16	Min	Max	Mean	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Dec-16	Min	Max	Mean
DH-62	3926.95	57.02	57.19	57.02	57.13	57.34	57.36	57.51	57.68	57.02	57.68	57.28	3869.93	3869.76	3869.93	3869.82	3869.61	3869.59	3869.44	3869.27	3869.27	3869.93	3869.67
DH-63	3905.37	41.24	41.44	41.25	40.84	40.96	41.32	DRY	DRY	40.84	41.44	41.18	3864.13	3863.93	3864.12	3864.53	3864.41	3864.05	NM	NM	3863.93	3864.53	3864.20
DH-64	3904.02	38.16	38.33	38	37.68	37.8	38.28	38.52	38.93	37.68	38.93	38.21	3865.86	3865.69	3866.02	3866.34	3866.22	3865.74	3865.50	3865.09	3865.09	3866.34	3865.81
DH-65	3945.85	63.44	62.66	61.54	60.24	63.62	63.98	63.46	63.26	60.24	63.98	62.78	3882.41	3883.19	3884.31	3885.61	3882.23	3881.87	3882.39	3882.59	3881.87	3885.61	3883.07
DH-66	3919.28	49.05	49.29	52.18	51.86	51.99	52.47	52.77	53.07	49.05	53.07	51.59	3867.10	3866.86	3867.10	3867.42	3867.29	3866.81	3866.51	3866.21	3866.21	3867.42	3866.91
DH-67	3899.77	36.5	36.73	36.43	36.09	36.17	36.57	36.81	37.13	36.09	37.13	36.55	3863.27	3863.04	3863.34	3863.68	3863.60	3863.20	3862.96	3862.64	3862.64	3863.68	3863.21
DH-68	3943.28	43.2	42.81	42.74	43.51	44.44	44.61	44.37	44.68	42.74	44.68	43.80	3900.08	3900.47	3900.54	3899.77	3898.84	3898.67	3898.91	3898.60	3898.60	3900.54	3899.49
DH-69	3934.40	34.61	34.4	34.33	35.12	35.99	36.9	35.72	35.72	34.33	36.90	35.35	3899.79	3900.00	3900.07	3899.28	3898.41	3897.50	3898.68	3898.68	3897.50	3900.07	3899.06
DH-7	3898.66	21.21	20.66	19.67	19.89	16.76	16.4	16.15	16.15	16.15	21.21	18.36	3877.45	3878.00	3878.99	3878.77	3881.90	3882.26	3882.51	3882.51	3877.45	3882.51	3880.30
DH-70	3933.91	NM	NM	NM	33.01	33.76	34.43	33.59	33.68	33.01	34.43	33.69	NM	NM	NM	3900.90	3900.15	3899.48	3900.32	3900.23	3899.48	3900.90	3900.22
DH-71	3944.88	55.43	55.64	55.72	56.23	56.33	56.3	56.39	56.43	55.43	56.43	56.06	3889.45	3889.24	3889.16	3888.65	3888.55	3888.58	3888.49	3888.45	3888.45	3889.45	3888.82
DH-72	3916.35	18.93	19.11	19.36	19.77	NM	43.55	43.78	43.84	18.93	43.84	29.76	3897.42	3897.24	3896.99	3896.58	NM	3896.12	3895.89	3895.83	3895.83	3897.42	3896.58
DH-73	3918.08	39.22	39.02	37.75	38.33	39.24	39.98	39.94	40.30	37.75	40.30	39.22	3878.86	3879.06	3880.33	3879.75	3878.84	3878.10	3878.14	3877.78	3877.78	3880.33	3878.86
DH-74	4001.49	119.2	118.22	116.72	116.26	119.43	120.21	119.54	119.64	116.26	120.21	118.65	3882.29	3883.27	3884.77	3885.23	3882.06	3881.28	3881.95	3881.85	3881.28	3885.23	3882.84
DH-75	4001.55	119.73	118.81	117.29	116.86	119.88	120.57	119.99	120.08	116.86	120.57	119.15	3881.82	3882.74	3884.26	3884.69	3881.67	3880.98	3881.56	3881.47	3880.98	3884.69	3882.40
DH-76	3994.28	98.24	97.96	97.77	98.33	99.18	99.18	99.12	98.74	97.77	99.18	98.57	3896.04	3896.32	3896.51	3895.95	3895.10	3895.10	3895.16	3895.54	3895.10	3896.51	3895.72
DH-77	3932.20	52.84	52.98	52.94	53.06	53.29	53.42	53.61	53.71	52.84	53.71	53.23	3879.36	3879.22	3879.26	3879.14	3878.91	3878.78	3878.59	3878.49	3878.49	3879.36	3878.97
DH-78	3918.85	50.4	52.96	52.8	53.6	52.77	53.06	53.27	53.45	50.40	53.60	52.79	3868.45	3868.16	3868.32	3867.52	3868.35	3868.06	3867.85	3867.67	3867.52	3868.45	3868.04
DH-79	3928.80	NM	NM	53.61	53.55	53.9	54.31	54.59	54.97	53.55	54.97	54.16	NM	NM	3875.19	3875.25	3874.90	3874.49	3874.21	3873.83	3873.83	3875.25	3874.65
DH-8	3923.38	48.5	48.57	51.31	51.37	51.47	51.6	51.78	51.80	48.50	51.80	50.80	3874.88	3874.81	3872.07	3872.01	3871.91	3871.78	3871.60	3871.58	3871.58	3874.88	3872.58
DH-80	3919.52	23.86	24.03	24.27	24.71	NM	48.63	48.78	48.93	23.86	48.93	34.74	3895.66	3895.49	3895.25	3894.81	NM	3893.73	3893.58	3893.43	3893.43	3895.66	3894.56
DH-81	3926.66	20.4	NM	NM	NM	NM	NM	NM	NM	20.40	20.40	20.40	3906.26	NM	NM	NM	NM	NM	NM	NM	3906.26	3906.26	3906.26
DH-82	3908.18	43.43	43.67	43.34	43	43.14	42.52	43.78	44.17	42.52	44.17	43.38	3864.75	3864.51	3864.84	3865.18	3865.04	3865.66	3864.40	3864.01	3864.01	3865.66	3864.80
DH-83	3918.83	48.78	52.44	52.18	52.13	52.27	52.46	52.59	52.71	48.78	52.71	51.95	3870.05	3869.70	3869.96	3866.70	3866.56	3866.37	3866.24	3866.12	3866.12	3870.05	3867.71
DH-9	3918.08	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NA	NA	NA	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA
East-PZ-1	3911.93	30.69	30.25	28.96	29.14	24.74	23.49	23.24	23.28	23.24	30.69	26.72	3881.24	3881.68	3882.97	3882.79	3887.19	3888.44	3888.69	3888.65	3881.24	3888.69	3885.21
East-PZ-2	3924.58	13.62	12.97	12.25	14.05	14.95	12.12	17.48	21.89	12.12	21.89	14.92	3910.96	3911.61	3912.33	3910.53	3909.63	3912.46	3907.10	3902.69	3902.69	3912.46	3909.66
East-PZ-4	3935.66	20.38	19.61	19.46	20.06	20.28	20.38	20.45	20.47	19.46	20.47	20.14	3915.28	3916.05	3916.20	3915.60	3915.38	3915.28	3915.21	3915.19	3915.19	3916.20	3915.52
East-PZ-6	3943.83	24.08	23.63	23.49	24.26	24.42	24.02	24.31	24.28	23.49	24.42	24.06	3919.75	3920.20	3920.34	3919.57	3919.41	3919.81	3919.52	3919.55	3919.41	3920.34	3919.77
East-PZ-7	3928.83	14.59	13.8	13.7	15.8	16.52	14.82	17.81	18.30	13.70	18.30	15.67	3914.24	3915.03	3915.13	3913.03	3912.31	3914.01	3911.02	3910.53	3910.53	3915.13	3913.16
EH-100	3889.83	31.55	31.74	31.49	31.15	31.15	31.63	31.75	NM	31.15	31.75	31.49	3858.28	3858.09	3858.34	3858.68	3858.68	3858.20	3858.08	NM	3858.08	3858.68	3858.33
EH-101	3879.95	19.84	19.05	17.21	17.08	17.43	18.25	18.81	NM	17.08	19.84	18.24	3860.11	3860.90	3862.74	3862.87	3862.52	3861.70	3861.14	NM	3860.11	3862.87	3861.71
EH-102	3880.45	10.98	10.35	9.58	9.74	9.24	9.4	9.8	NM	9.24	10.98	9.87	3869.47	3870.10	3870.87	3870.71	3871.21	3871.05	3870.65	NM	3869.47	3871.21	3870.58
EH-103	3890.54	28.72	28.87	28.59	28.24	28.3	28.75	28.99	NM	28.24	28.99	28.64	3861.82	3861.67	3861.95	3862.30	3862.24	3861.79	3861.55	NM	3861.55	3862.30	3861.90
EH-104	3887.83	39.05	39.45	39.38	38.93	38.85	39.25	39.5	NM	38.85	39.50	39.20	3848.78	3848.38	3848.45	3848.90	3848.98	3848.58	3848.33	NM	3848.33	3848.98	3848.63
EH-106	3882.07	32.76	33.02	32.87	32.46	32.34	32.84	32.94	NM	32.34	33.02	32.75	3849.31	3849.05	3849.20	3849.61	3849.73	3849.23	3849.13	NM	3849.05	3849.73	3849.32
EH-107	3880.15	27.28	26.88	25.32	24.93	25.39	25.97	26.57	NM	24.93	27.28	26.05	3852.87	3853.27	3854.83	3855.22	3854.76	3854.18	3853.58	NM	3852.87	3855.22	3854.10
EH-109	3885.67	28.7	28.92	28.65	28.31	28.3	28.83	28.93	NM	28.30	28.93	28.66	3856.97	3856.75	3857.02	3857.36	3857.37	3856.84	3856.74	NM	3856.74	3857.37	3857.01
EH-110	3884.05	24.1	24.29	24.01	23.65	23.68	24.18	24.31	NM	23.65	24.31	24.03	3859.95	3859.76	3860.04	3860.40	3860.37	3859.87	3859.74	NM	3859.74	3860.40	3860.02
EH-111	3876.50	33.88	34.27	34.03	33.32	33.37	33.94	34.05	NM	33.32	34.27	33.84	3842.62	3842.23	3842.47	3843.18	3843.13	3842.56	3842.45	NM	3842.23	3843.18	3842.66
EH-112	3875.78	33.67	34.1	32.81	31.3	NM	32.98	NM	NM	31.30	34.10	32.97	3842.11	3841.68	3842.97	3844.48	NM	3842.80	NM	NM	3841.68	3844.48	3842.81
EH-113	3871.34	32.36	32.81	31.73	30.42	30.87	31.95	31.84	NM	30.42	32.81	31.71	3838.98	3838.53	3839.61	3840.92	3840.47	3839.39	3839.50	NM	3838.53	3840.92	3839.63
EH-114	3878.07	36.96	37.41	37.22	36.68	36.72	37.26	37.29	NM	36.68	37.41	37.08	3841.11	3840.66	3840.85	3841.39	3841.35	3840.81	3840.78	NM	3840.66	3841.39	3840.99
EH-115	3883.29	39.2	39.64	39.58	39.32	39.07	39.56	39.63	NM	39.07	39.64	39.43	3844.09	3843.65	3843.71	3843.97	3844.22	3843.73	3843.66	NM	3843.65	3844.22	3843.86
EH-116	3874.52	35.02	35.4	34.89	34.2	34.38	35.12	34.95	NM	34.20	35.40	34.85	3839.50	3839.12	3839.63	3840.32	3840.14	3839.40	3839.57	NM	3839.12	3840.32	3839.67
EH-117	3871.33	33.15	33.43	32.54	31.56	31.96	32.94	32.66	NM	31.56	33.43	32.61	3838.18	3837.90	3838.79	3839.77	3839.37	3838.39	3838.67	NM	3837.90	3839.77	3838.73
EH-118	3879.95	40.38	40.86	40.76	40.28	40.29	40.8	40.83	NM	40.28	40.86	40.60	3839.57	3839.09	3839.19	3839.67	3839.66	3839.15	3839.12	NM	3839.09	3839.67	3839.35
EH-119	3873.75	37.27	37.68	37.48	37.96	37.08	37.58	37.53	NM	37.08	37.96	37.51	3836.48	3836.07	3836.27	3835.79	3836.67	3836.17	3836.22	NM	3835.79	3836.67	3836.24
EH-120	3865.78	36	35.65	33.46	33.15	33.3	35.31	33.88	NM	33.15	36.00	34.39	3829.78	3830.13	3832.32	3832.63	3832.48	3830.47	3831.90	NM	3829.78	3832.63	3831.39
EH-121	3869.49	35.48	33.99	30.25	30.99	32.8	34.21	31.54	NM	30.25	35.48	32.75	3834.01	3835.50	3839.24	3838.50	3836.69	3835.28	3837.95	NM	3834.01	3839.24	3836.74

2016 DEPTH TO GROUNDWATER AND GROUNDWATER ELEVATION SUMMARY - EAST HELENA FACILITY

		Depth to Water											Water Elevation										
SiteID	MP Elevation	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Dec-16	Min	Max	Mean	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Dec-16	Min	Max	Mean
EH-122	3868.08	31.7	29.74	25.7	26.9	28.99	30.46	27.74	NM	25.70	31.70	28.75	3836.38	3838.34	3842.38	3841.18	3839.09	3837.62	3840.34	NM	3836.38	3842.38	3839.34
EH-123	3885.71	46.32	46.73	46.79	46.54	46.56	46.95	47.08	NM	46.32	47.08	46.71	3839.39	3838.98	3838.92	3839.17	3839.15	3838.76	3838.63	NM	3838.63	3839.39	3839.00
EH-124	3874.46	40.53	40.91	40.73	40.27	40.37	40.83	40.83	NM	40.27	40.91	40.64	3833.93	3833.55	3833.73	3834.19	3834.09	3833.63	3833.63	NM	3833.55	3834.19	3833.82
EH-125	3863.22	41.43	40.85	38.22	37.99	39.18	40.43	38.65	NM	37.99	41.43	39.54	3821.79	3822.37	3825.00	3825.23	3824.04	3822.79	3824.57	NM	3821.79	3825.23	3823.69
EH-126	3870.00	61.02	61.15	59.25	58.21	58.64	59.64	59.08	NM	58.21	61.15	59.57	3808.98	3808.85	3810.75	3811.79	3811.36	3810.36	3810.92	NM	3808.85	3811.79	3810.43
EH-127	3860.75	37.27	35.28	31.45	32.27	34.74	35.87	31.53	NM	31.45	37.27	34.06	3823.48	3825.47	3829.30	3828.48	3826.01	3824.88	3829.22	NM	3823.48	3829.30	3826.69
EH-128	3892.17	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NM	NA	NA	NA	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA
EH-129	3870.21	61.64	61.92	60.25	59.11	59.3	60.26	59.88	NM	59.11	61.92	60.34	3808.57	3808.29	3809.96	3811.10	3810.91	3809.95	3810.33	NM	3808.29	3811.10	3809.87
EH-130	3858.55	51.98	51.51	49	48.43	49.32	50.37	49.36	NM	48.43	51.98	50.00	3806.57	3807.04	3809.55	3810.12	3809.23	3808.18	3809.19	NM	3806.57	3810.12	3808.55
EH-131	3834.44	40.63	40.07	37.01	36.04	37.23	38.06	37.21	NM	36.04	40.63	38.04	3793.81	3794.37	3797.43	3798.40	3797.21	3796.38	3797.23	NM	3793.81	3798.40	3796.41
EH-132	3893.90	62.12	62.45	62.54	62.34	62.32	62.56	62.62	NM	62.12	62.62	62.42	3831.78	3831.45	3831.36	3831.56	3831.58	3831.34	3831.28	NM	3831.28	3831.78	3831.48
EH-133	3884.36	58.6	58.91	59.02	58.89	58.03	59.01	59.09	NM	58.03	59.09	58.79	3825.76	3825.45	3825.34	3825.47	3826.33	3825.35	3825.27	NM	3825.27	3826.33	3825.57
EH-134	3870.21	61.03	61.32	59.99	59.1	59.18	60	59.69	NM	59.10	61.32	60.04	3809.18	3808.89	3810.22	3811.11	3811.03	3810.21	3810.52	NM	3808.89	3811.11	3810.17
EH-135	3852.25	36.35	35.11	31.81	32.25	33.84	35.19	32.91	NM	31.81	36.35	33.92	3815.90	3817.14	3820.44	3820.00	3818.41	3817.06	3819.34	NM	3815.90	3820.44	3818.32
EH-136	3838.59	38.1	36.87	33.35	33.4	35.02	36.14	34.6	NM	33.35	38.10	35.35	3800.49	3801.72	3805.24	3805.19	3803.57	3802.45	3803.99	NM	3800.49	3805.24	3803.23
EH-137	3839.66	44.61	44.05	40.36	39.22	41.25	42.41	41.22	NM	39.22	44.61	41.87	3795.05	3795.61	3799.30	3800.44	3798.41	3797.25	3798.44	NM	3795.05	3800.44	3797.78
EH-138	3839.70	51.36	50.89	48.31	46.98	47.54	48.26	48.17	NM	46.98	51.36	48.79	3788.34	3788.81	3791.39	3792.72	3792.16	3791.44	3791.53	NM	3788.34	3792.72	3790.92
EH-139	3839.78	56.9	57.15	54.78	52.64	53.12	53.82	53.96	NM	52.64	57.15	54.62	3782.88	3782.63	3785.00	3787.14	3786.66	3785.96	3785.82	NM	3782.63	3787.14	3785.15
EH-140	3812.08	29.7	29.86	27.14	24.95	25.85	26.47	26.27	NM	24.95	29.86	27.18	3782.38	3782.22	3784.94	3787.13	3786.23	3785.61	3785.81	NM	3782.22	3787.13	3784.90
EH-141	3813.32	37.44	36.78	33.72	32.38	33.15	33.79	33.92	NM	32.38	37.44	34.45	3775.88	3776.54	3779.60	3780.94	3780.17	3779.53	3779.40	NM	3775.88	3780.94	3778.87
EH-142	3804.68	37.72	37.1	34.24	32.72	33.17	33.72	34.02	NM	32.72	37.72	34.67	3766.96	3767.58	3770.44	3771.96	3771.51	3770.96	3770.66	NM	3766.96	3771.96	3770.01
EH-143	3803.37	38.49	37.88	35.16	33.61	33.94	34.35	34.73	NM	33.61	38.49	35.45	3764.88	3765.49	3768.21	3769.76	3769.43	3769.02	3768.64	NM	3764.88	3769.76	3767.91
EH-144D	3778.86	26.2	26.1	24.18	22.42	22.2	22.04	22.61	NM	22.04	26.20	23.68	3752.66	3752.76	3754.68	3756.44	3756.66	3756.82	3756.25	NM	3752.66	3756.82	3755.18
EH-144M	3778.95	28.68	28.72	27.02	25.01	24.7	24.44	24.98	NM	24.44	28.72	26.22	3750.27	3750.23	3751.93	3753.94	3754.25	3754.51	3753.97	NM	3750.23	3754.51	3752.73
EH-144S	3778.70	29.99	30.18	28.61	26.49	26.08	25.82	26.31	NM	25.82	30.18	27.64	3748.71	3748.52	3750.09	3752.21	3752.62	3752.88	3752.39	NM	3748.52	3752.88	3751.06
EH-145D	3789.60	NM	NM	NM	NM	NM	NM	30.45	NM	30.45	30.45	30.45	NM	NM	NM	NM	NM	NM	3759.15	NM	3759.15	3759.15	3759.15
EH-145S	3790.09	NM	NM	NM	NM	NM	NM	31.41	NM	31.41	31.41	31.41	NM	NM	NM	NM	NM	NM	3758.68	NM	3758.68	3758.68	3758.68
EH-200	3953.33	29.5	29.46	29.17	29.3	29.36	29.36	29.21	NM	29.17	29.50	29.34	3923.83	3923.87	3924.16	3924.03	3923.97	3923.97	3924.12	NM	3923.83	3924.16	3924.00
EH-201	3973.48	97.97	98.04	97.85	97.97	98.05	97.83	97.94	NM	97.83	98.05	97.95	3875.51	3875.44	3875.63	3875.51	3875.43	3875.65	3875.54	NM	3875.43	3875.65	3875.53
EH-202	3930.56	66.58	66.84	66.8	66.92	67.02	67.03	67.06	67.07	66.58	67.07	66.92	3863.98	3863.72	3863.76	3863.64	3863.54	3863.53	3863.50	3863.49	3863.49	3863.98	3863.64
EH-203	4003.92	105.97	106.22	106.04	106.22	106.27	106.46	106.33	106.56	105.97	106.56	106.26	3897.95	3897.70	3897.88	3897.70	3897.65	3897.46	3897.59	3897.36	3897.36	3897.95	3897.66
EH-204	3925.69	57.19	57.34	57.2	57.46	57.54	57.3	57.72	57.69	57.19	57.72	57.43	3868.50	3868.35	3868.49	3868.23	3868.15	3868.39	3867.97	3868.00	3867.97	3868.50	3868.26
EH-205	3900.66	36.7	36.71	36.68	36.7	DRY	DRY	DRY	DRY	36.68	36.71	36.70	3863.96	3863.95	3863.98	3863.96	NM	NM	NM	NM	3863.95	3863.98	3863.96
EH-206	3898.10	50.64	50.94	51.07	51.22	51.3	51.61	51.76	NM	50.64	51.76	51.22	3847.46	3847.16	3847.03	3846.88	3846.80	3846.49	3846.34	NM	3846.34	3847.46	3846.88
EH-208	3910.58	57.89	58.22	58.69	59.18	59.49	59.25	59.08	NM	57.89	59.49	58.83	3852.69	3852.36	3851.89	3851.40	3851.09	3851.33	3851.50	NM	3851.09	3852.69	3851.75
EH-209	3898.34	44.95	45.25	45.44	45.98	46.94	46.26	46.15	NM	44.95	46.94	45.85	3853.39	3853.09	3852.90	3852.36	3851.40	3852.08	3852.19	NM	3851.40	3853.39	3852.48
EH-210	3901.19	39.06	39.26	39.11	39.05	39.2	39.26	39.33	39.39	39.05	39.39	39.21	3862.13	3861.93	3862.08	3862.14	3861.99	3861.93	3861.86	3861.80	3861.80	3862.14	3861.98
EH-211	3905.75	51.11	51.23	51.25	51.45	51.58	51.59	51.74	51.74	51.11	51.74	51.46	3854.64	3854.52	3854.50	3854.30	3854.17	3854.16	3854.01	3854.01	3854.01	3854.64	3854.29
EH-212	3905.90	51.22	51.33	51.39	51.55	51.68	51.74	51.86	51.84	51.22	51.86	51.58	3854.68	3854.57	3854.51	3854.35	3854.22	3854.16	3854.04	3854.06	3854.04	3854.68	3854.32
EH-50	3889.39	31.01	31.21	30.97	30.61	30.6	31.08	31.18	NM	30.60	31.21	30.95	3858.38	3858.18	3858.42	3858.78	3858.79	3858.31	3858.21	NM	3858.18	3858.79	3858.44
EH-51	3880.09	19.51	18.34	16.9	16.79	17.12	17.97	18.54	NM	16.79	19.51	17.88	3860.58	3861.75	3863.19	3863.30	3862.97	3862.12	3861.55	NM	3860.58	3863.30	3862.21
EH-52	3880.50	8.95	8.24	7.76	8	7.67	7.78	8.17	NM	7.67	8.95	8.08	3871.55	3872.26	3872.74	3872.50	3872.83	3872.72	3872.33	NM	3871.55	3872.83	3872.42
EH-53	3872.82	33.35	33.75	32.36	31.03	31.59	32.78	32.61	NM	31.03	33.75	32.50	3839.47	3839.07	3840.46	3841.79	3841.23	3840.04	3840.21	NM	3839.07	3841.79	3840.32
EH-54	3869.66	10.82	9.54	7.29	7.92	8.48	9.92	11.36	NM	7.29	11.36	9.33	3858.84	3860.12	3862.37	3861.74	3861.18	3859.74	3858.30	NM	3858.30	3862.37	3860.32
EH-57	3885.05	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NM	NA	NA	NA	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA
EH-57A	3885.45	42.5	42.96	42.97	42.48	42.45	42.9	43.06	NM	42.45	43.06	42.76	3842.95	3842.49	3842.48	3842.97	3843.00	3842.55	3842.39	NM	3842.39	3843.00	3842.69
EH-58	3888.15	17.23	16.77	15.84	15.8	14.31	14.16	14.25	NM	14.16	17.23	15.48	3870.92	3871.38	3872.31	3872.35	3873.84	3873.99	3873.90	NM	3870.92	3873.99	3872.67
EH-59	3876.57	9.78	9.23	8.47	8.5	8.12	8.14	8.44	NM	8.12	9.78	8.67	3866.79	3867.34	3868.10	3868.07	3868.45	3868.43	3868.13	NM	3866.79	3868.45	3867.90
EH-60	3888.46	26.4	26.57	26.28	25.93	25.97	26.44	26.68	NM	25.93	26.68	26.32	3862.06	3861.89	3862.18	3862.53	3862.49	3862.02	3861.78	NM	3861.78	3862.53	3862.14
EH-61	3889.77	28.13	28.32	28.02	25.7	27.72	28.17	28.42	NM	25.70	28.42	27.78	3861.64	3861.45	3861.75	3864.07	3862.05	3861.60	3861.35	NM	3861.35	3864.07	3861.99

2016 DEPTH TO GROUNDWATER AND GROUNDWATER ELEVATION SUMMARY - EAST HELENA FACILITY

		Depth to Water											Water Elevation										
SiteID	MP Elevation	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Dec-16	Min	Max	Mean	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Dec-16	Min	Max	Mean
EH-62	3875.07	31.55	30.55	27.24	27.26	28.69	30.14	29.38	NM	27.24	31.55	29.26	3843.52	3844.52	3847.83	3847.81	3846.38	3844.93	3845.69	NM	3843.52	3847.83	3845.81
EH-63	3878.32	25.47	24.7	22.1	21.86	22.65	23.76	24.08	NM	21.86	25.47	23.52	3852.85	3853.62	3856.22	3856.46	3855.67	3854.56	3854.24	NM	3852.85	3856.46	3854.80
EH-64	3882.67	31.87	31.08	28.21	27.94	28.85	30.11	30.28	NM	27.94	31.87	29.76	3850.80	3851.59	3854.46	3854.73	3853.82	3852.56	3852.39	NM	3850.80	3854.73	3852.91
EH-65	3879.96	30.95	30.52	28.02	27.47	28.29	29.7	29.72	NM	27.47	30.95	29.24	3849.01	3849.44	3851.94	3852.49	3851.67	3850.26	3850.24	NM	3849.01	3852.49	3850.72
EH-66	3869.48	35.26	33.82	29.94	30.66	32.53	33.98	31.18	NM	29.94	35.26	32.48	3834.22	3835.66	3839.54	3838.82	3836.95	3835.50	3838.30	NM	3834.22	3839.54	3836.99
EH-67	3869.46	33.77	30.98	26.52	27.73	29.86	31.46	28.54	NM	26.52	33.77	29.84	3835.69	3838.48	3842.94	3841.73	3839.60	3838.00	3840.92	NM	3835.69	3842.94	3839.62
EH-68	3867.60	11.8	11.02	9.59	10.04	10.5	11.03	11.8	NM	9.59	11.80	10.83	3855.80	3856.58	3858.01	3857.56	3857.10	3856.57	3855.80	NM	3855.80	3858.01	3856.77
EH-69	3869.10	23.13	22.75	21.43	20.63	20.87	21.03	21.56	NM	20.63	23.13	21.63	3845.97	3846.35	3847.67	3848.47	3848.23	3848.07	3847.54	NM	3845.97	3848.47	3847.47
EH-70	3863.48	40.85	40.26	37.59	37.32	38.52	39.87	38	NM	37.32	40.85	38.92	3822.63	3823.22	3825.89	3826.16	3824.96	3823.61	3825.48	NM	3822.63	3826.16	3824.56
EHMW-3	3825.45	46.41	48.9	46.18	41.7	42.52	43.09	43.02	NM	41.70	48.90	44.55	3779.04	3776.55	3779.27	3783.75	3782.93	3782.36	3782.43	NM	3776.55	3783.75	3780.90
EHTW-3	3827.66	48.84	49.85	47.22	44.05	44.95	45.54	45.46	NM	44.05	49.85	46.56	3778.82	3777.81	3780.44	3783.61	3782.71	3782.12	3782.20	NM	3777.81	3783.61	3781.10
IW-01	3888.28	66.62	66.86	66.85	66.88	66.7	66.81	66.91	NM	66.62	66.91	66.80	3821.66	3821.42	3821.43	3821.40	3821.58	3821.47	3821.37	NM	3821.37	3821.66	3821.48
IW-02	3871.08	52.14	52.34	52.39	53.1	52.74	52.72	53	NM	52.14	53.10	52.63	3818.94	3818.74	3818.69	3817.98	3818.34	3818.36	3818.08	NM	3817.98	3818.94	3818.45
MW-1	3953.05	53.71	53.95	53.78	53.95	54.05	54.27	54.18	54.38	53.71	54.38	54.03	3899.34	3899.10	3899.27	3899.10	3899.00	3898.78	3898.87	3898.67	3898.67	3899.34	3899.01
MW-10	3946.28	45.79	46.04	46.1	46.31	46.55	46.61	46.51	46.53	45.79	46.61	46.31	3900.49	3900.24	3900.18	3899.97	3899.73	3899.67	3899.77	3899.75	3899.67	3900.49	3899.98
MW-11	3973.33	63.87	64.05	63.94	64.08	64.2	64.24	64.24	64.49	63.87	64.49	64.14	3909.46	3909.28	3909.39	3909.25	3909.13	3909.09	3909.09	3908.84	3908.84	3909.46	3909.19
MW-2	3945.97	40.48	40.89	41.1	41.67	41.97	41.64	41.03	40.80	40.48	41.97	41.20	3905.49	3905.08	3904.87	3904.30	3904.00	3904.33	3904.94	3905.17	3904.00	3905.49	3904.77
MW-3	3940.95	35.7	36.1	36.27	36.86	37.17	36.93	36.4	36.18	35.70	37.17	36.45	3905.25	3904.85	3904.68	3904.09	3903.78	3904.02	3904.55	3904.77	3903.78	3905.25	3904.50
MW-4	3947.06	49.74	50.05	49.93	50.14	50.32	50.44	NM	50.69	49.74	50.69	50.19	3897.32	3897.01	3897.13	3896.92	3896.74	3896.62	NM	3896.37	3896.37	3897.32	3896.88
MW-5	3956.18	54.91	55.06	54.98	55.17	55.35	55.41	55.49	55.83	54.91	55.83	55.28	3901.27	3901.12	3901.20	3901.01	3900.83	3900.77	3900.69	3900.35	3900.35	3901.27	3900.91
MW-6	3938.14	32.26	32.64	32.82	33.4	33.75	33.43	32.8	32.54	32.26	33.75	32.96	3905.88	3905.50	3905.32	3904.74	3904.39	3904.71	3905.34	3905.60	3904.39	3905.88	3905.19
MW-7	3963.67	57.59	57.71	57.62	57.8	57.91	57.97	57.99	58.14	57.59	58.14	57.84	3906.08	3905.96	3906.05	3905.87	3905.76	3905.70	3905.68	3905.53	3905.53	3906.08	3905.83
MW-8	3958.65	53.91	54.09	54.04	54.19	54.34	54.45	54.38	54.53	53.91	54.53	54.24	3904.74	3904.56	3904.61	3904.46	3904.31	3904.20	3904.27	3904.12	3904.12	3904.74	3904.40
MW-9	3965.36	59.17	59.35	59.22	59.41	59.55	59.66	52.92	53.42	52.92	59.66	57.84	3906.19	3906.01	3906.14	3905.95	3905.81	3905.70	3906.09	3905.59	3905.59	3906.19	3905.94
PBTW-1	3914.59	NM	46.74	46.38	46.08	46.31	46.77	47.04	47.46	46.08	47.46	46.68	NM	3867.85	3868.21	3868.51	3868.28	3867.82	3867.55	3867.13	3867.13	3868.51	3867.91
PBTW-2	3906.73	39.27	39.47	39.13	38.81	39.02	39.48	39.72	40.13	38.81	40.13	39.38	3867.46	3867.26	3867.60	3867.92	3867.71	3867.25	3867.01	3866.60	3866.60	3867.92	3867.35
PPCRPZ-02	3919.76	8.29	9.18	NM	9.11	9.35	8.6	8.05	NM	8.05	9.35	8.76	3911.47	3910.58	NM	3910.65	3910.41	3911.16	3911.71	NM	3910.41	3911.71	3911.00
PRB-1	3918.37	NM	NM	50.57	50.24	50.45	50.91	51.16	51.57	50.24	51.57	50.82	NM	NM	3867.80	3868.13	3867.92	3867.46	3867.21	3866.80	3866.80	3868.13	3867.55
PRB-2	3905.34	37.14	37.31	36.91	36.62	36.85	37.35	37.57	38.04	36.62	38.04	37.22	3868.20	3868.03	3868.43	3868.72	3868.49	3867.99	3867.77	3867.30	3867.30	3868.72	3868.11
PRB-3	3916.31	48.63	51.9	51.59	51.24	51.43	51.88	52.16	52.52	48.63	52.52	51.42	3867.68	3867.29	3867.60	3865.07	3864.88	3864.43	3864.15	3863.79	3863.79	3867.68	3865.61
PZ-33B	3894.26	7.96	7.39	6.82	8.48	8.54	NM	NM	NM	6.82	8.54	7.84	3886.30	3886.87	3887.44	3885.78	3885.72	NM	NM	NM	3885.72	3887.44	3886.42
PZ-36A	3858.96	DRY	DRY	10.03	DRY	DRY	DRY	10.09	NM	10.03	10.09	10.06	NM	NM	3848.93	NM	NM	NM	3848.87	NM	3848.87	3848.93	3848.90
PZ-36B	3858.75	DRY	DRY	11.02	DRY	DRY	DRY	11.88	NM	11.02	11.88	11.45	NM	NM	3847.73	NM	NM	NM	3846.87	NM	3846.87	3847.73	3847.30
PZ-36C	3859.60	19.75	17.34	12.32	14.67	17.38	19.19	16.44	NM	12.32	19.75	16.73	3839.85	3842.26	3847.28	3844.93	3842.22	3840.41	3843.16	NM	3839.85	3847.28	3842.87
PZ-9A	3850.70	DRY	DRY	12.19	DRY	DRY	DRY	DRY	NM	12.19	12.19	12.19	NM	NM	3838.51	NM	NM	NM	NM	NM	3838.51	3838.51	3838.51
PZ-9B	3849.43	19.23	19.53	13.21	16.07	18.06	19.46	18.81	NM	13.21	19.53	17.77	3830.20	3829.90	3836.22	3833.36	3831.37	3829.97	3830.62	NM	3829.90	3836.22	3831.66
SC-1	3890.42	34.32	35.44	34.3	34.12	34.25	34.44	34.47	NM	34.12	35.44	34.48	3856.10	3854.98	3856.12	3856.30	3856.17	3855.98	3855.95	NM	3854.98	3856.30	3855.94
SDMW-1	3925.11	NM	50.95	50.51	50.41	50.82	51.29	51.58	51.97	50.41	51.97	51.08	NM	3874.16	3874.60	3874.70	3874.29	3873.82	3873.53	3873.14	3873.14	3874.70	3874.03
SDMW-2	3928.09	NM	NM	53.01	52.96	53.25	53.61	53.87	54.19	52.96	54.19	53.48	NM	NM	3875.08	3875.13	3874.84	3874.48	3874.22	3873.90	3873.90	3875.13	3874.61
SDMW-3	3935.14	NM	NM	51.88	52.08	52.32	52.52	52.71	52.87	51.88	52.87	52.40	NM	NM	3883.26	3883.06	3882.82	3882.62	3882.43	3882.27	3882.27	3883.26	3882.75
SDMW-4	3936.10	47.38	47.45	50.69	50.86	51.15	51.3	51.37	51.47	47.38	51.47	50.21	3885.42	3885.35	3885.41	3885.24	3884.95	3884.80	3884.73	3884.63	3884.63	3885.42	3885.07
SDMW-5	3929.86	53.91	54.04	53.94	53.93	54.22	54.43	54.62	54.80	53.91	54.80	54.24	3875.95	3875.82	3875.92	3875.93	3875.64	3875.43	3875.24	3875.06	3875.06	3875.95	3875.62
SP-3	3905.91	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NA	NA	NA	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA
SP-4	3908.16	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NA	NA	NA	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA
SP-5	3903.52	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NM	NA	NA	NA	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA
STW-1	3905.58	38.68	38.81	38.51	38.2	38.4	38.86	39.09	39.51	38.20	39.51	38.76	3866.90	3866.77	3867.07	3867.38	3867.18	3866.72	3866.49	3866.07	3866.07	3867.38	3866.82
TW-1	3930.10	NM	NM	NM	50.73	50.99	51.35	53.94	51.52	50.73	53.94	51.71	NM	NM	NM	3879.37	3879.11	3878.75	3876.16	3878.58	3876.16	3879.37	3878.39
TW-2	3931.44	NM	NM	NM	NM	NM	NM	NM	53.37	53.37	53.37	53.37	NM	NM	NM	NM	NM	NM	NM	3878.07	3878.07	3878.07	3878.07
ULM-PZ-1	3924.40	5.95	5.95	6.29	6.81	7.04	6.35	5.89	NM	5.89	7.04	6.33	3918.45	3918.45	3918.11	3917.59	3917.36	3918.05	3918.51	NM	3917.36	3918.51	3918.08
ULM-PZ-2	3925.41	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA	NM	NM	NM	NM	NM	NM	NM	NM	NA	NA	NA

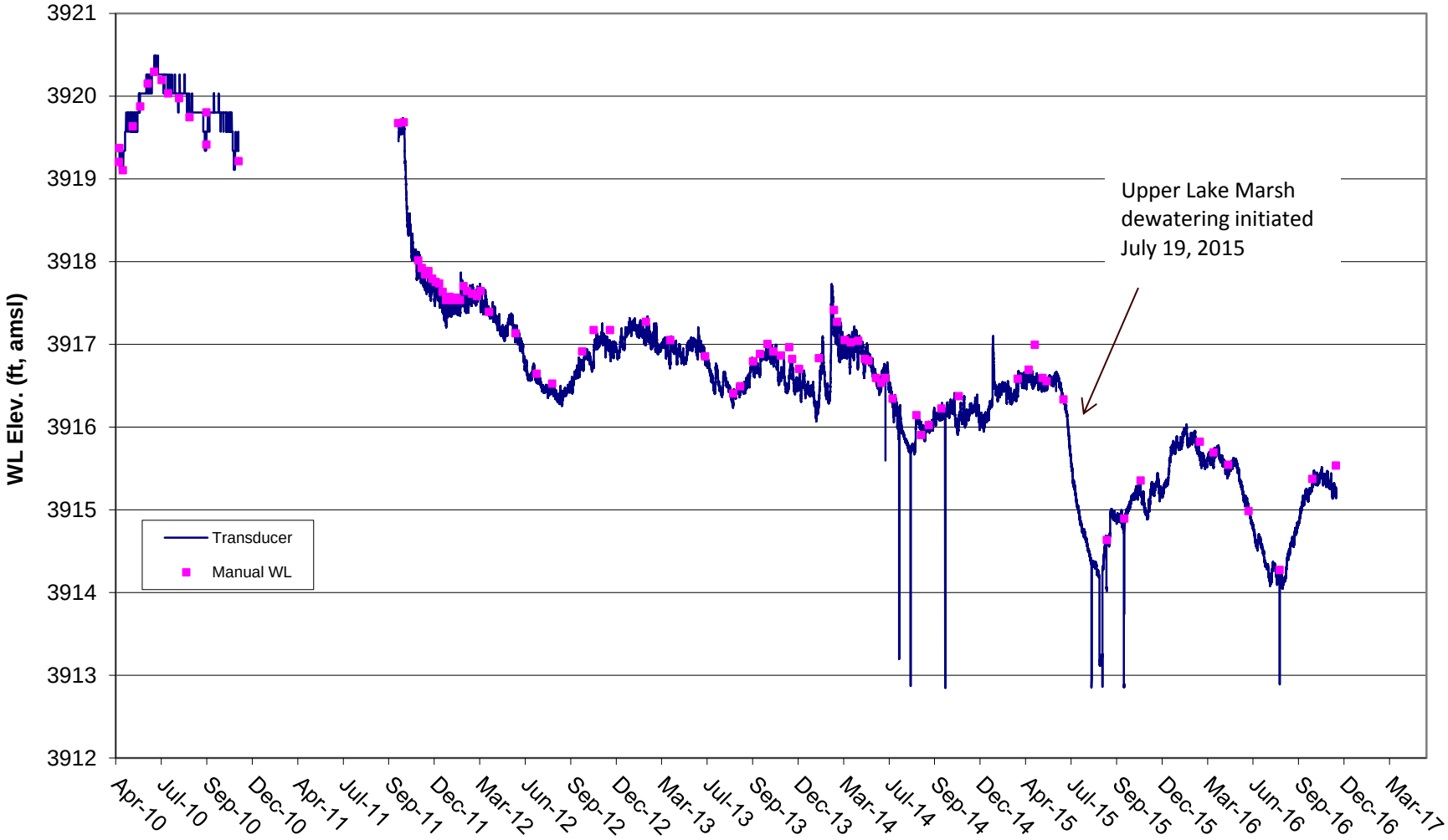
2016 DEPTH TO GROUNDWATER AND GROUNDWATER ELEVATION SUMMARY - EAST HELENA FACILITY

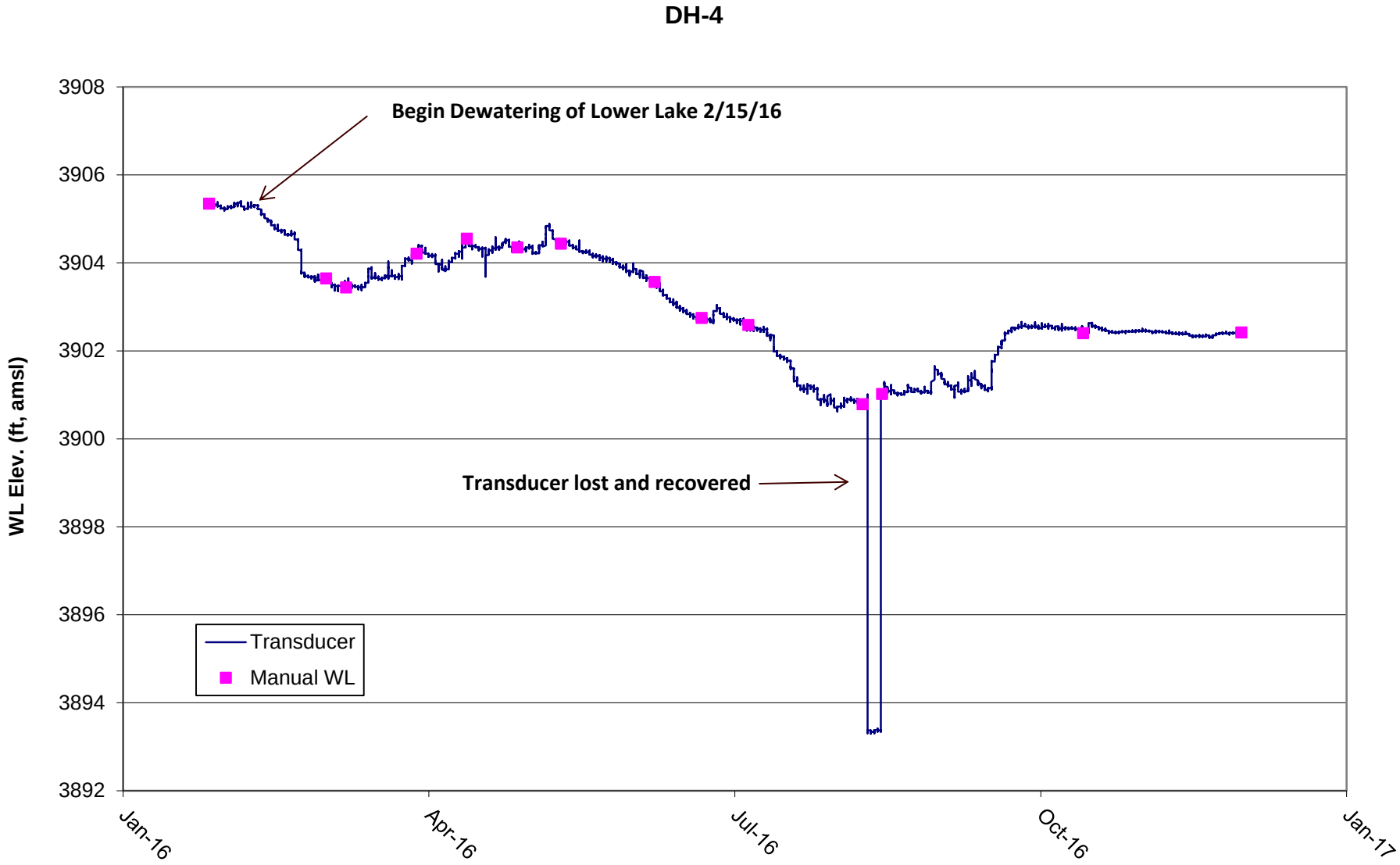
		Depth to Water											Water Elevation										
SiteID	MP Elevation	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Dec-16	Min	Max	Mean	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Dec-16	Min	Max	Mean
ULTP-1	3919.63	9.39	9.82	10.1	10.86	11.08	10.63	5.38	NM	5.38	11.08	9.61	3910.24	3909.81	3909.53	3908.77	3908.55	3909.00	3914.25	NM	3908.55	3914.25	3910.02
ULTP-2	3921.23	7.59	7.83	8.45	9.08	9.39	8.54	7.61	7.25	7.25	9.39	8.22	3913.64	3913.40	3912.78	3912.15	3911.84	3912.69	3913.62	3913.98	3911.84	3913.98	3913.01

APPENDIX D2

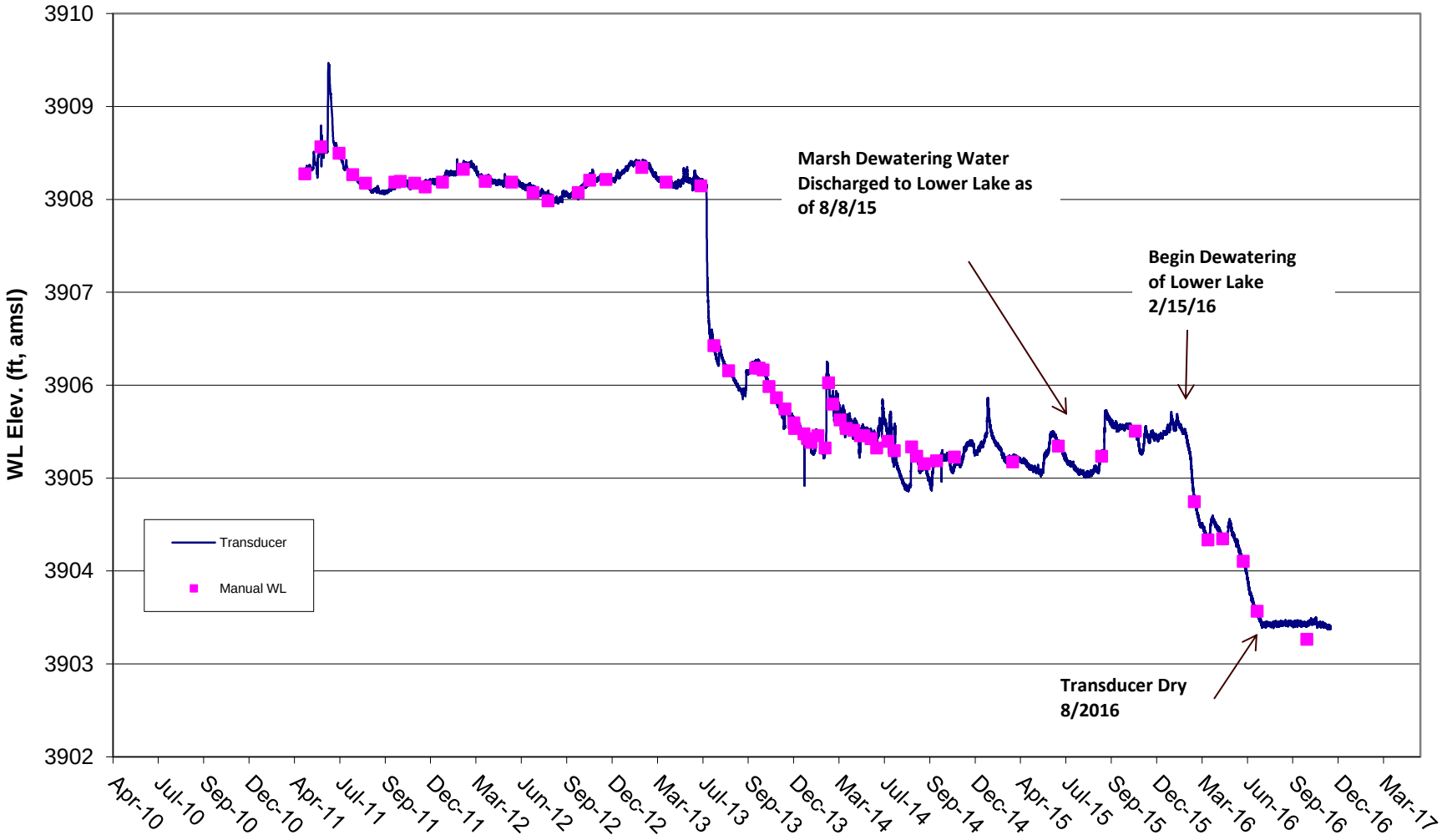
CONTINUOUS GROUNDWATER LEVEL HYDROGRAPHS FROM TRANSDUCER-INSTRUMENTED WELLS

DH-3

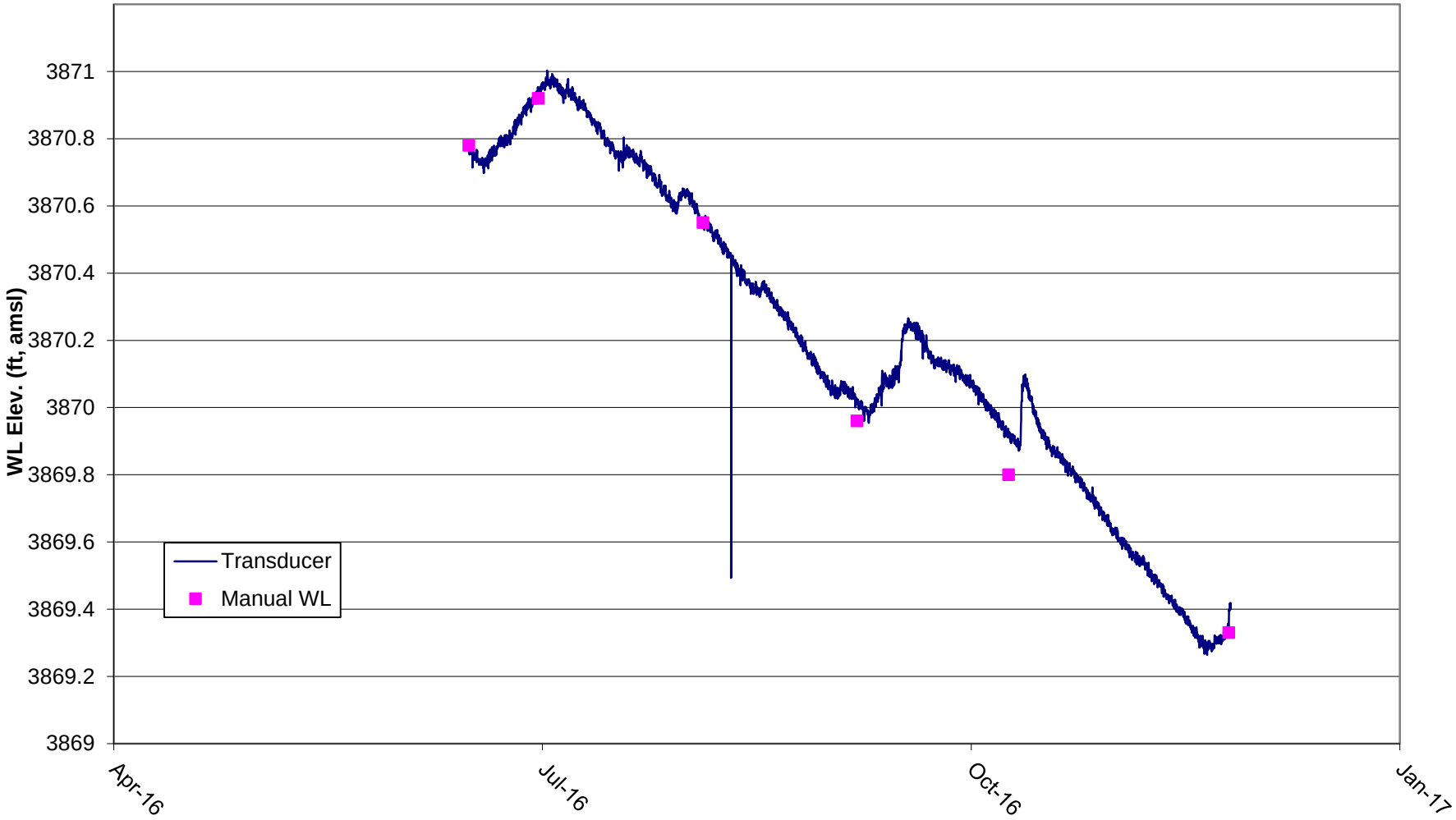

WL Elev. (ft, amsl)
3921
3920
3919
3918
3917
3916
3915
3914
3913
3912
Apr-10
Jul-10
Sep-10
Dec-10
Apr-11
Jul-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jul-13
Sep-13
Dec-13
Mar-14
Jul-14
Sep-14
Dec-14
Apr-15
Jul-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Transducer
Manual WL
Upper Lake Marsh
dewatering initiated
July 19, 2015


DH-4
Begin Dewatering of Lower Lake 2/15/16
Transducer lost and recovered
Transducer
Manual WL
WL Elev. (ft, amsl)
3908
3906
3904
3902
3900
3898
3896
3894
3892
Jan-16
Apr-16
Jul-16
Oct-16
Jan-17

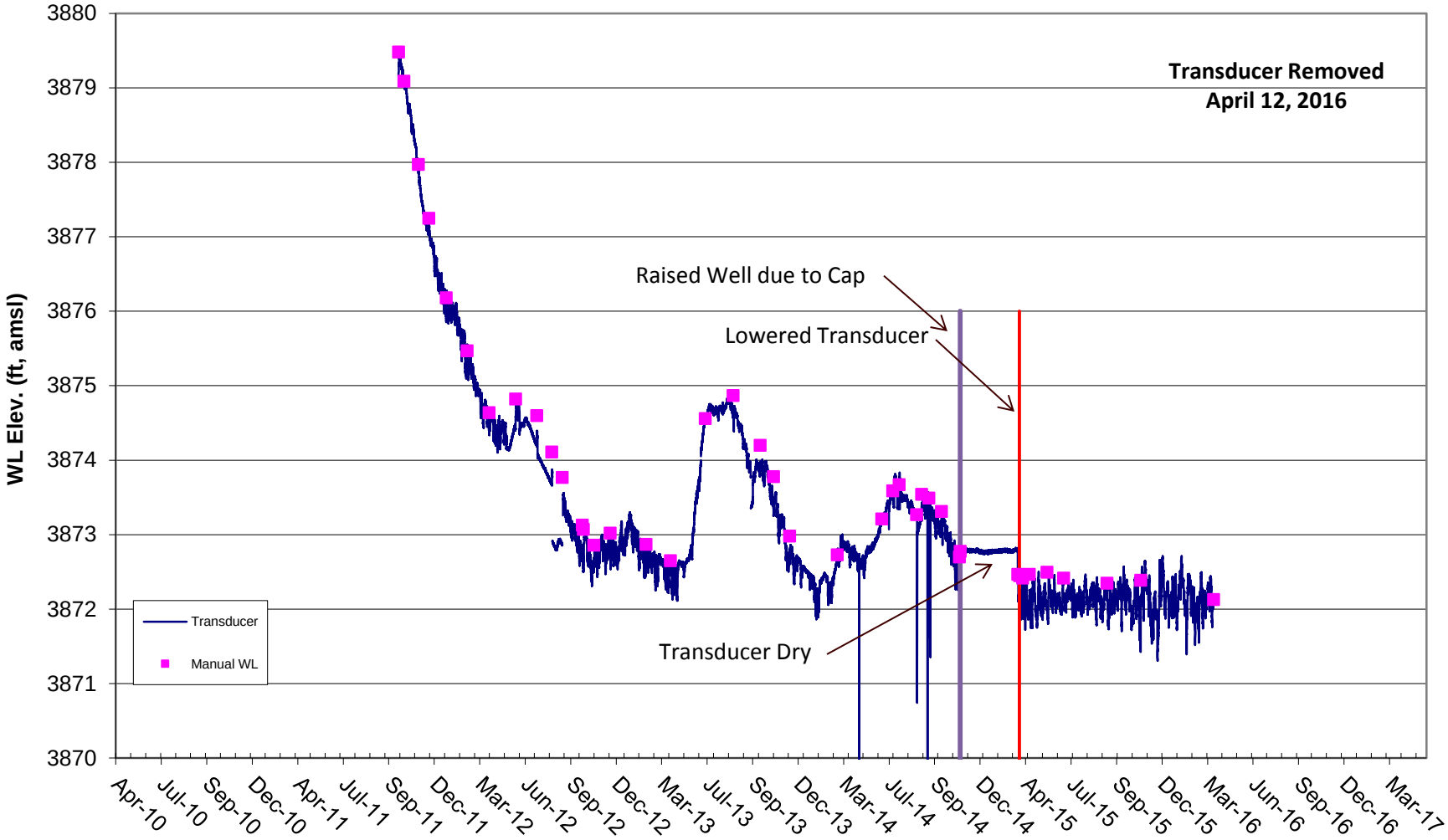
DH-5


WL Elev. (ft, amsl)
3910
3909
3908
3907
3906
3905
3904
3903
3902
Transducer
Manual WL
Marsh Dewatering Water Discharged to Lower Lake as of 8/8/15
Begin Dewatering of Lower Lake 2/15/16
Transducer Dry 8/2016
Apr-10
Jul-10
Sep-10
Dec-10
Apr-11
Jul-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jul-13
Sep-13
Dec-13
Mar-14
Jul-14
Sep-14
Dec-14
Apr-15
Jul-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17

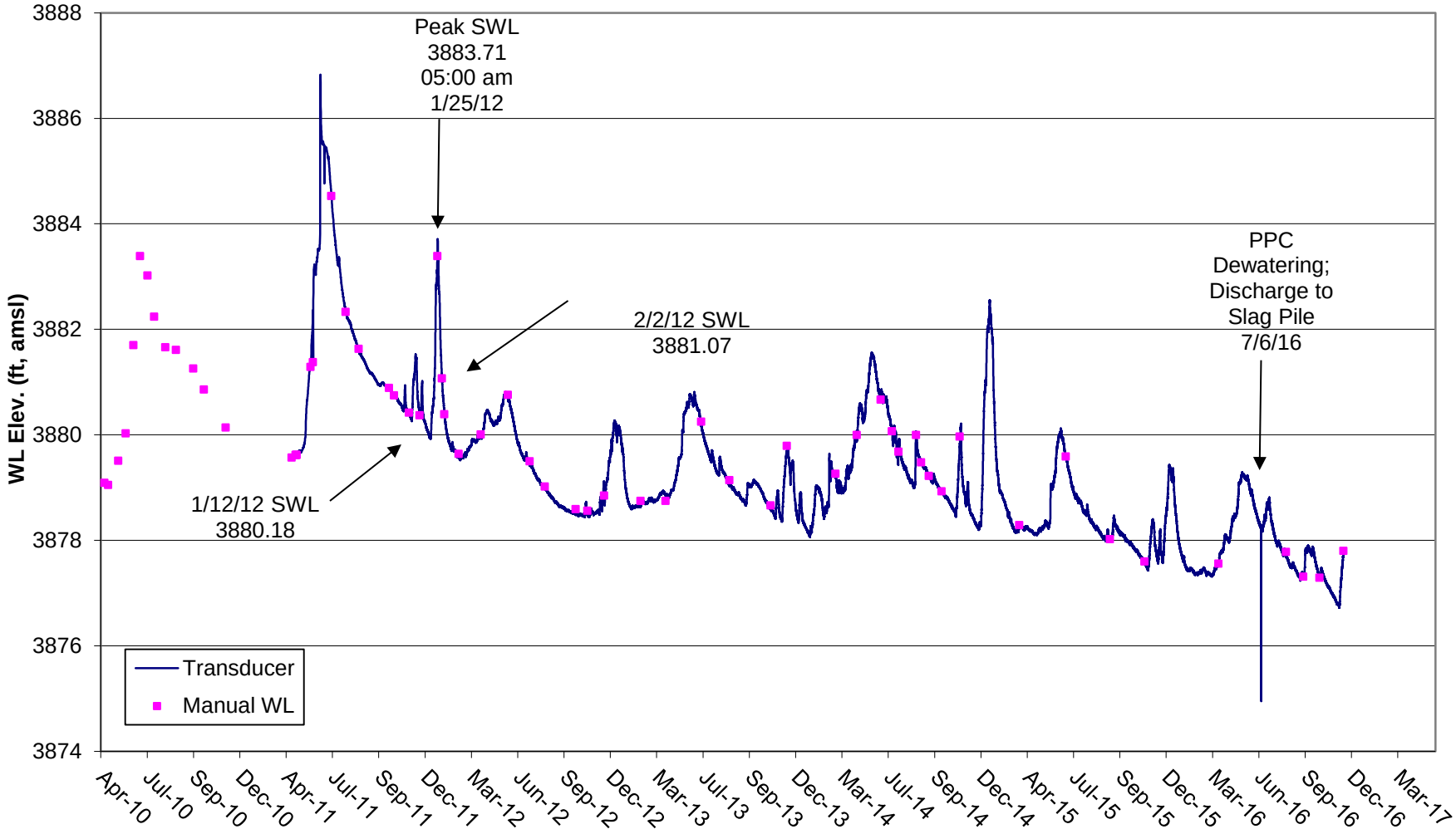
DH-6


WL Elev. (ft, amsl)
3871
3870.8
3870.6
3870.4
3870.2
3870
3869.8
3869.6
3869.4
3869.2
3869
Apr-16
Jul-16
Oct-16
Jan-17
Transducer
Manual WL

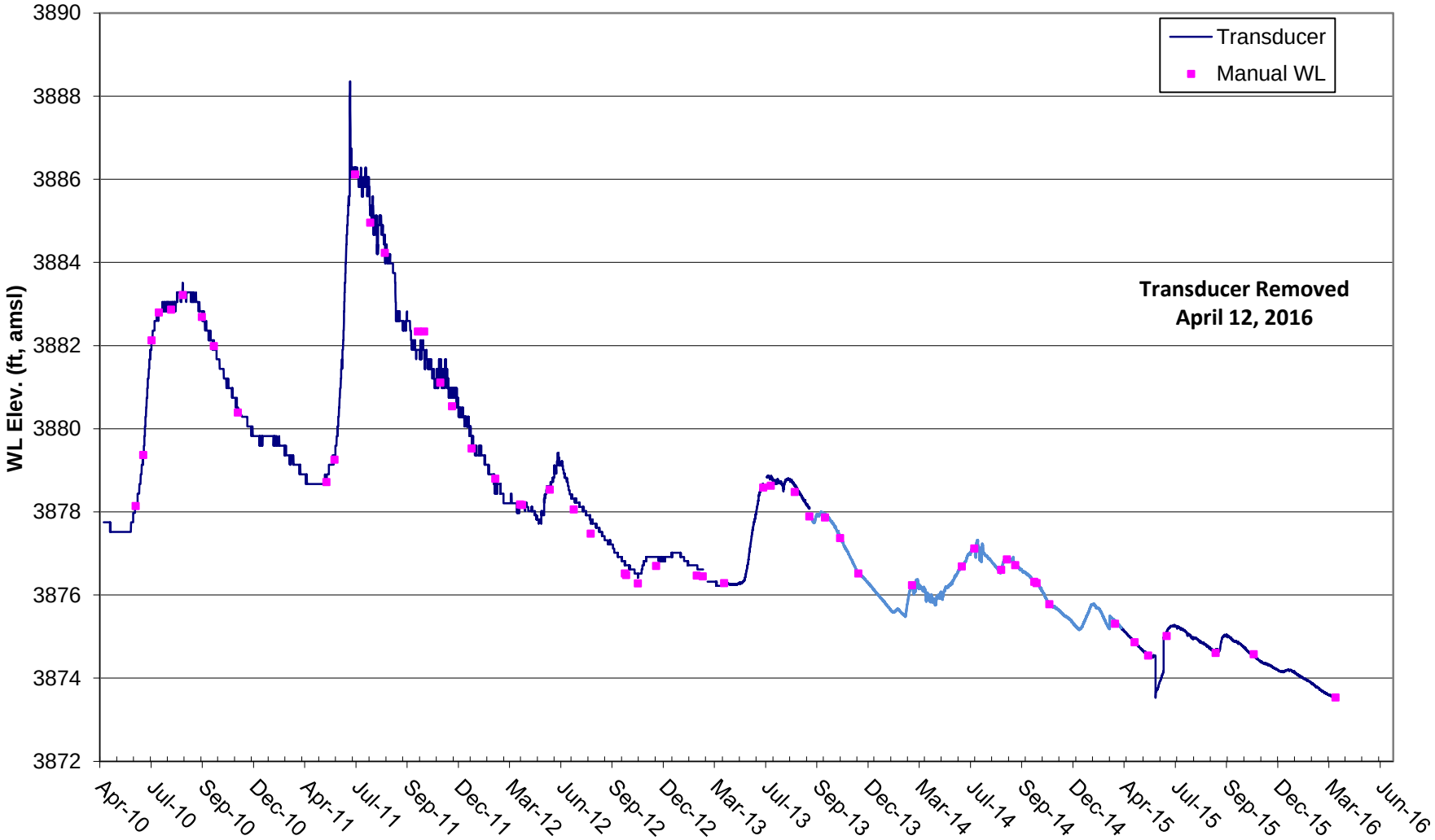
DH-8


Transducer Removed
April 12, 2016
Raised Well due to Cap
Lowered Transducer
Transducer Dry
Transducer
Manual WL
WL Elev. (ft, amsl)
3880
3879
3878
3877
3876
3875
3874
3873
3872
3871
3870
Apr-10
Jul-10
Sep-10
Dec-10
Apr-11
Jul-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jul-13
Sep-13
Dec-13
Mar-14
Jul-14
Sep-14
Dec-14
Apr-15
Jul-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17

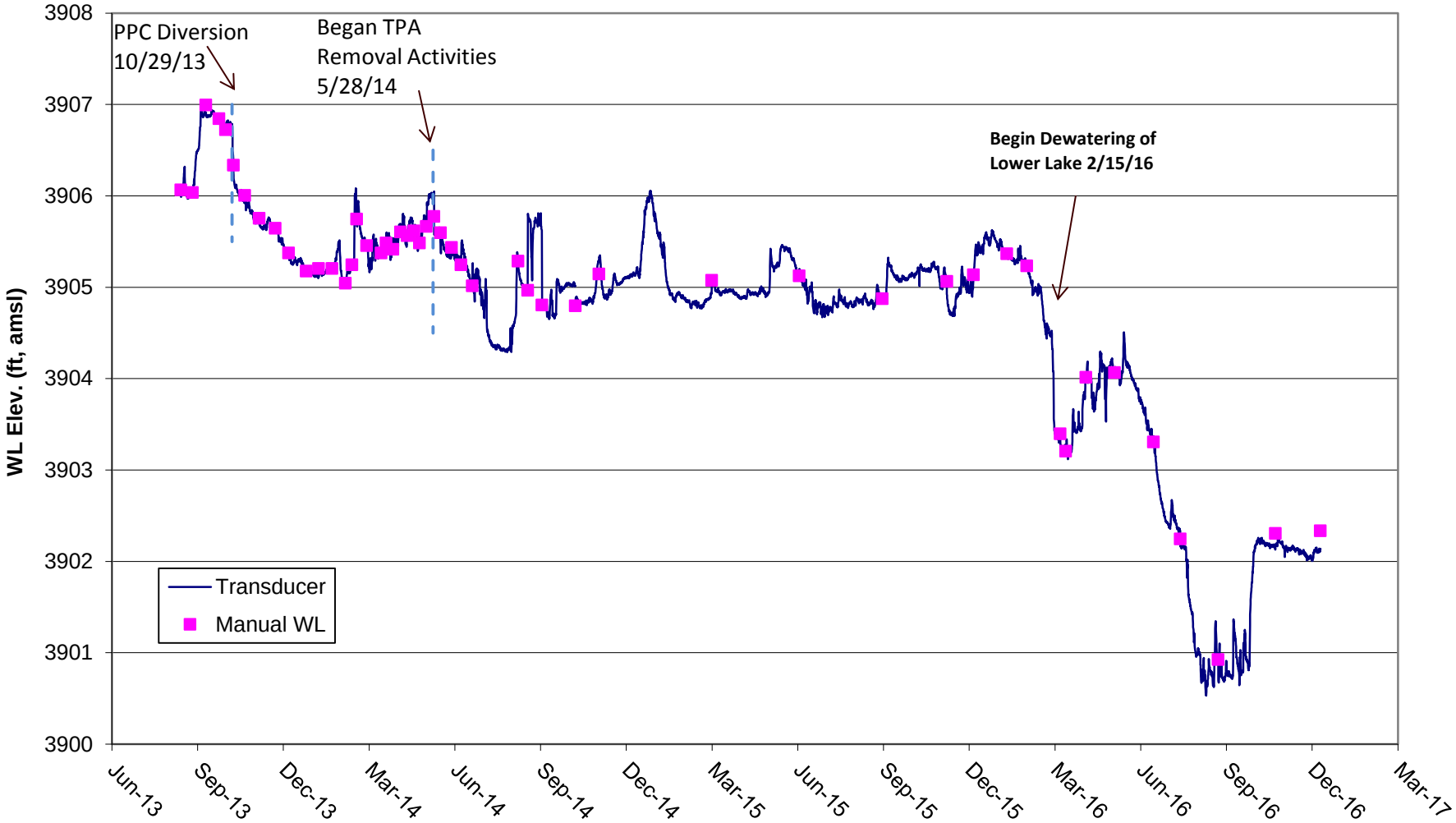
DH-10A


WL Elev. (ft, amsl)
3888
3886
3884
3882
3880
3878
3876
3874
Peak SWL
3883.71
05:00 am
1/25/12
2/2/12 SWL
3881.07
PPC
Dewatering;
Discharge to
Slag Pile
7/6/16
1/12/12 SWL
3880.18
Transducer
Manual WL
Apr-10
Jul-10
Sep-10
Dec-10
Apr-11
Jul-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jul-13
Sep-13
Dec-13
Mar-14
Jul-14
Sep-14
Dec-14
Apr-15
Jul-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17

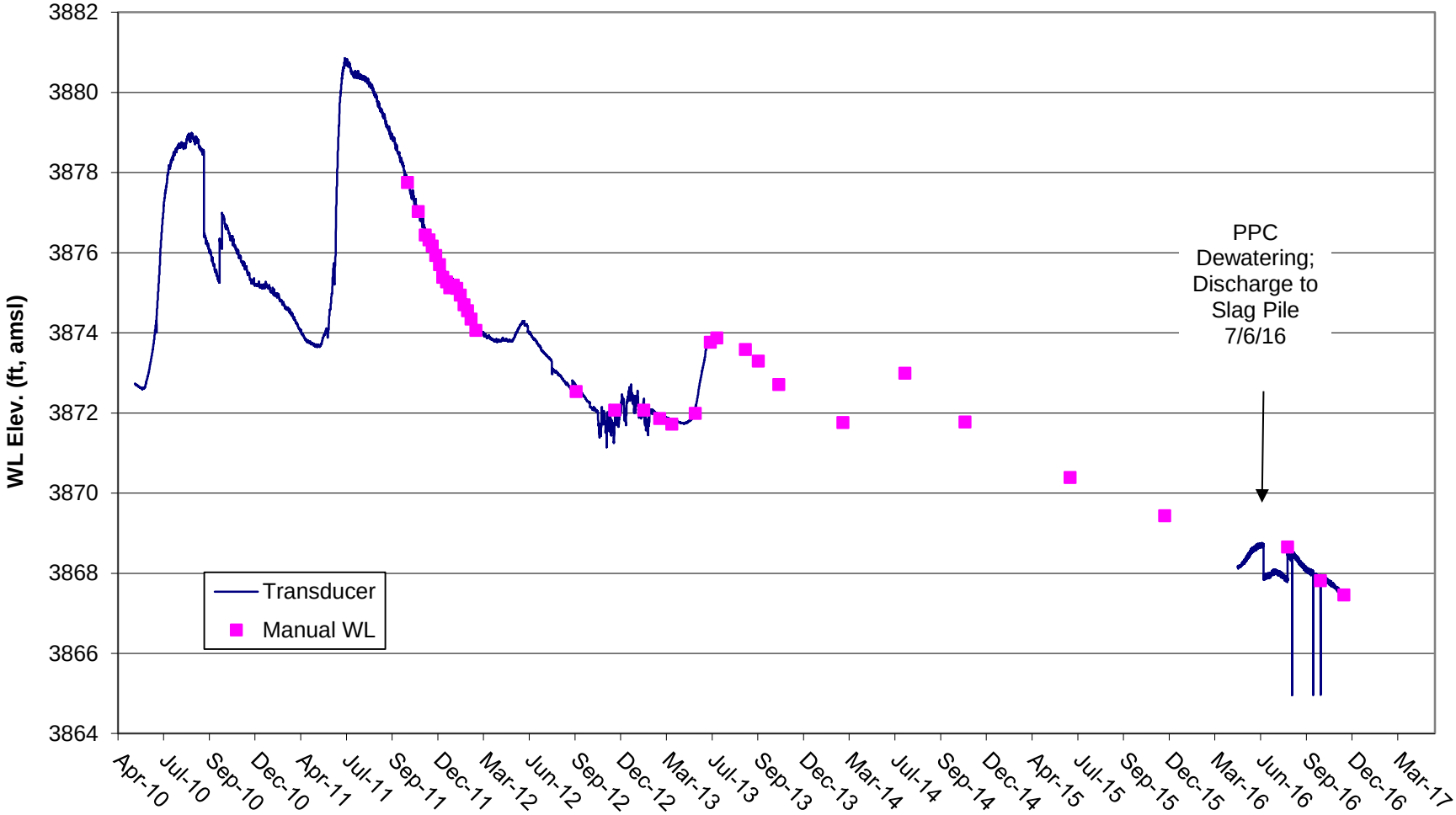
DH-13


Transducer
Manual WL
Transducer Removed
April 12, 2016
WL Elev. (ft, amsl)
3890
3888
3886
3884
3882
3880
3878
3876
3874
3872
Apr-10
Jul-10
Sep-10
Dec-10
Apr-11
Jul-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jul-13
Sep-13
Dec-13
Mar-14
Jul-14
Sep-14
Dec-14
Apr-15
Jul-15
Sep-15
Dec-15
Mar-16
Jun-16

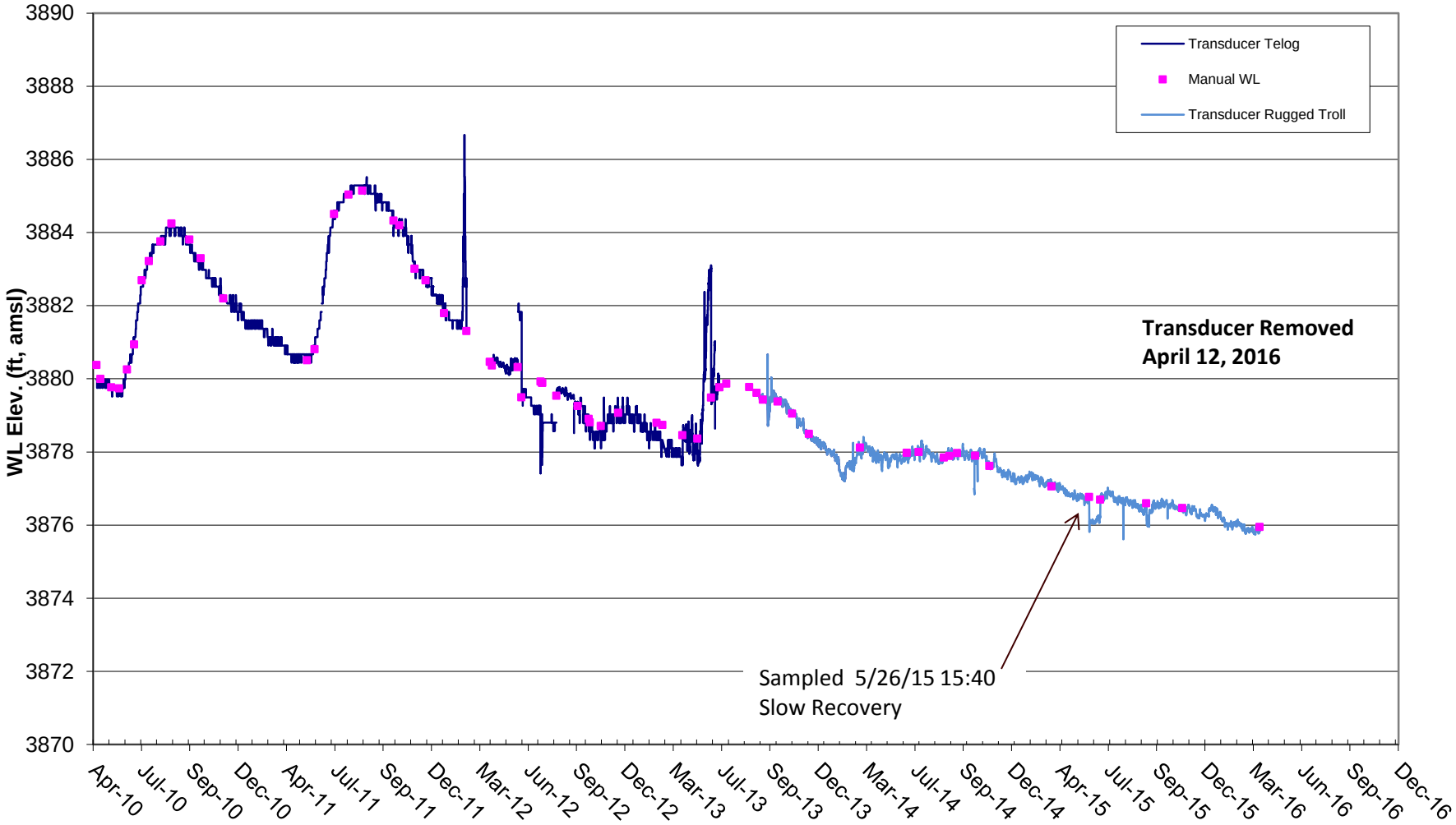
DH-14

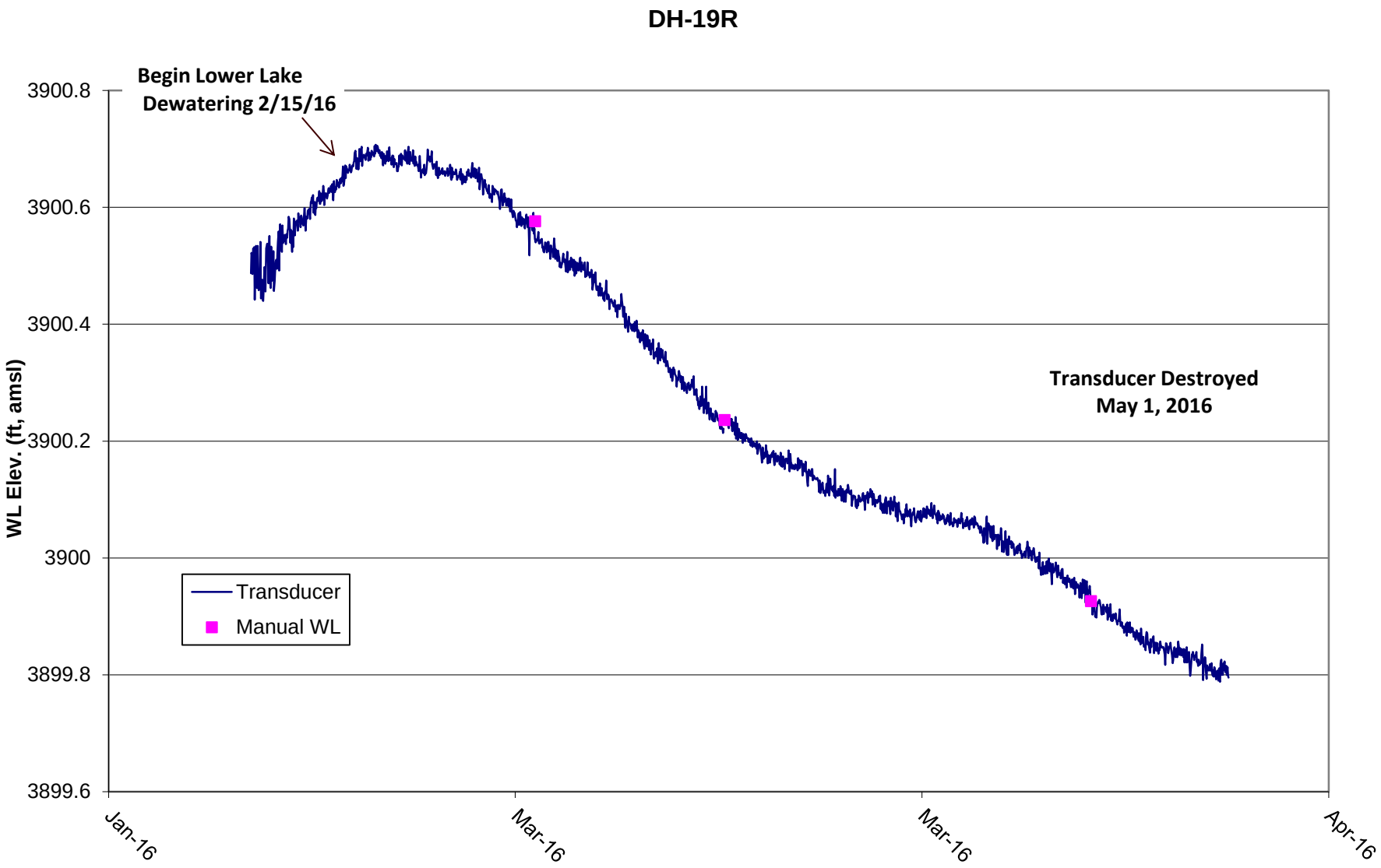

PPC Diversion
10/29/13
Began TPA
Removal Activities
5/28/14
Begin Dewatering of
Lower Lake 2/15/16
Transducer
Manual WL
WL Elev. (ft, amsl)
3908
3907
3906
3905
3904
3903
3902
3901
3900
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17

DH-17

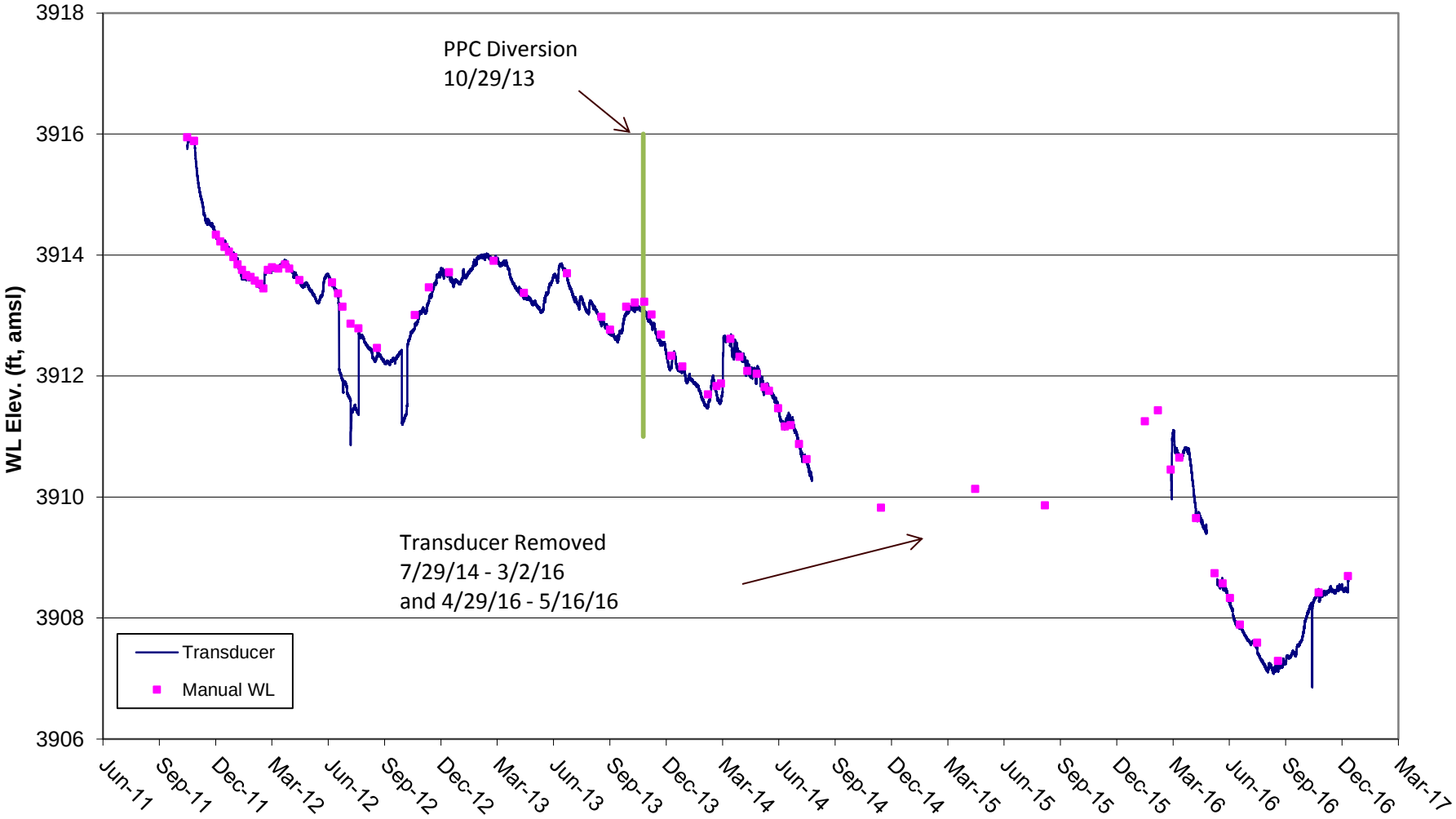

WL Elev. (ft, amsl)
3882
3880
3878
3876
3874
3872
3870
3868
3866
3864
Apr-10
Jul-10
Sep-10
Dec-10
Apr-11
Jul-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jul-13
Sep-13
Dec-13
Mar-14
Jul-14
Sep-14
Dec-14
Apr-15
Jul-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Transducer
Manual WL
PPC Dewatering; Discharge to Slag Pile 7/6/16

DH-18

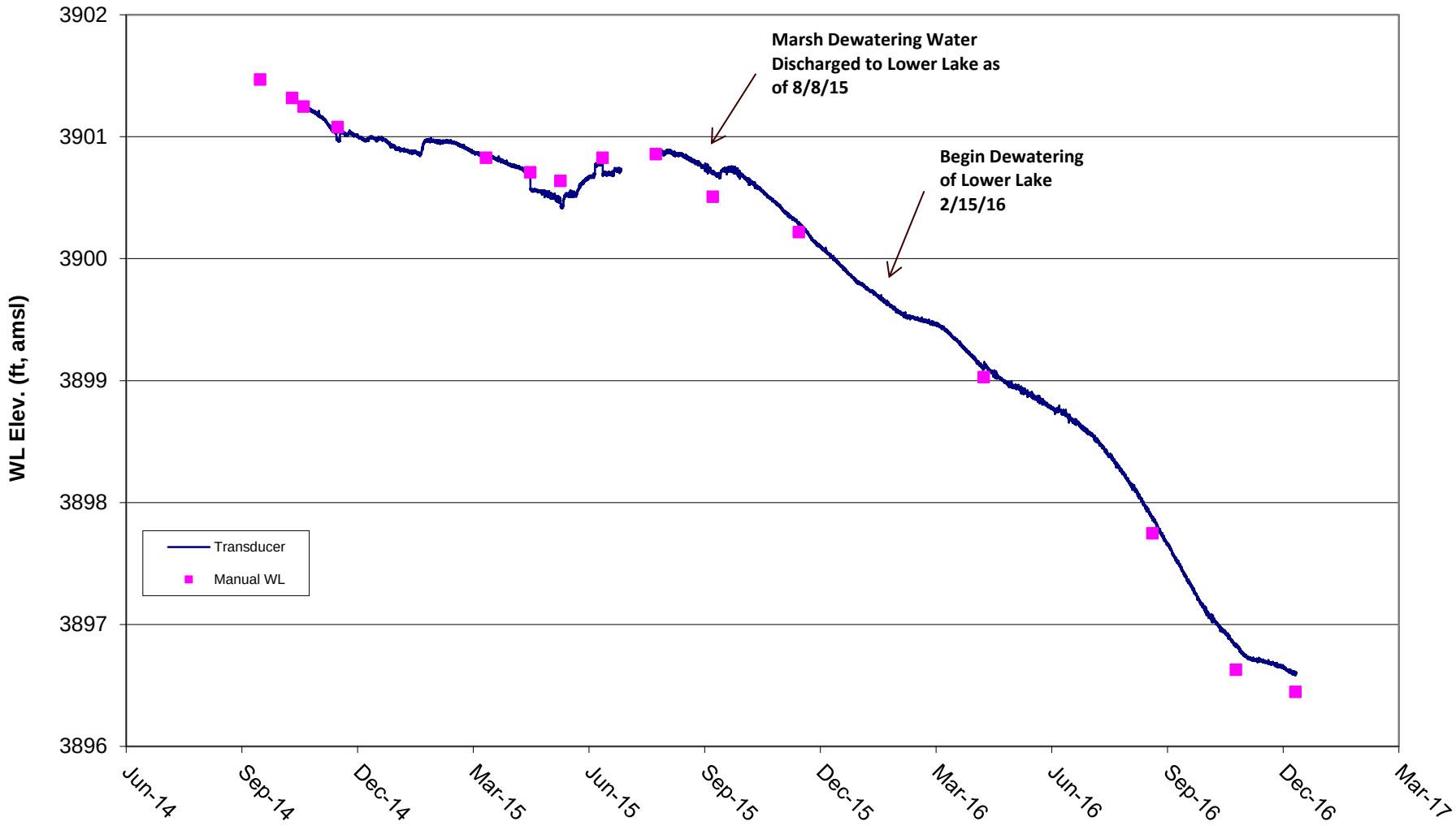

Transducer Telog
Manual WL
Transducer Rugged Troll
WL Elev. (ft, amsl)
3890
3888
3886
3884
3882
3880
3878
3876
3874
3872
3870
Transducer Removed
April 12, 2016
Sampled 5/26/15 15:40
Slow Recovery
Apr-10
Jul-10
Sep-10
Dec-10
Apr-11
Jul-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jul-13
Sep-13
Dec-13
Mar-14
Jul-14
Sep-14
Dec-14
Apr-15
Jul-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16

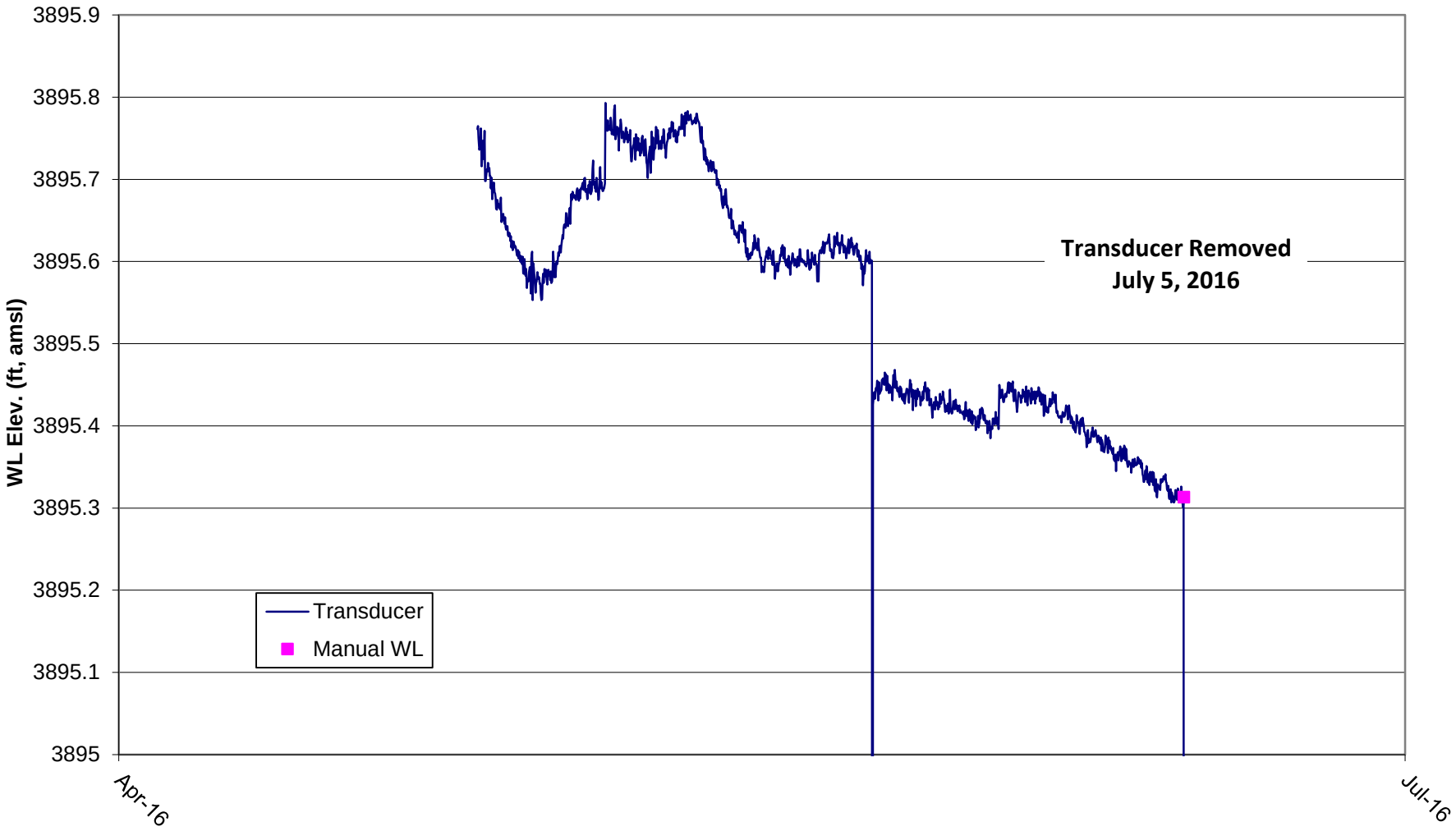

DH-19R
Begin Lower Lake Dewatering 2/15/16
Transducer Destroyed May 1, 2016
WL Elev. (ft, amsl)
3900.8
3900.6
3900.4
3900.2
3900
3899.8
3899.6
Transducer
Manual WL
Jan-16
Mar-16
Mar-16
Apr-16

DH-20

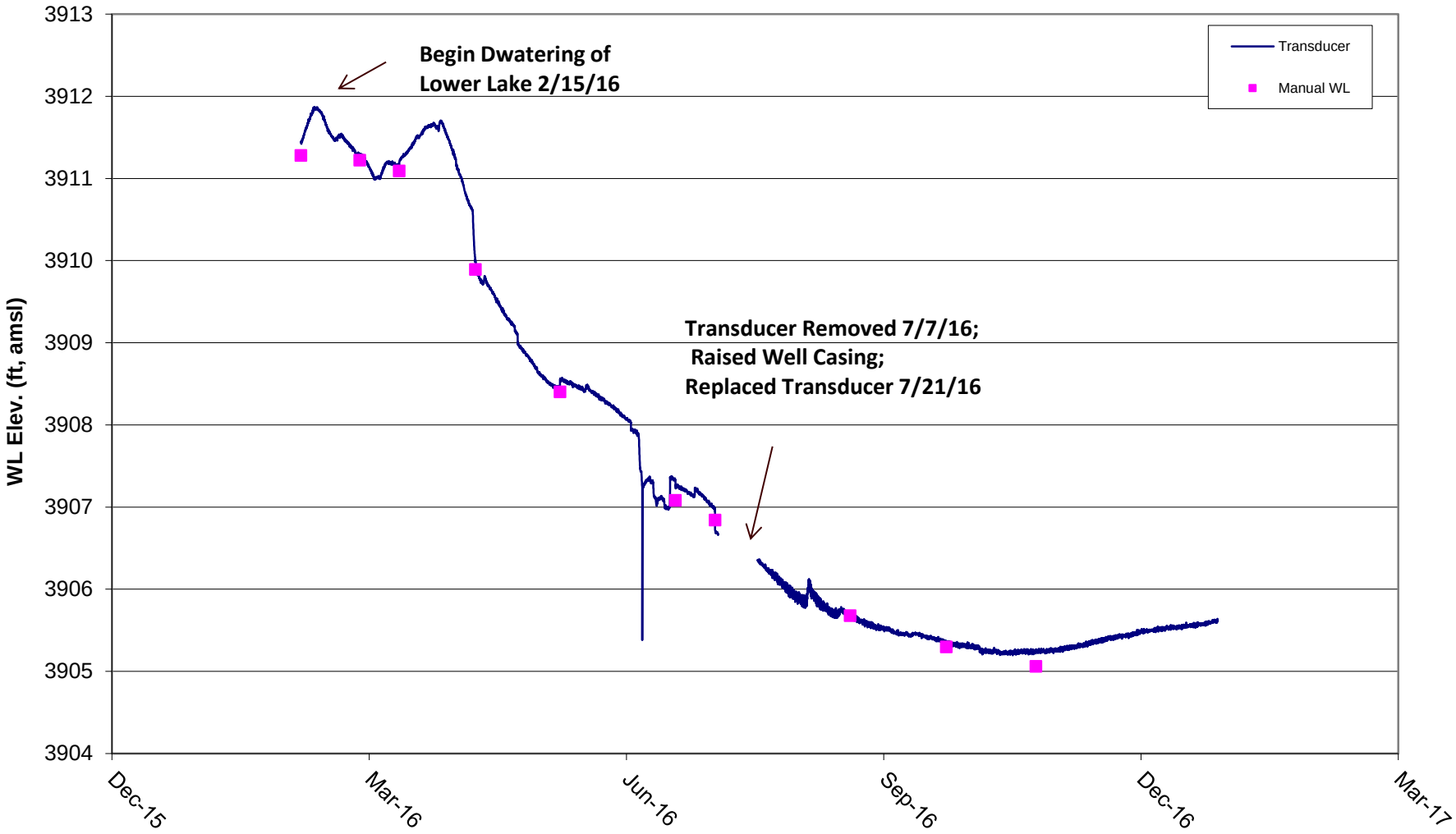

PPC Diversion
10/29/13
Transducer Removed
7/29/14 - 3/2/16
and 4/29/16 - 5/16/16
Transducer
Manual WL
WL Elev. (ft, amsl)
3918
3916
3914
3912
3910
3908
3906
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17

DH-23

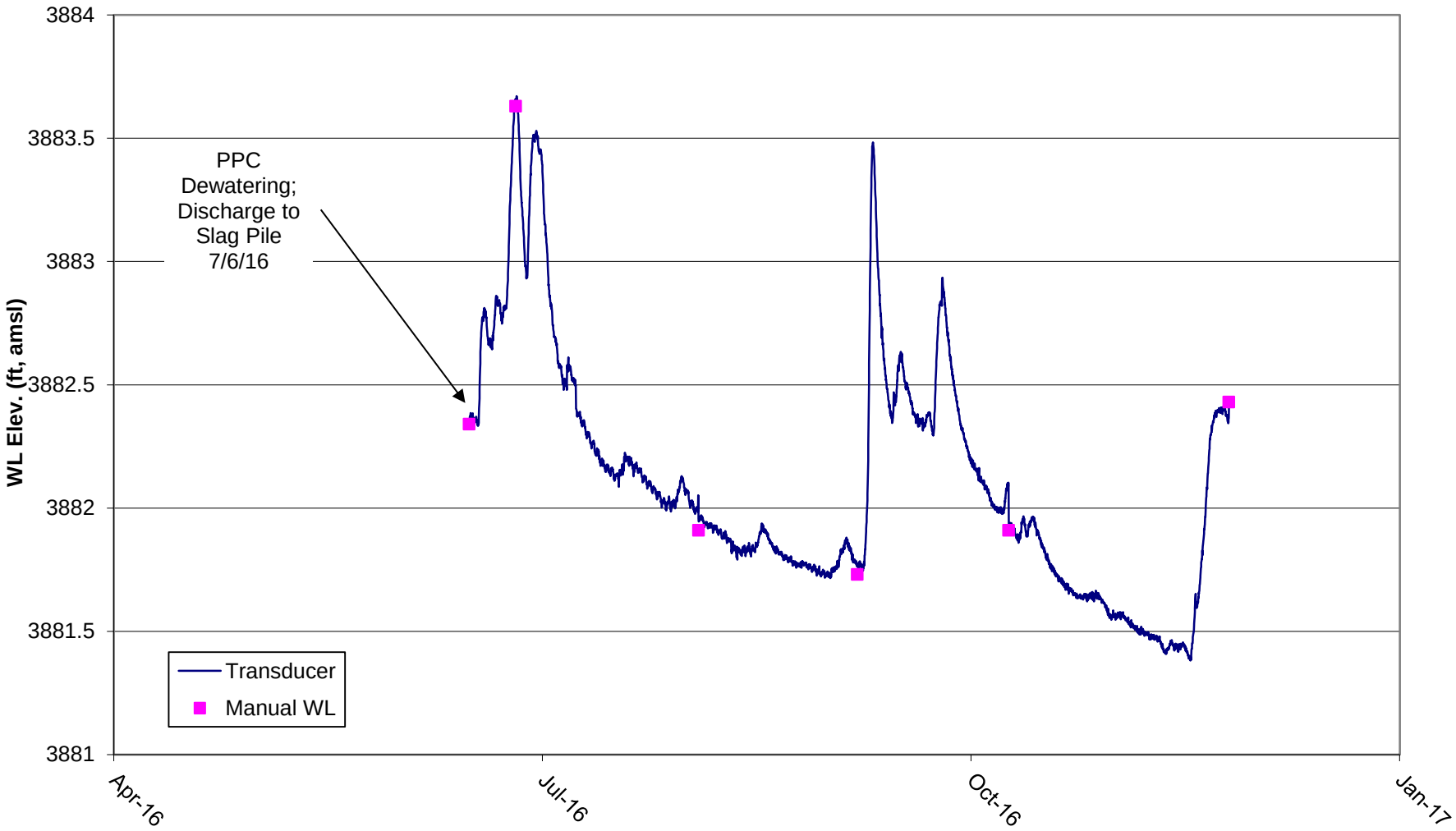

WL Elev. (ft, amsl)
3902
3901
3900
3899
3898
3897
3896
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Marsh Dewatering Water Discharged to Lower Lake as of 8/8/15
Begin Dewatering of Lower Lake 2/15/16
Transducer
Manual WL

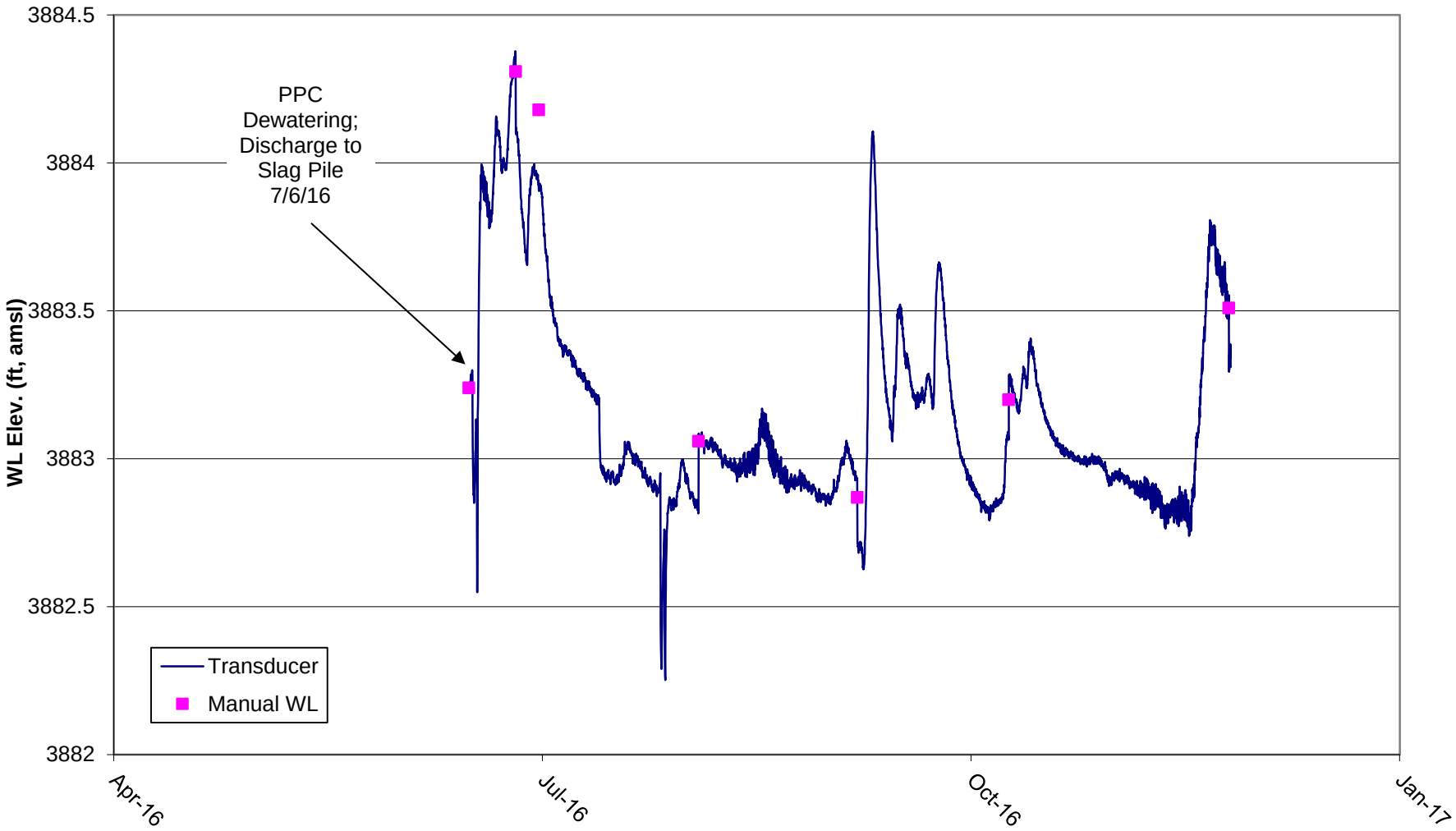

DH-42
3895.9
3895.8
3895.7
3895.6
3895.5
3895.4
3895.3
3895.2
3895.1
3895
WL Elev. (ft, amsl)
Transducer Removed
July 5, 2016
Transducer
Manual WL
Apr-16
Jul-16

DH-47

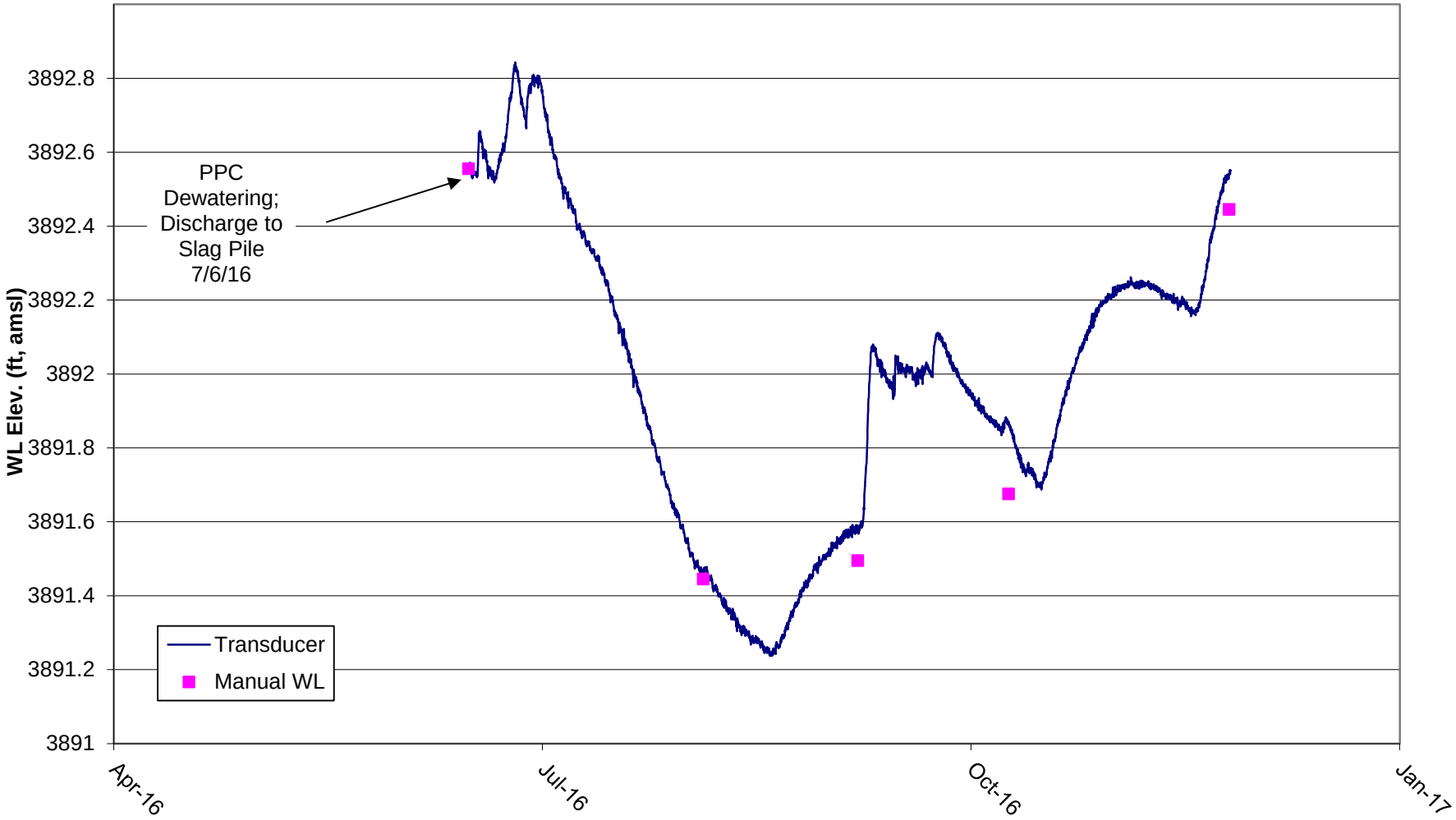

3913
3912
3911
3910
3909
3908
3907
3906
3905
3904
WL Elev. (ft, amsl)
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Transducer
Manual WL
Begin Dwatering of
Lower Lake 2/15/16
Transducer Removed 7/7/16;
Raised Well Casing;
Replaced Transducer 7/21/16

DH-52

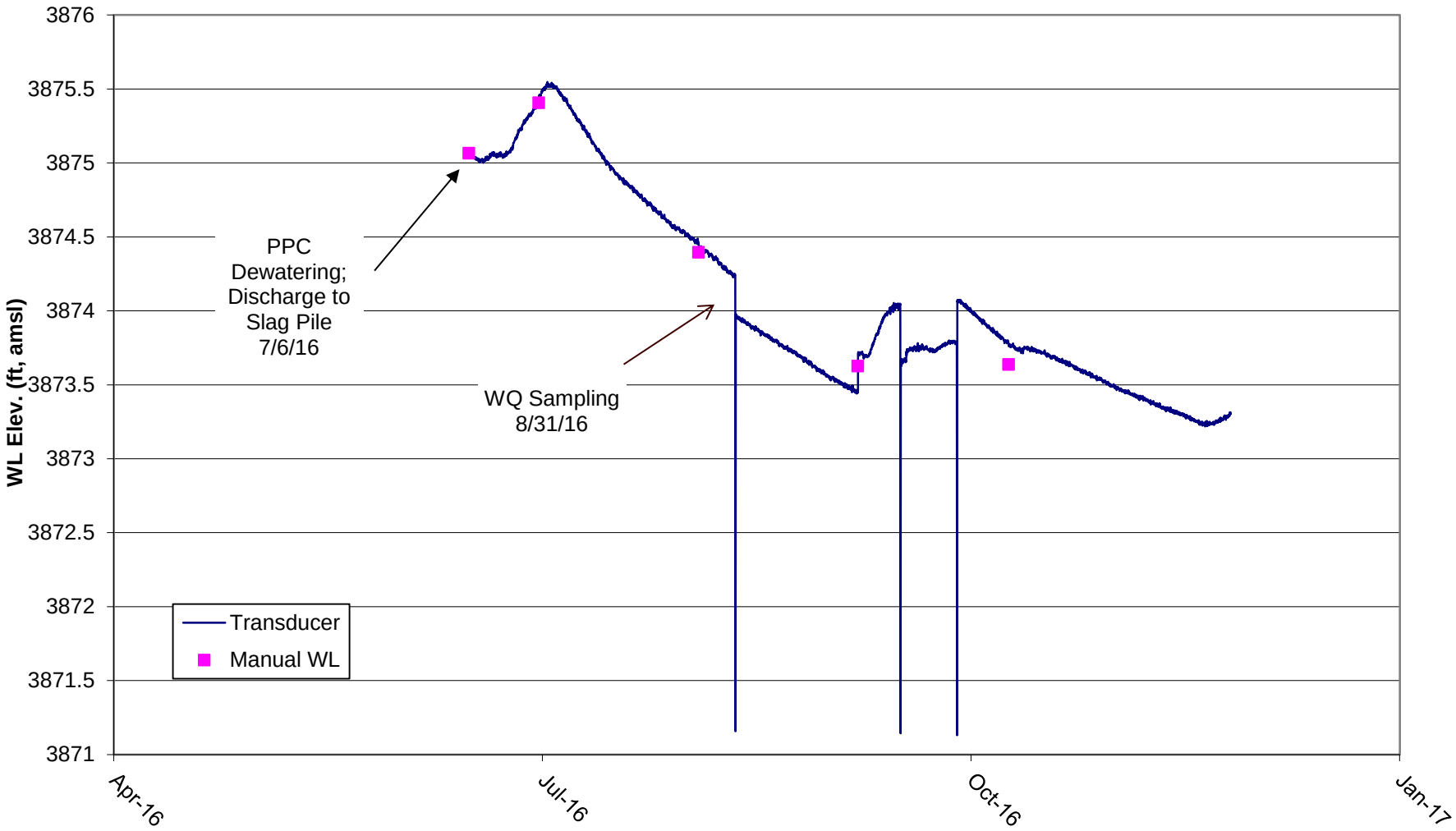

3884
3883.5
3883
3882.5
3882
3881.5
3881
WL Elev. (ft, amsl)
PPC Dewatering; Discharge to Slag Pile 7/6/16
Transducer
Manual WL
Apr-16
Jul-16
Oct-16
Jan-17


DH-53
3884.5
3884
3883.5
3883
3882.5
3882
WL Elev. (ft, amsl)
PPC
Dewatering;
Discharge to
Slag Pile
7/6/16
Transducer
Manual WL
Apr-16
Jul-16
Oct-16
Jan-17

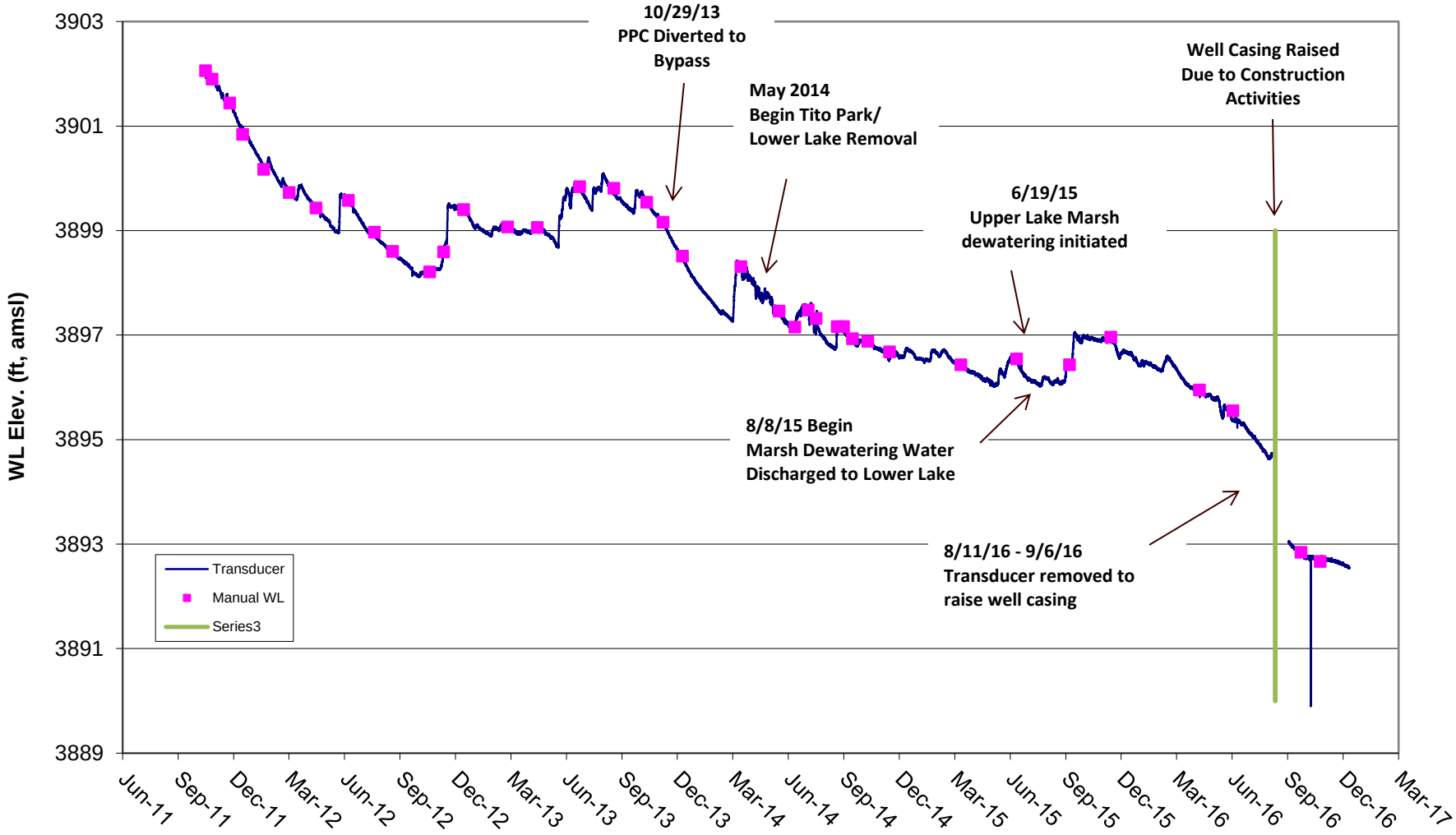
DH-55

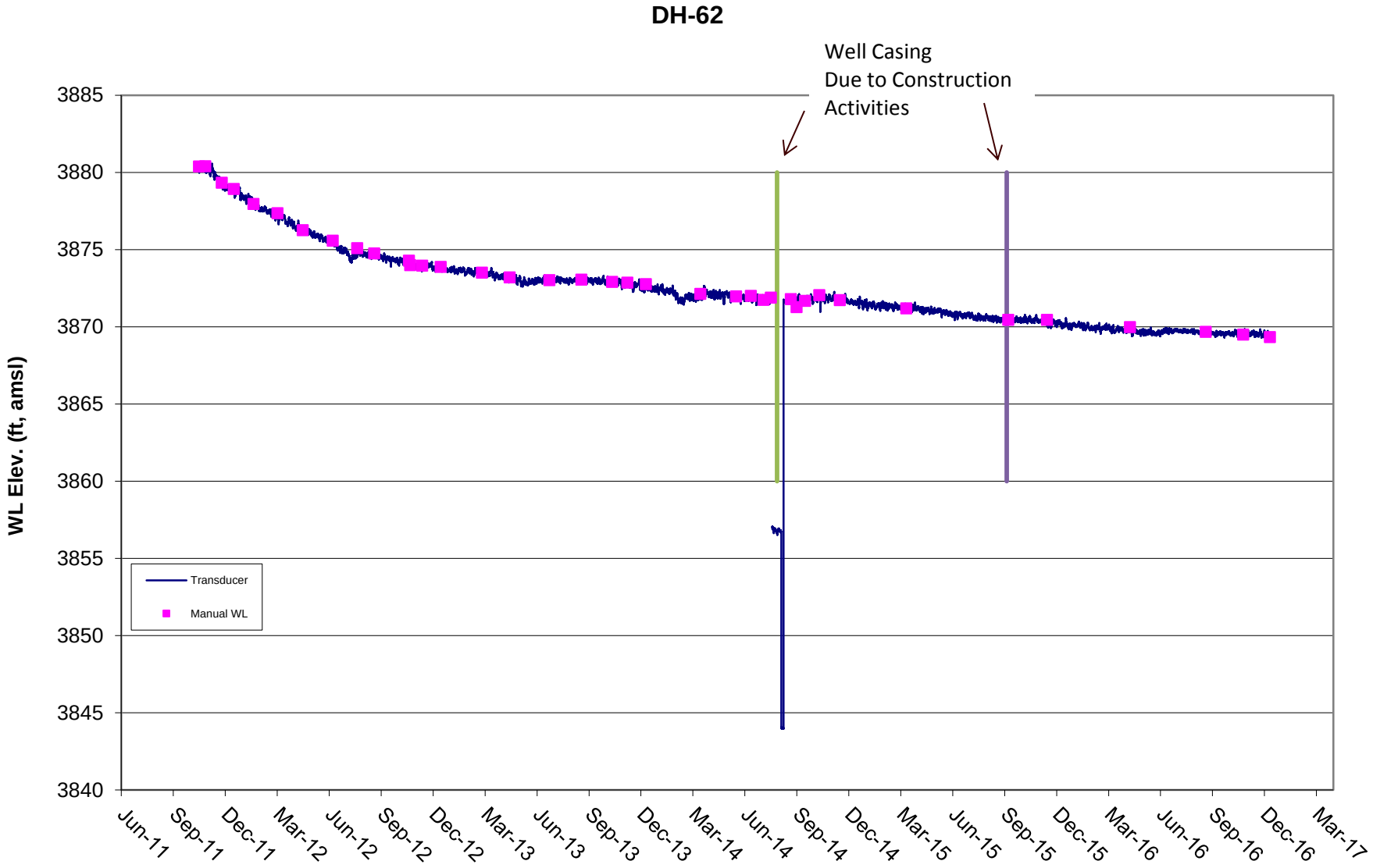

WL Elev. (ft, amsl)
3892.8
3892.6
3892.4
3892.2
3892
3891.8
3891.6
3891.4
3891.2
3891
PPC Dewatering; Discharge to Slag Pile 7/6/16
Transducer
Manual WL
Apr-16
Jul-16
Oct-16
Jan-17

DH-56

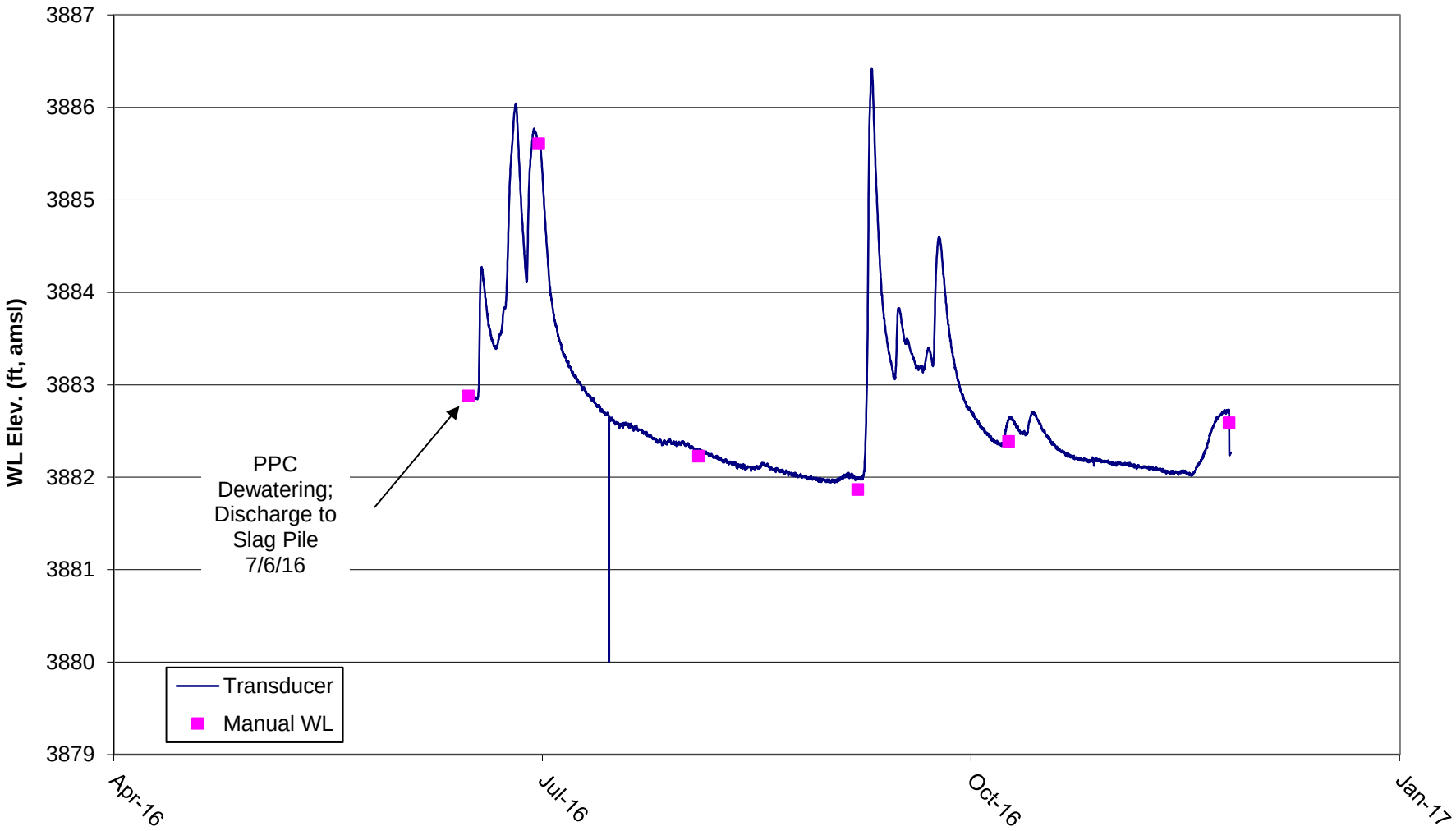

3876
3875.5
3875
3874.5
3874
3873.5
3873
3872.5
3872
3871.5
3871
WL Elev. (ft, amsl)
PPC Dewatering; Discharge to Slag Pile 7/6/16
WQ Sampling 8/31/16
Transducer
Manual WL
Apr-16
Jul-16
Oct-16
Jan-17

DH-59

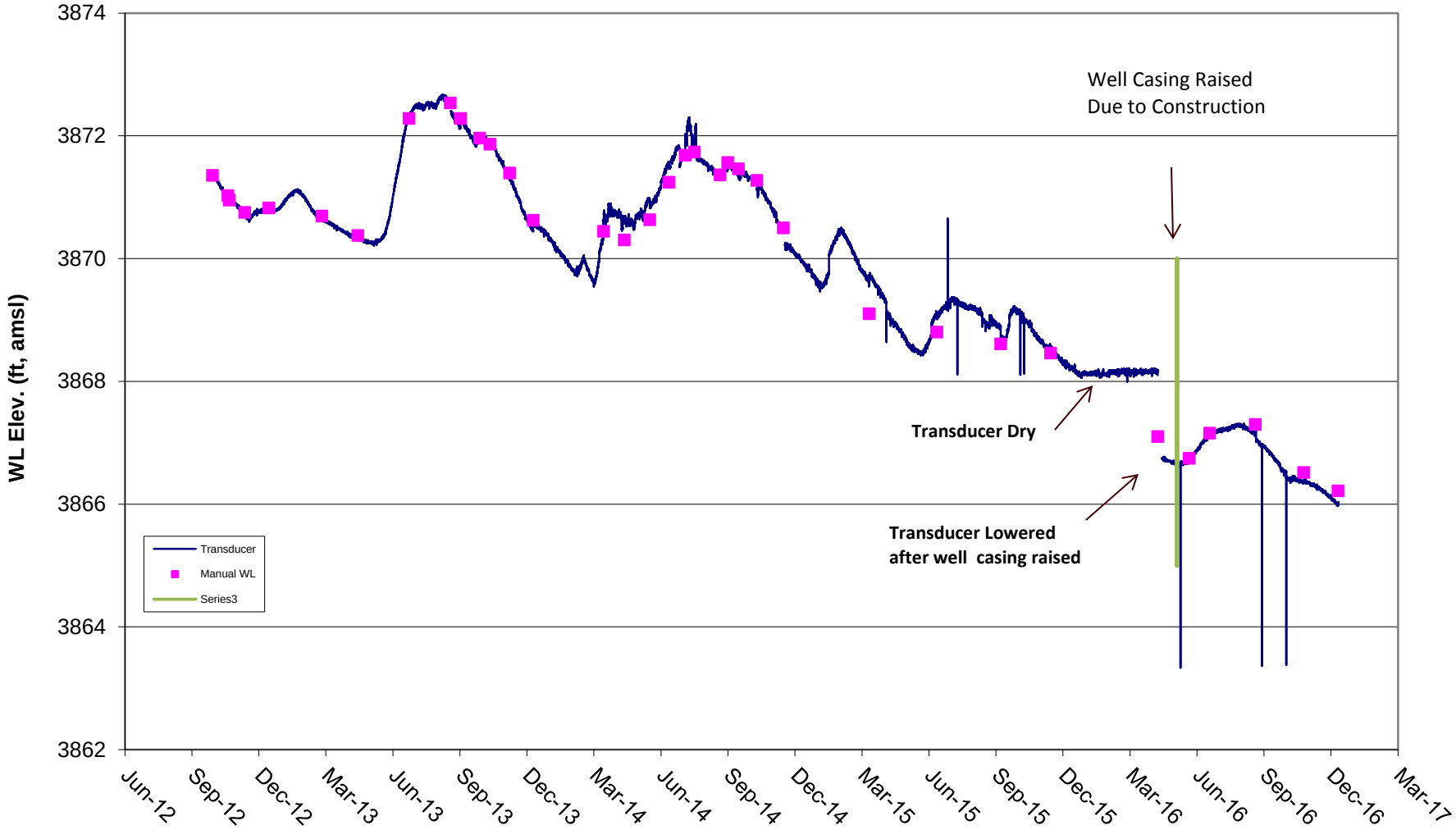

10/29/13
PPC Diverted to
Bypass
May 2014
Begin Tito Park/
Lower Lake Removal
6/19/15
Upper Lake Marsh
dewatering initiated
Well Casing Raised
Due to Construction
Activities
8/8/15 Begin
Marsh Dewatering Water
Discharged to Lower Lake
8/11/16 - 9/6/16
Transducer removed to
raise well casing
WL Elev. (ft, amsl)
3903
3901
3899
3897
3895
3893
3891
3889
Transducer
Manual WL
Series3
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17


DH-62
Well Casing
Due to Construction
Activities
WL Elev. (ft, amsl)
3885
3880
3875
3870
3865
3860
3855
3850
3845
3840
Transducer
Manual WL
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17

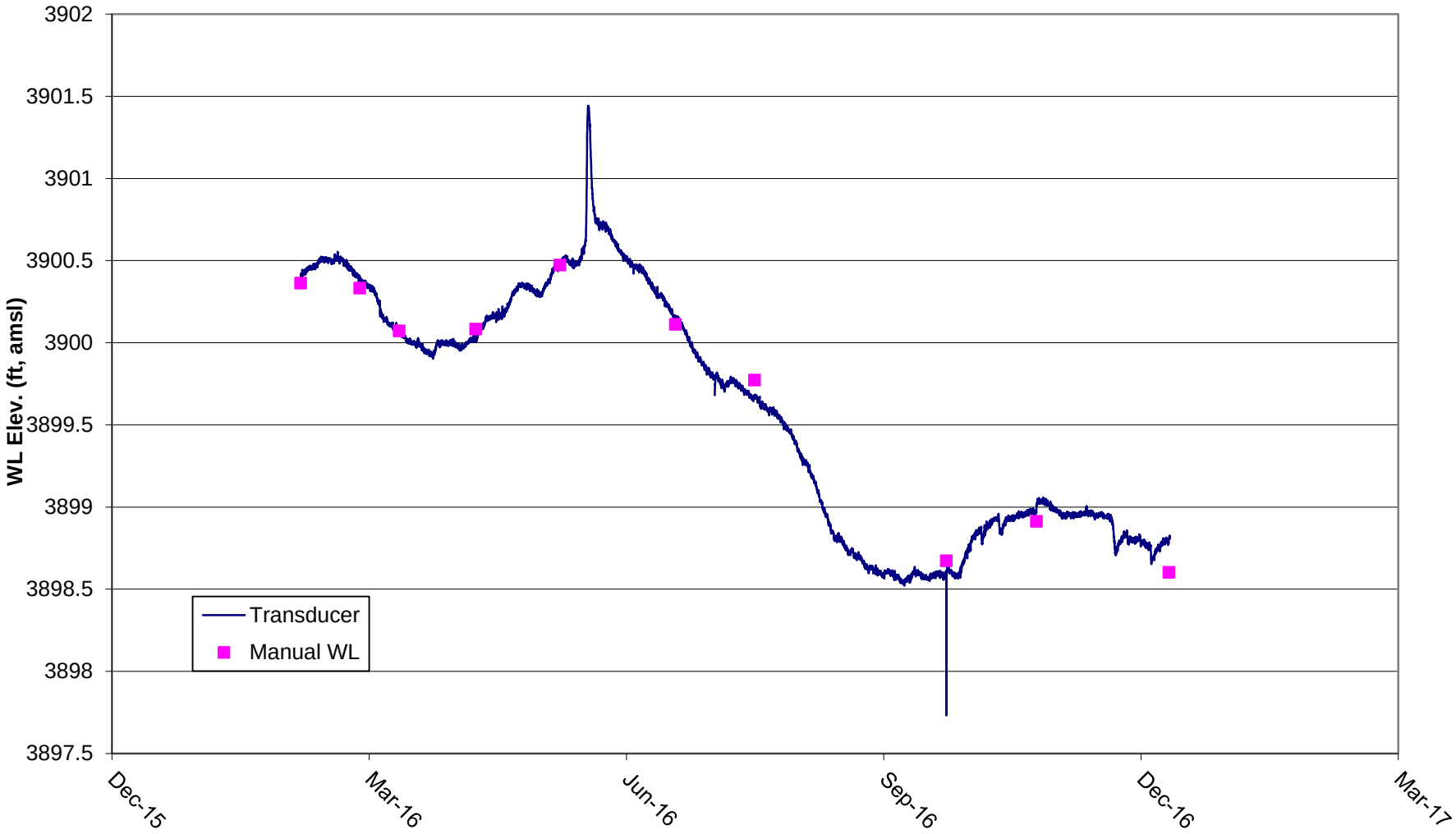
DH-65


WL Elev. (ft, amsl)
3887
3886
3885
3884
3883
3882
3881
3880
3879
Apr-16
Jul-16
Oct-16
Jan-17
PPC Dewatering; Discharge to Slag Pile 7/6/16
Transducer
Manual WL

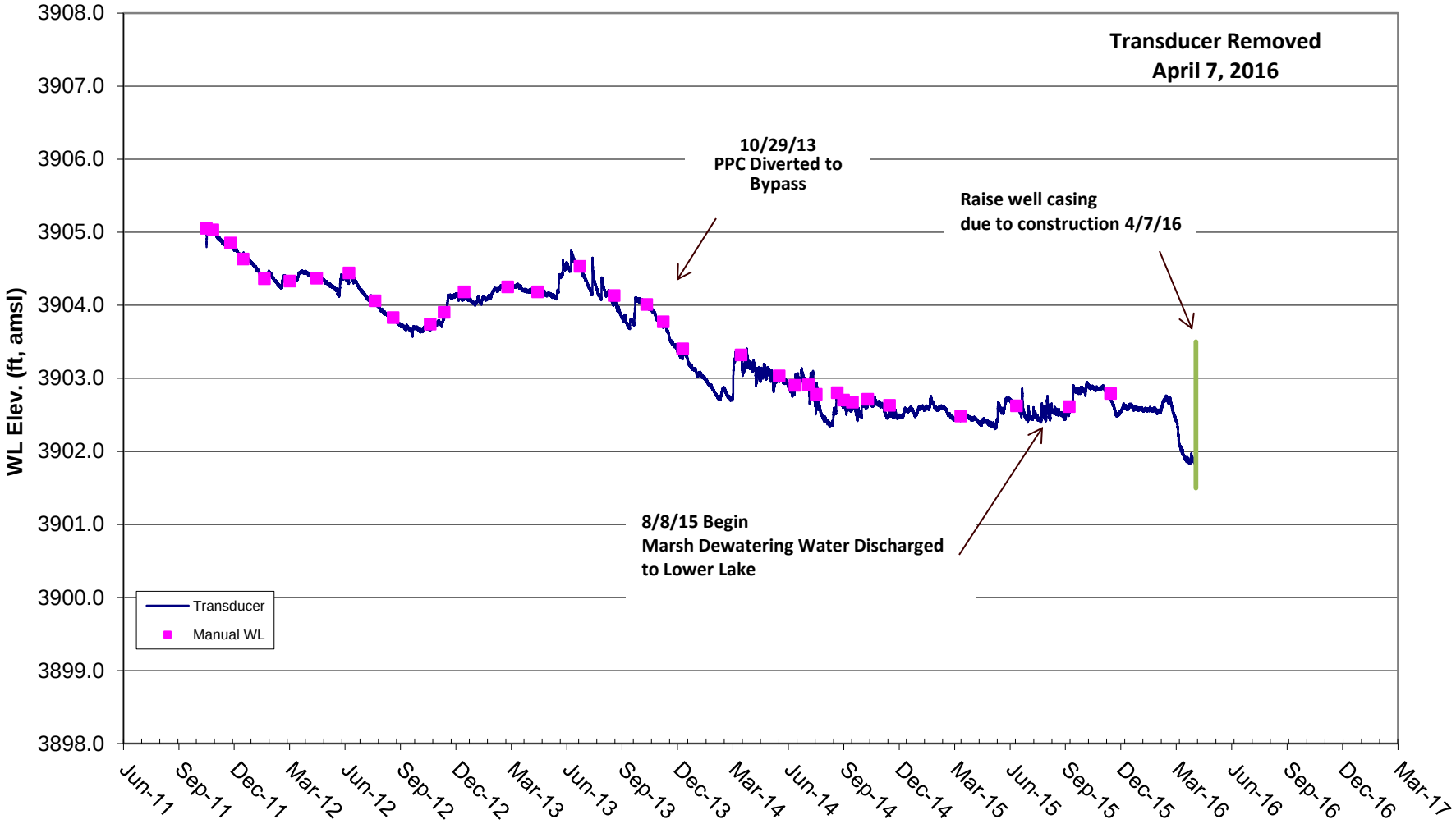
DH-66


WL Elev. (ft, amsl)
3874
3872
3870
3868
3866
3864
3862
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Well Casing Raised
Due to Construction
Transducer Dry
Transducer Lowered
after well casing raised
Transducer
Manual WL
Series3

DH-68


3902
3901.5
3901
3900.5
3900
3899.5
3899
3898.5
3898
3897.5
WL Elev. (ft, amsl)
Transducer
Manual WL
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17

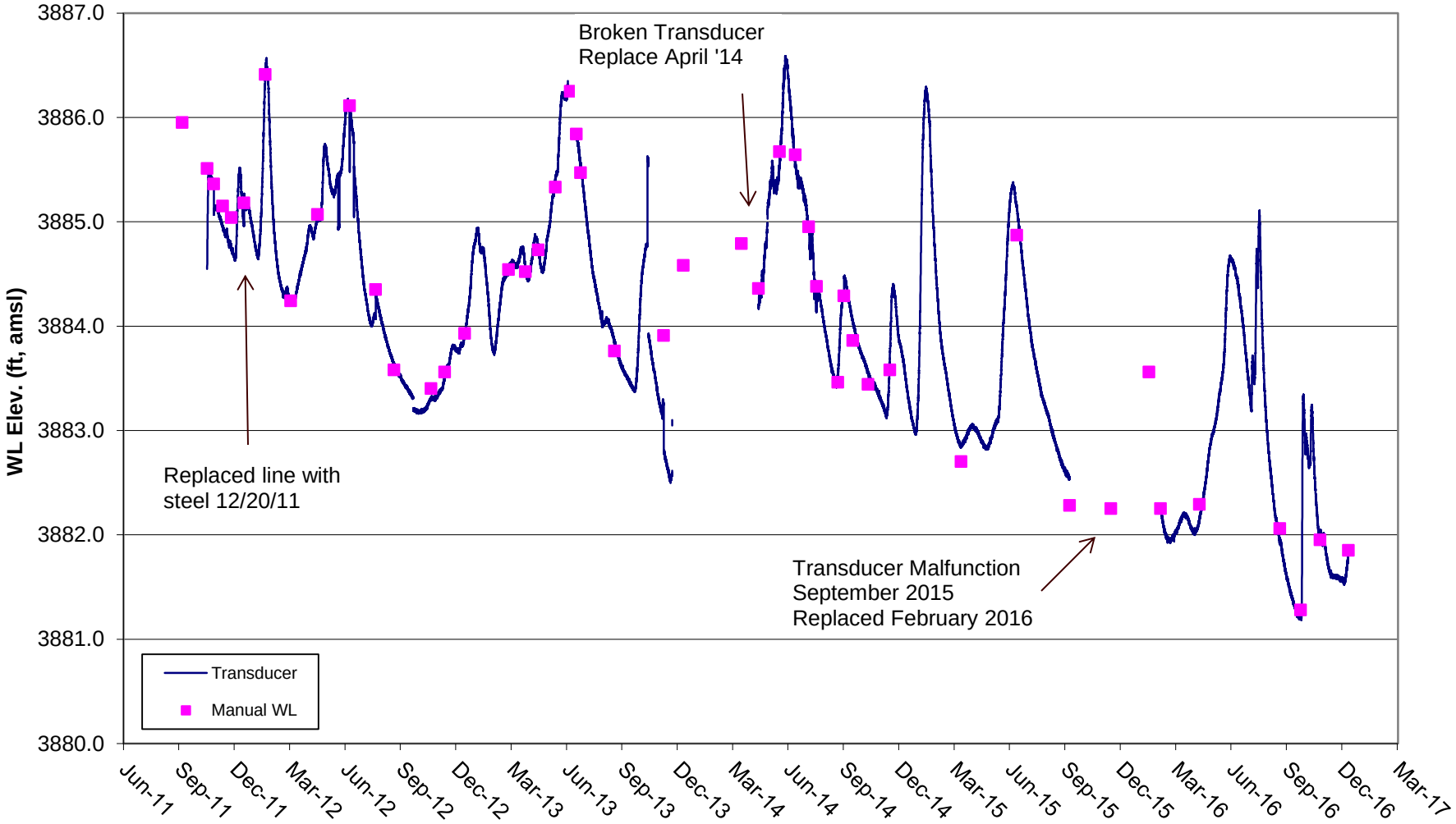
DH-70


Transducer Removed
April 7, 2016
10/29/13
PPC Diverted to
Bypass
Raise well casing
due to construction 4/7/16
8/8/15 Begin
Marsh Dewatering Water Discharged
to Lower Lake
WL Elev. (ft, amsl)
3908.0
3907.0
3906.0
3905.0
3904.0
3903.0
3902.0
3901.0
3900.0
3899.0
3898.0
Transducer
Manual WL
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17

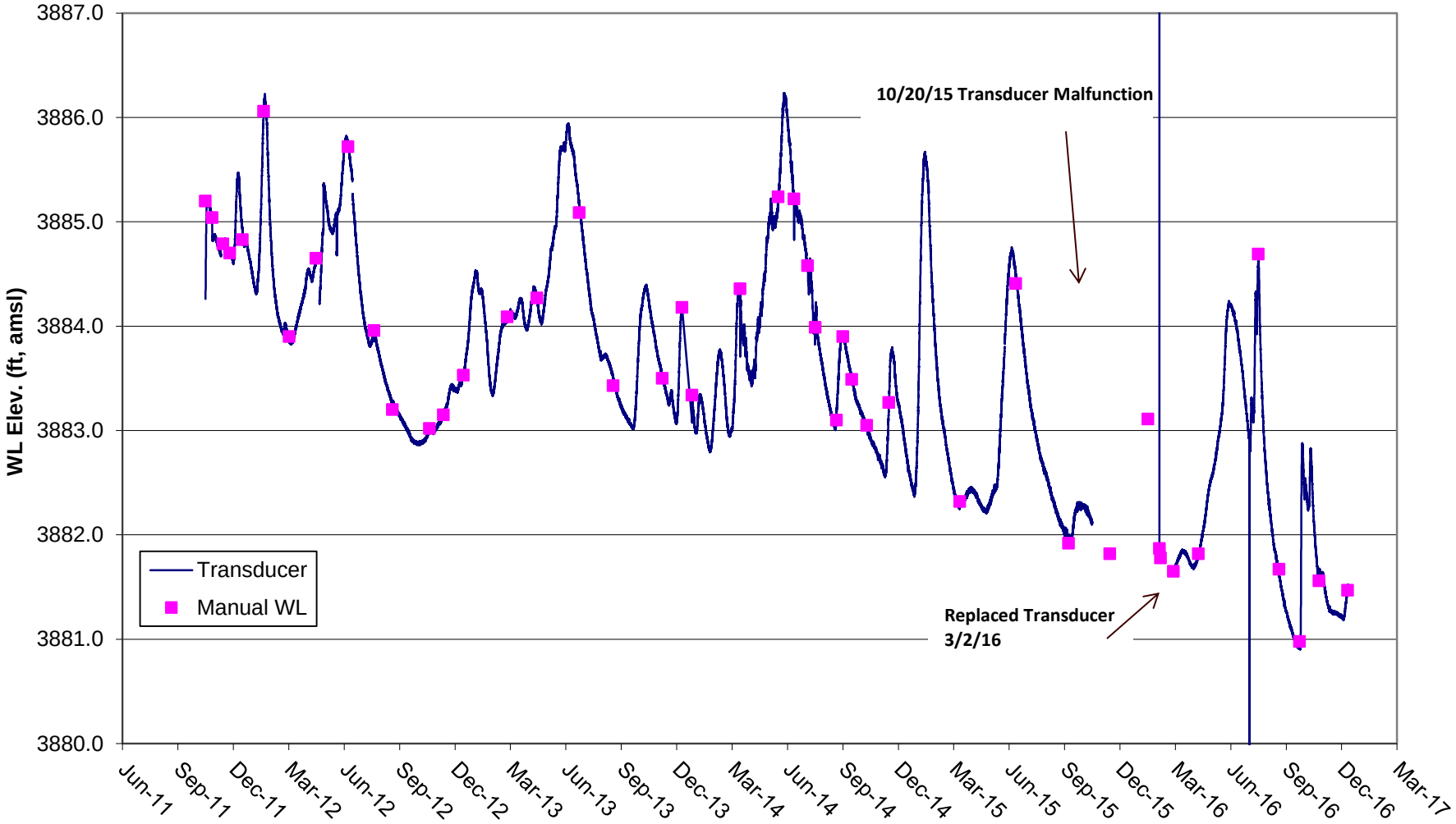
DH-72


WL Elev. (ft, amsl)
3905
3904
3903
3902
3901
3900
3899
3898
3897
3896
3895
3894
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Transducer
Manual WL
Series3
Well casing raised
due to construction
Transducer pulled
8/11 - 9/6/16
while well casing raised

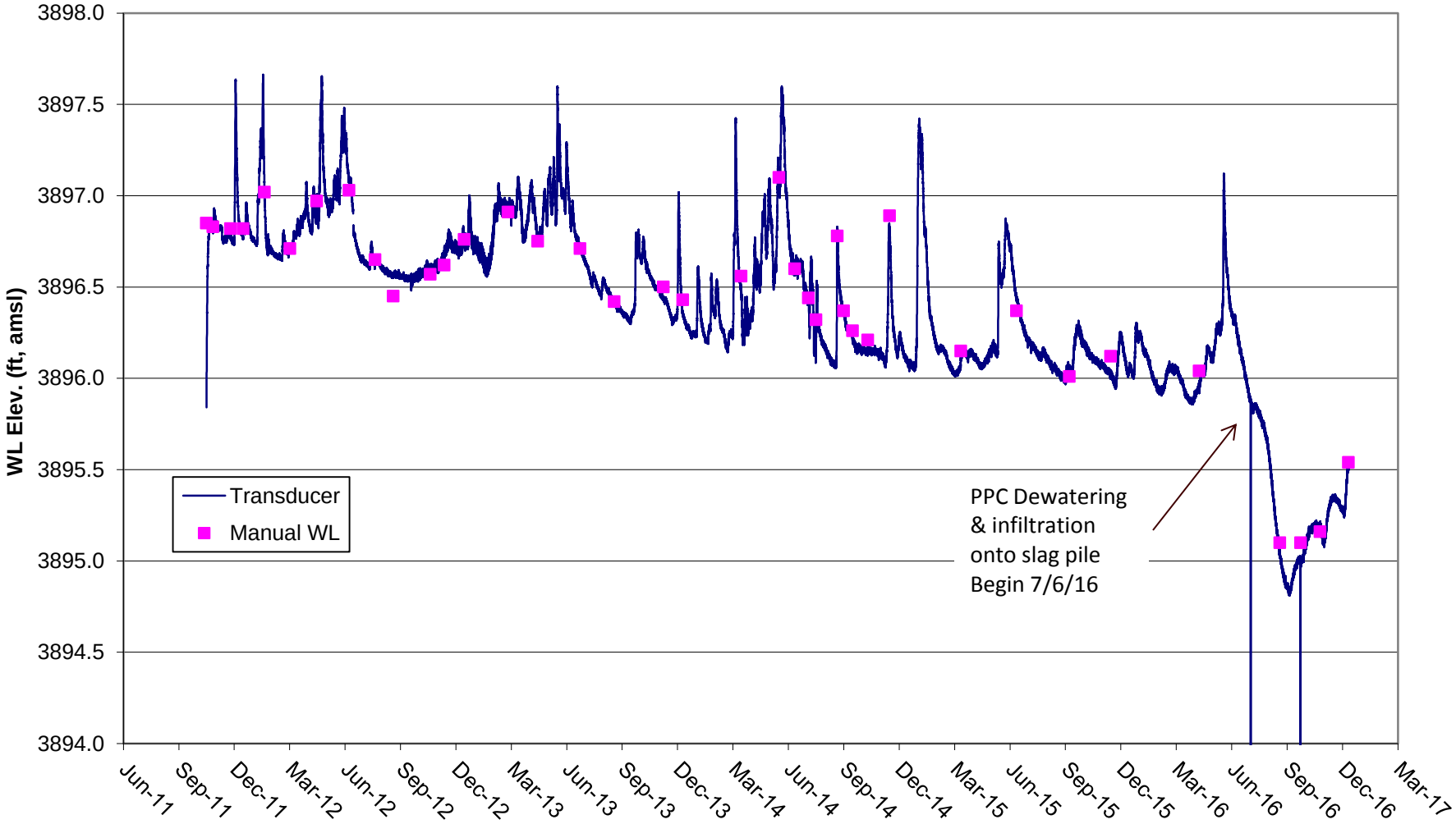
DH-74

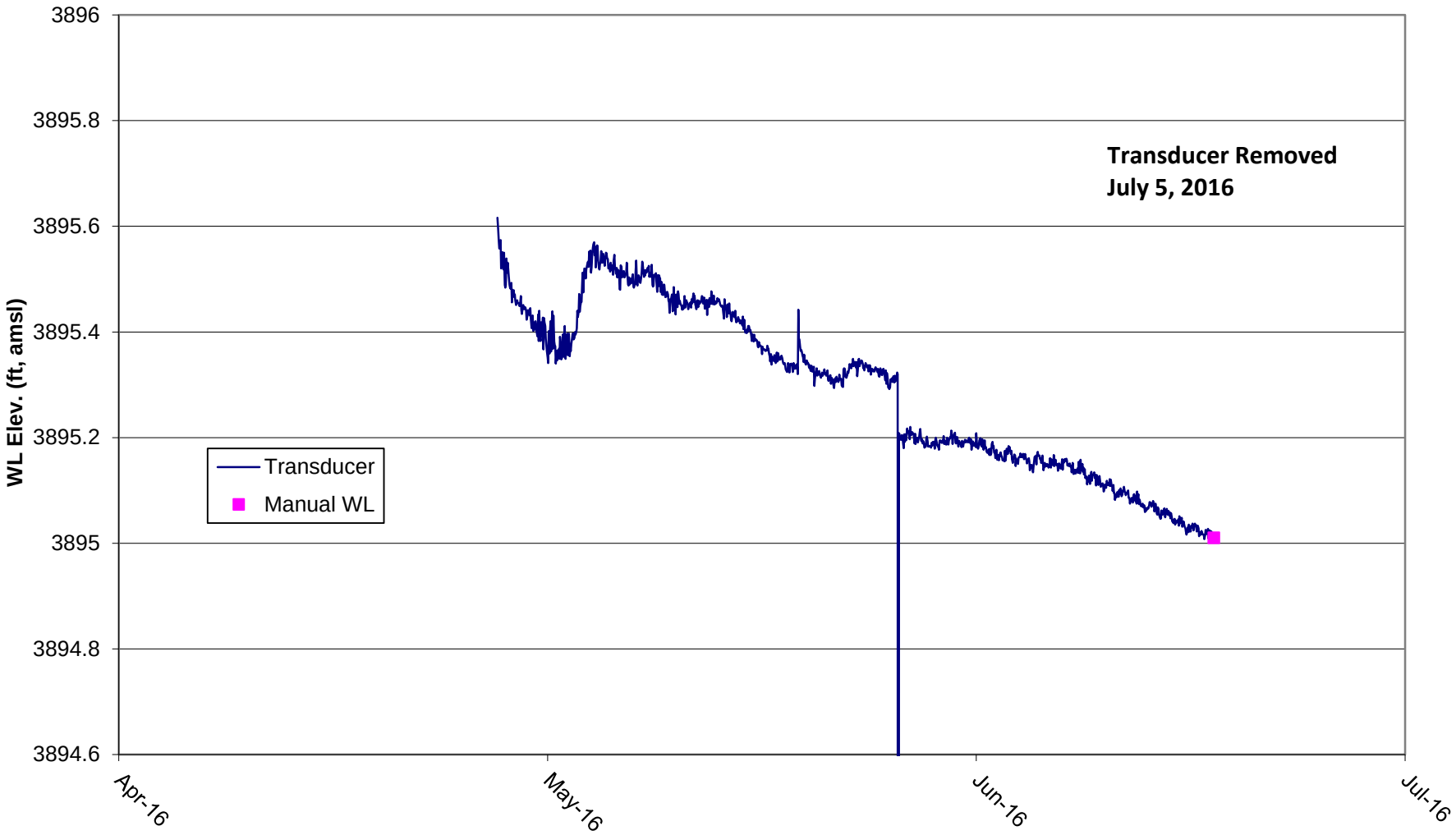

3887.0
3886.0
3885.0
3884.0
3883.0
3882.0
3881.0
3880.0
WL Elev. (ft, amsl)
Broken Transducer
Replace April '14
Replaced line with
steel 12/20/11
Transducer Malfunction
September 2015
Replaced February 2016
Transducer
Manual WL
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17

DH-75

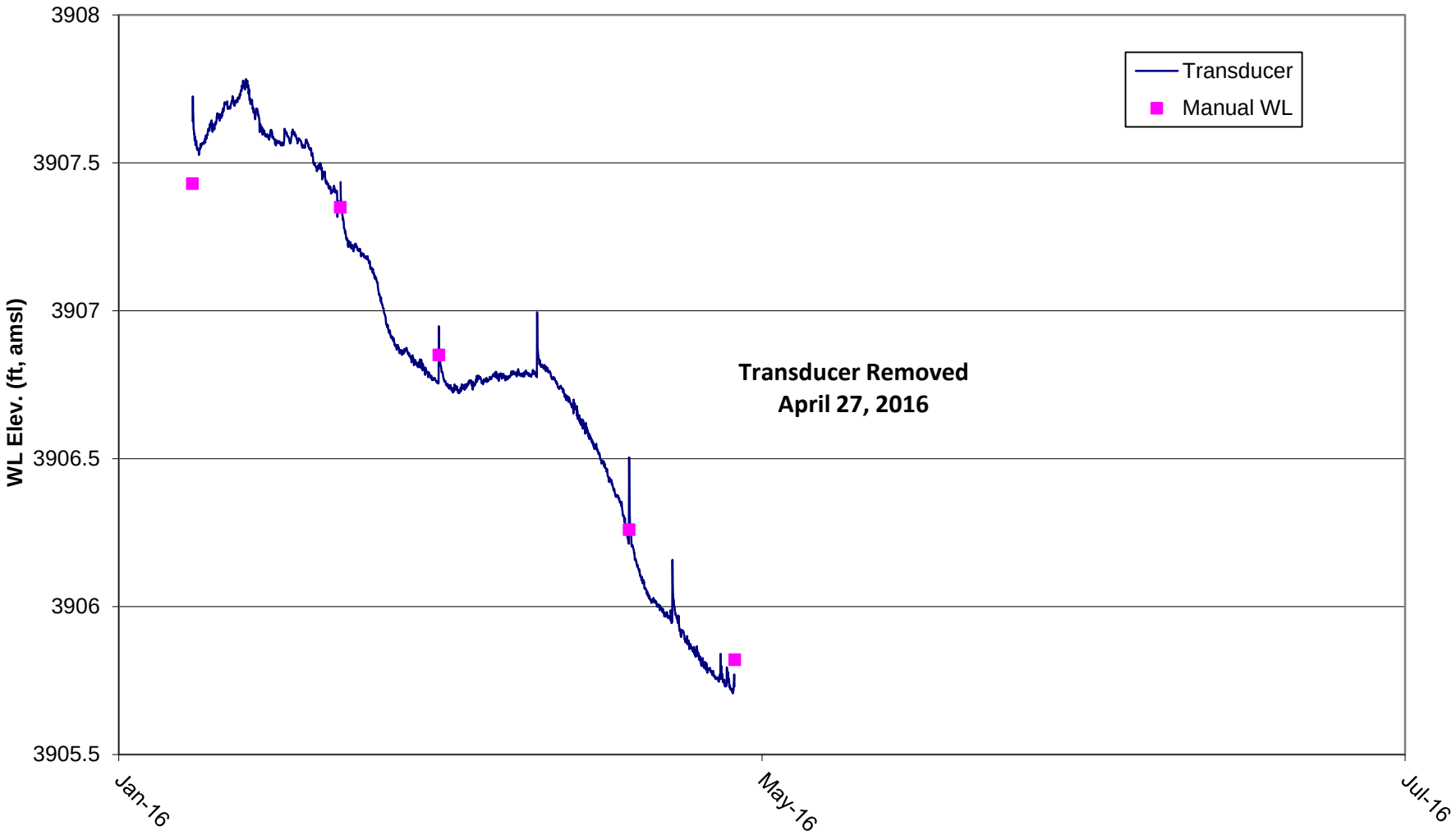

3887.0
3886.0
3885.0
3884.0
3883.0
3882.0
3881.0
3880.0
WL Elev. (ft, amsl)
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Transducer
Manual WL
10/20/15 Transducer Malfunction
Replaced Transducer
3/2/16

DH-76

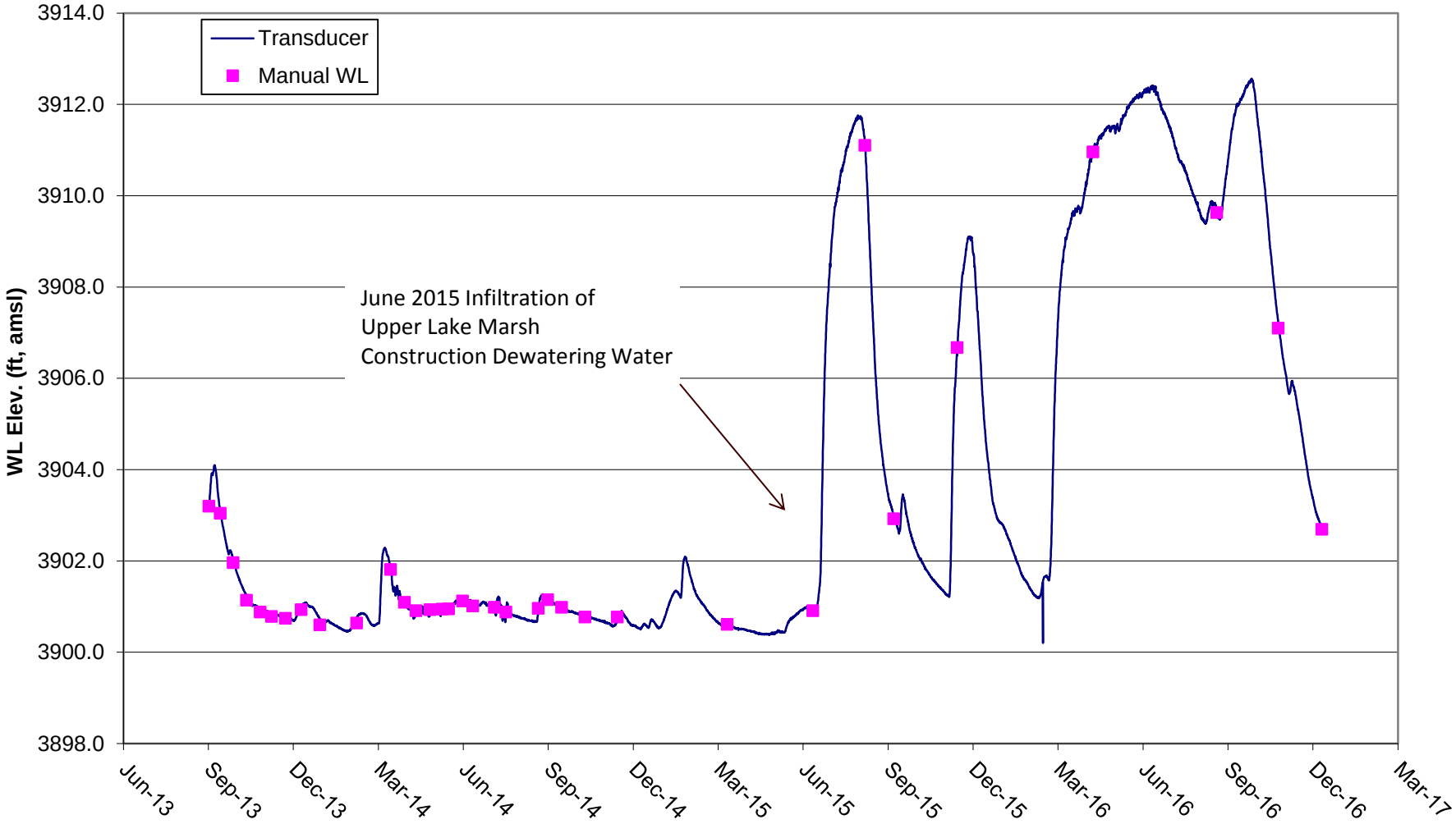

3898.0
3897.5
3897.0
3896.5
3896.0
3895.5
3895.0
3894.5
3894.0
WL Elev. (ft, amsl)
Transducer
Manual WL
PPC Dewatering
& infiltration
onto slag pile
Begin 7/6/16
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17

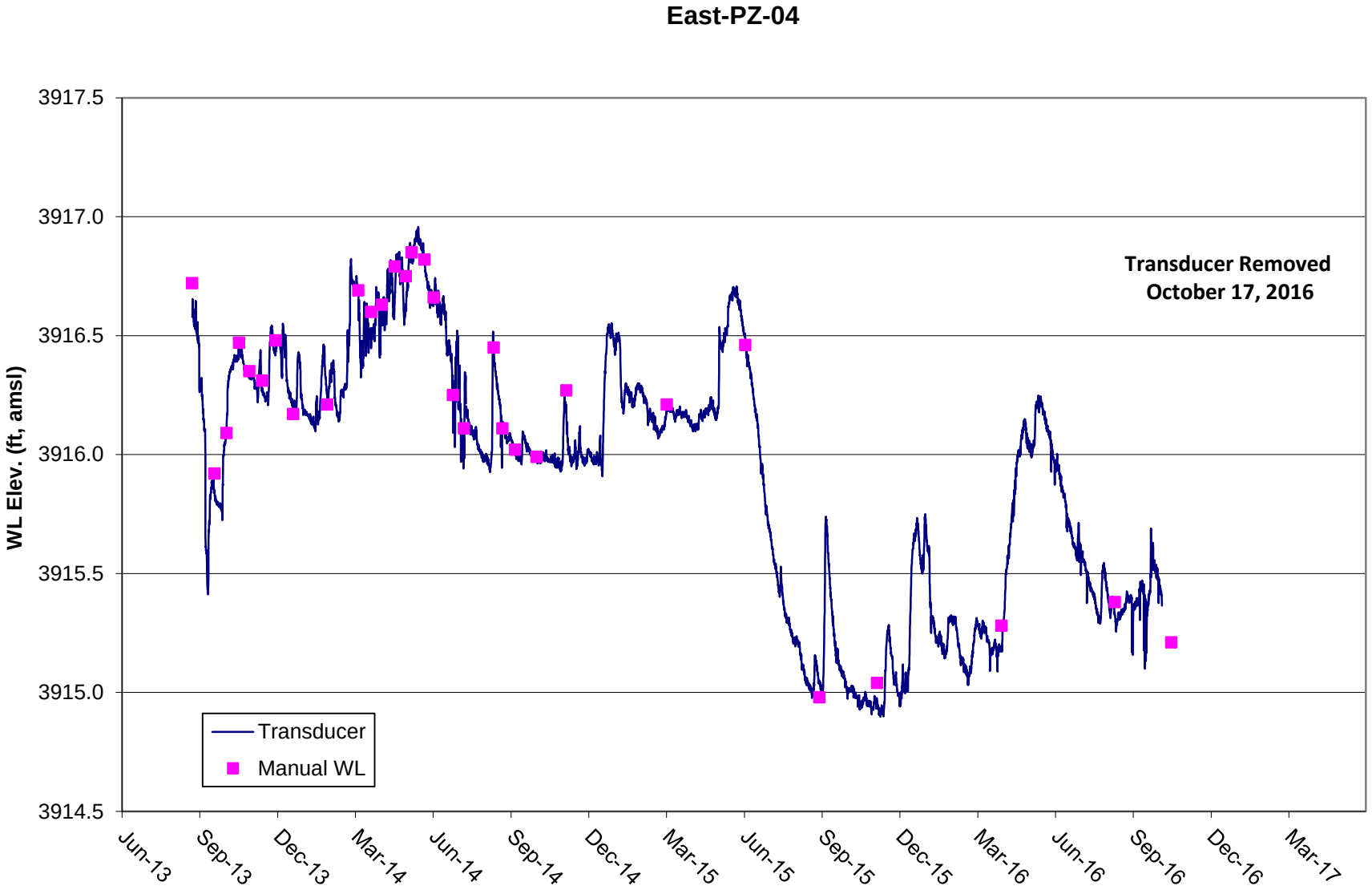

DH-80
WL Elev. (ft, amsl)
3896
3895.8
3895.6
3895.4
3895.2
3895
3894.8
3894.6
Apr-16
May-16
Jun-16
Jul-16
Transducer Removed
July 5, 2016
Transducer
Manual WL

DH-81

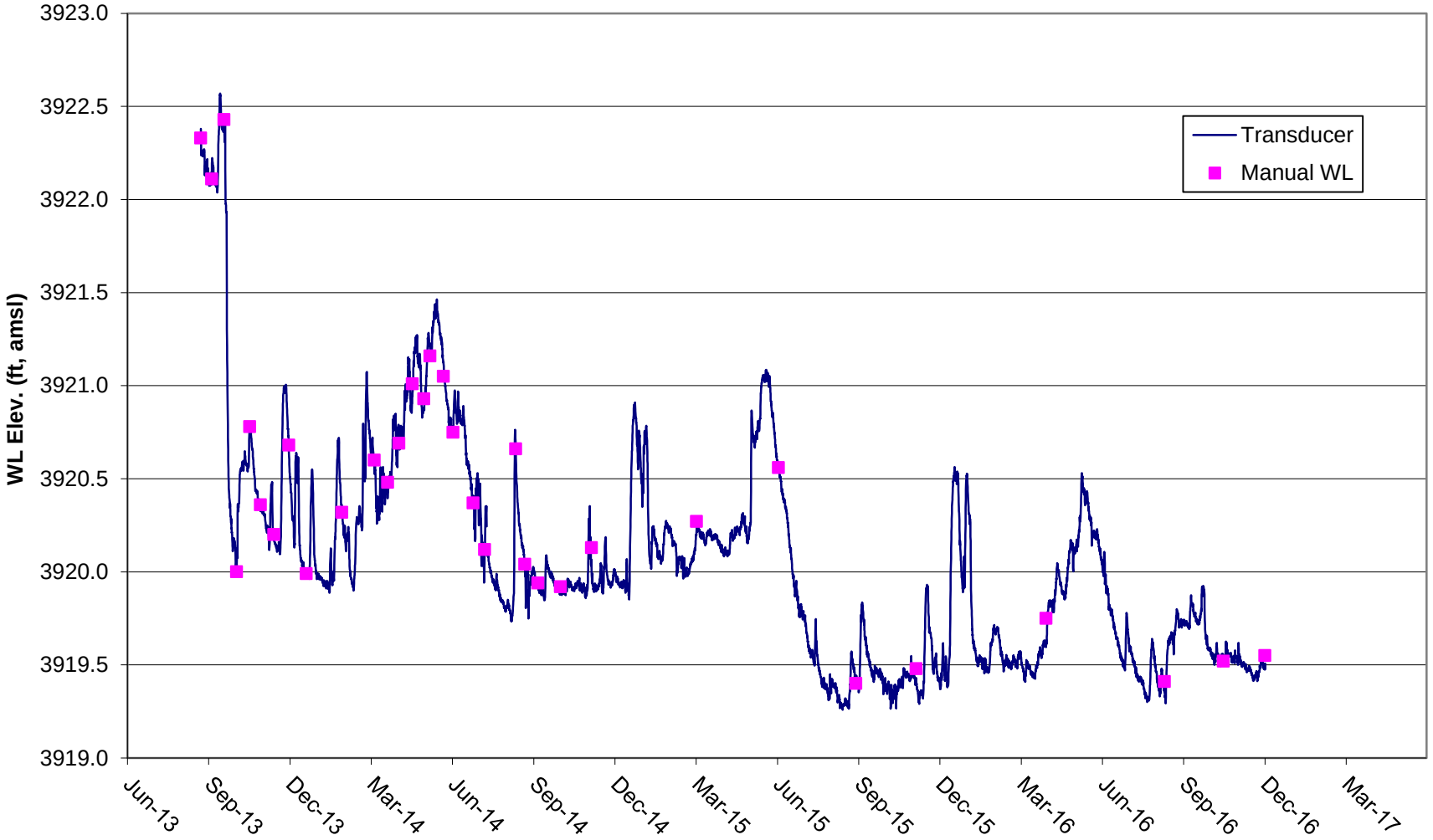

3908
3907.5
3907
3906.5
3906
3905.5
WL Elev. (ft, amsl)
Transducer
Manual WL
Transducer Removed
April 27, 2016
Jan-16
May-16
Jul-16

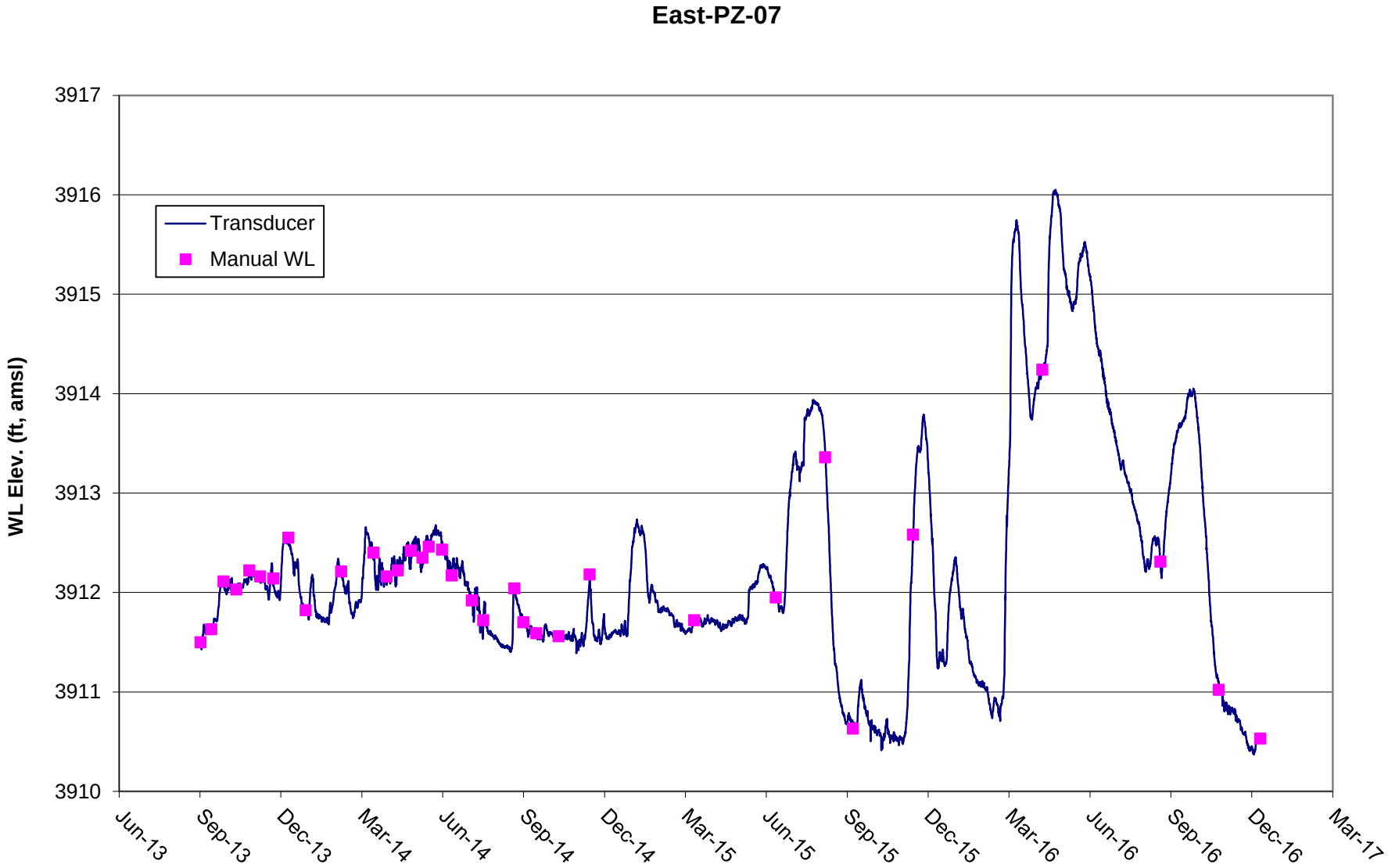
East-PZ-02


Transducer
Manual WL
June 2015 Infiltration of
Upper Lake Marsh
Construction Dewatering Water
WL Elev. (ft, amsl)
3914.0
3912.0
3910.0
3908.0
3906.0
3904.0
3902.0
3900.0
3898.0
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17

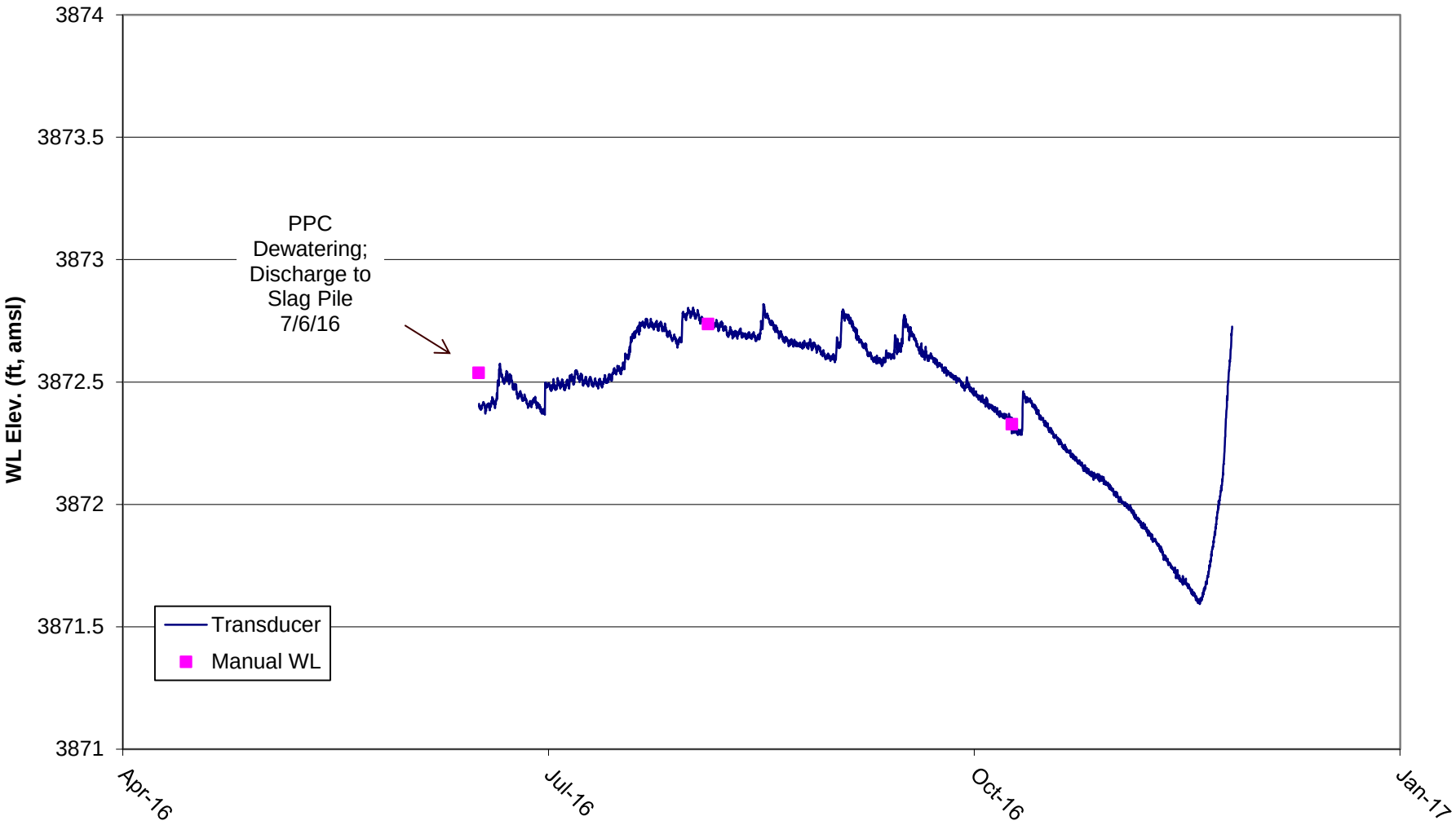

East-PZ-04
3917.5
3917.0
3916.5
3916.0
3915.5
3915.0
3914.5
WL Elev. (ft, amsl)
Transducer Removed
October 17, 2016
Transducer
Manual WL
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17

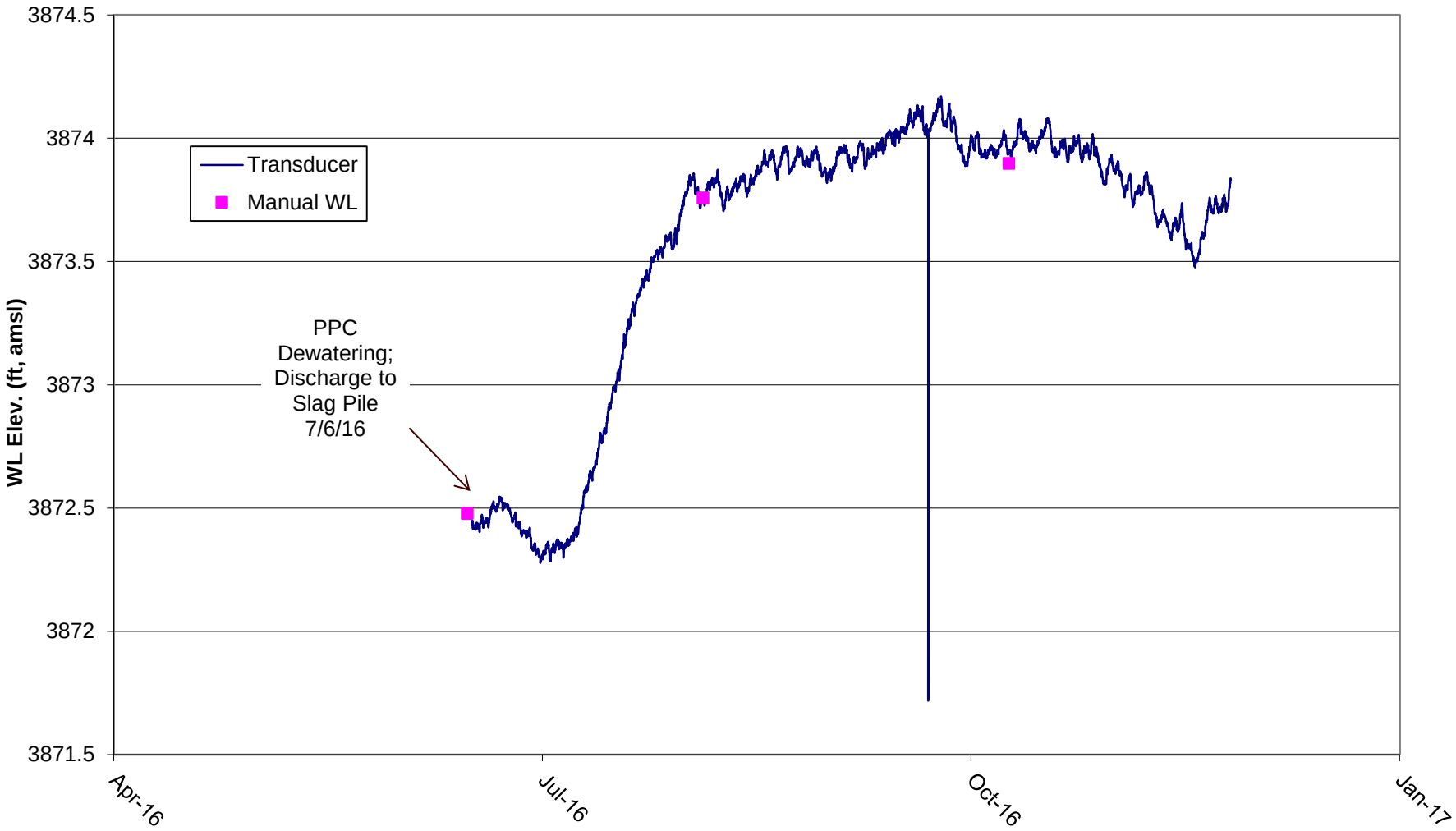
East-PZ-06


WL Elev. (ft, amsl)
3923.0
3922.5
3922.0
3921.5
3921.0
3920.5
3920.0
3919.5
3919.0
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Transducer
Manual WL

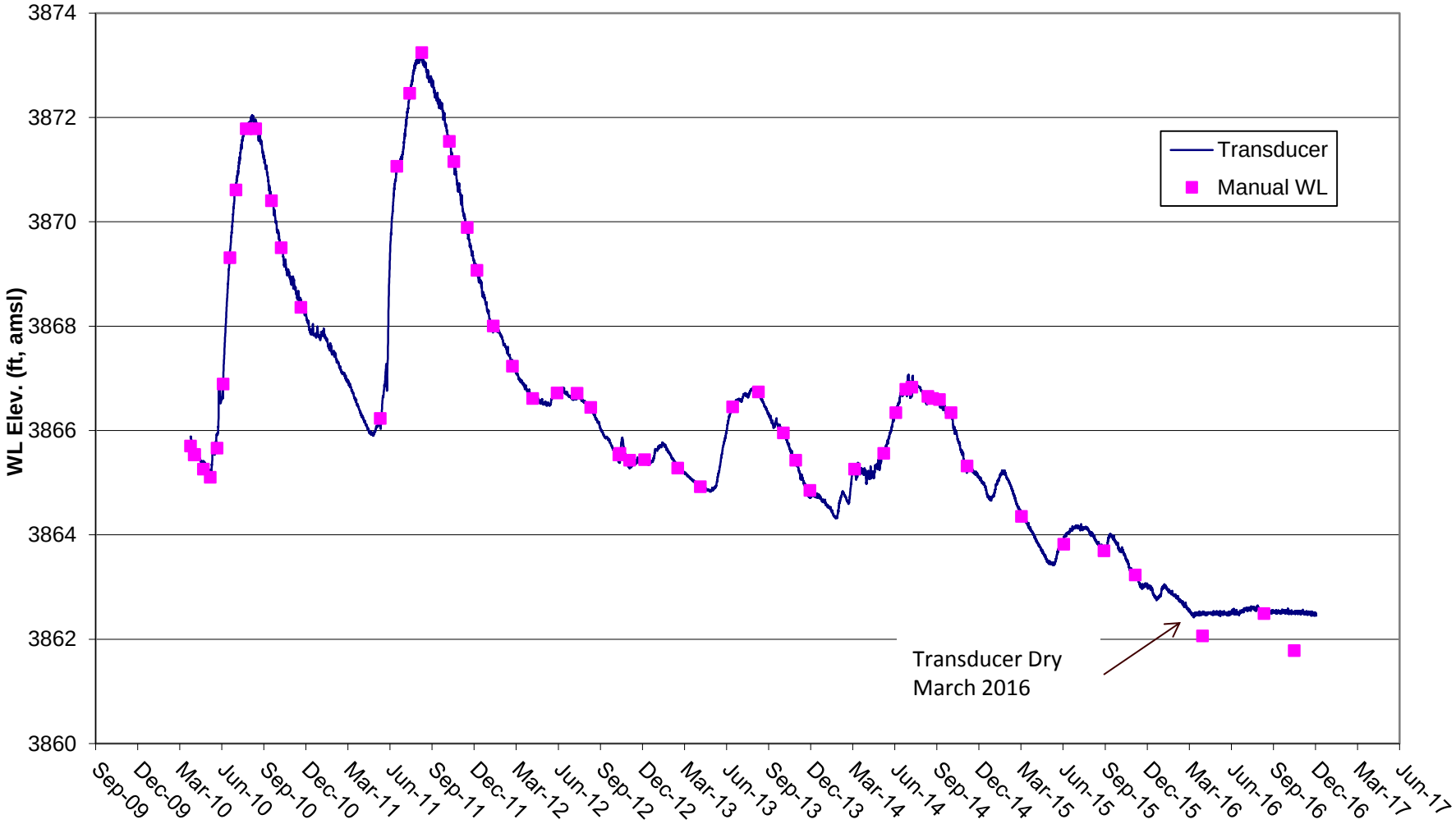

East-PZ-07
WL Elev. (ft, amsl)
3917
3916
3915
3914
3913
3912
3911
3910
Transducer
Manual WL
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17

EH-52


3874
3873.5
3873
3872.5
3872
3871.5
3871
WL Elev. (ft, amsl)
PPC Dewatering; Discharge to Slag Pile 7/6/16
Transducer
Manual WL
Apr-16
Jul-16
Oct-16
Jan-17


EH-58
3874.5
3874
3873.5
3873
3872.5
3872
3871.5
WL Elev. (ft, amsl)
Transducer
Manual WL
PPC
Dewatering;
Discharge to
Slag Pile
7/6/16
Apr-16
Jul-16
Oct-16
Jan-17

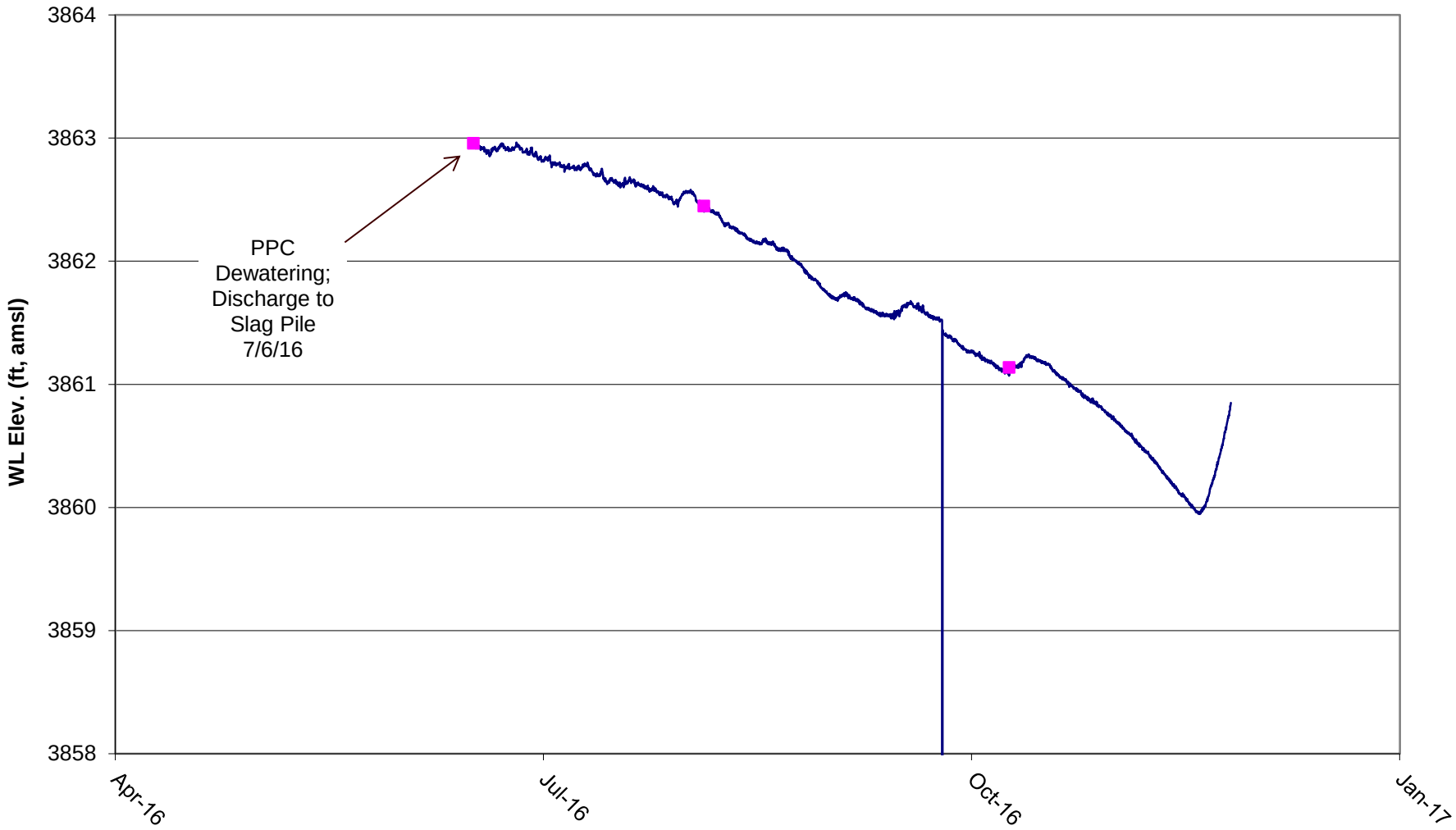
EH-60


WL Elev. (ft, amsl)
3874
3872
3870
3868
3866
3864
3862
3860
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Jun-17
Transducer
Manual WL
Transducer Dry
March 2016

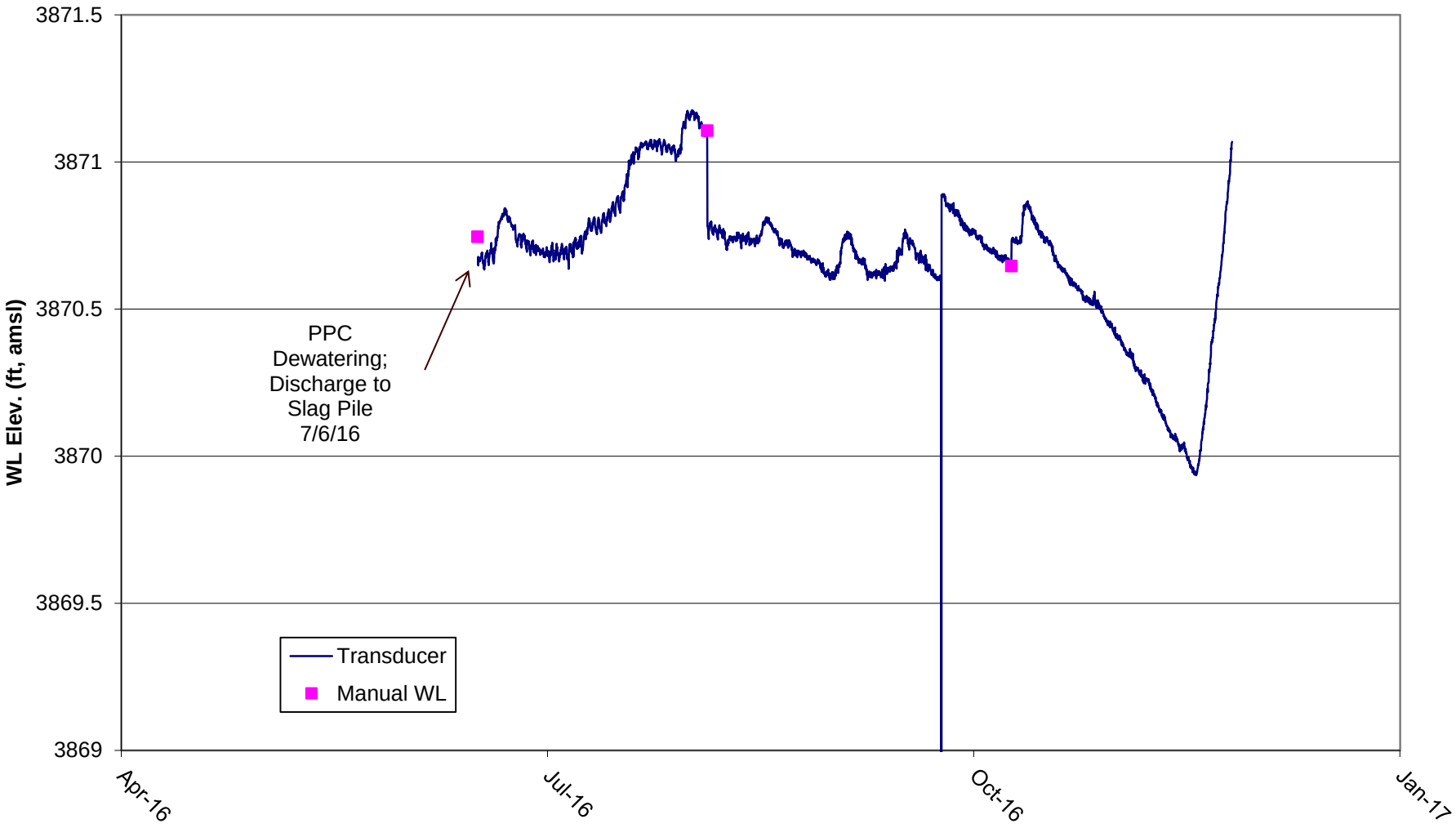
EH-61


WL Elev. (ft, amsl)
3874
3872
3870
3868
3866
3864
3862
3860
3858
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Transducer Removed
July 5, 2016
Transducer
Manual WL

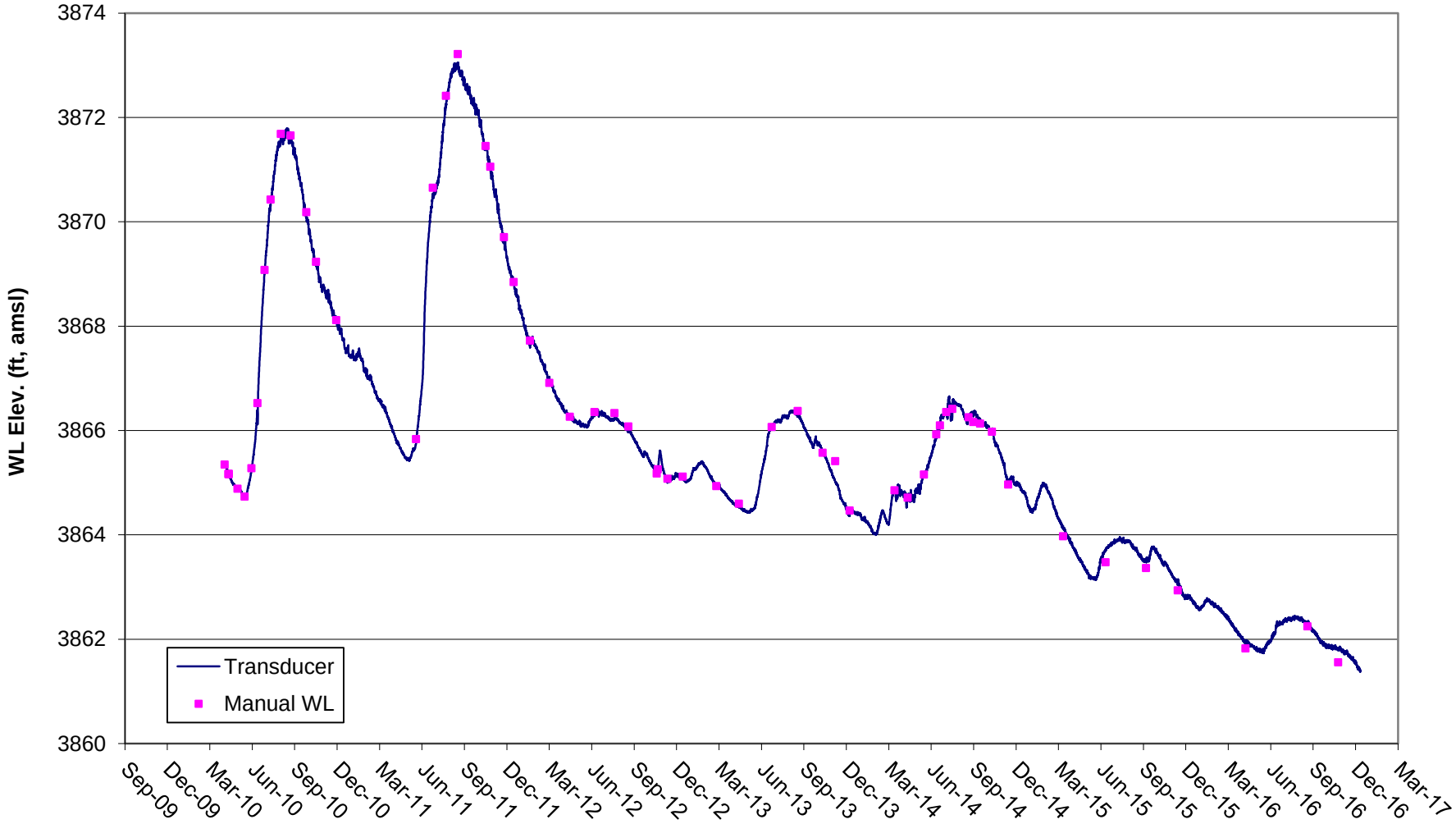
EH-101


3864
3863
3862
3861
3860
3859
3858
WL Elev. (ft, amsl)
PPC Dewatering; Discharge to Slag Pile 7/6/16
Apr-16
Jul-16
Oct-16
Jan-17

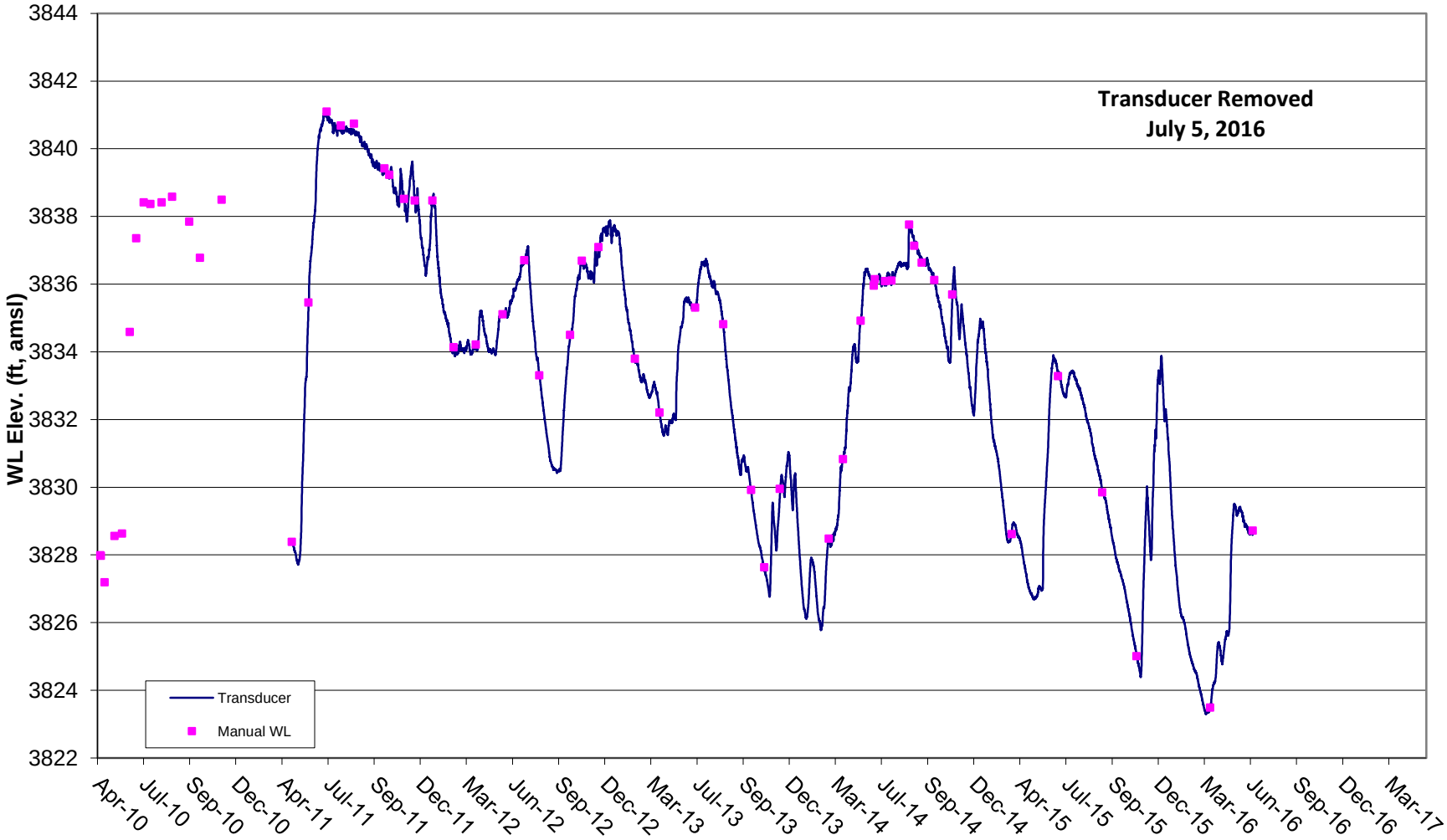
EH-102


3871.5
3871
3870.5
3870
3869.5
3869
WL Elev. (ft, amsl)
PPC
Dewatering;
Discharge to
Slag Pile
7/6/16
Transducer
Manual WL
Apr-16
Jul-16
Oct-16
Jan-17

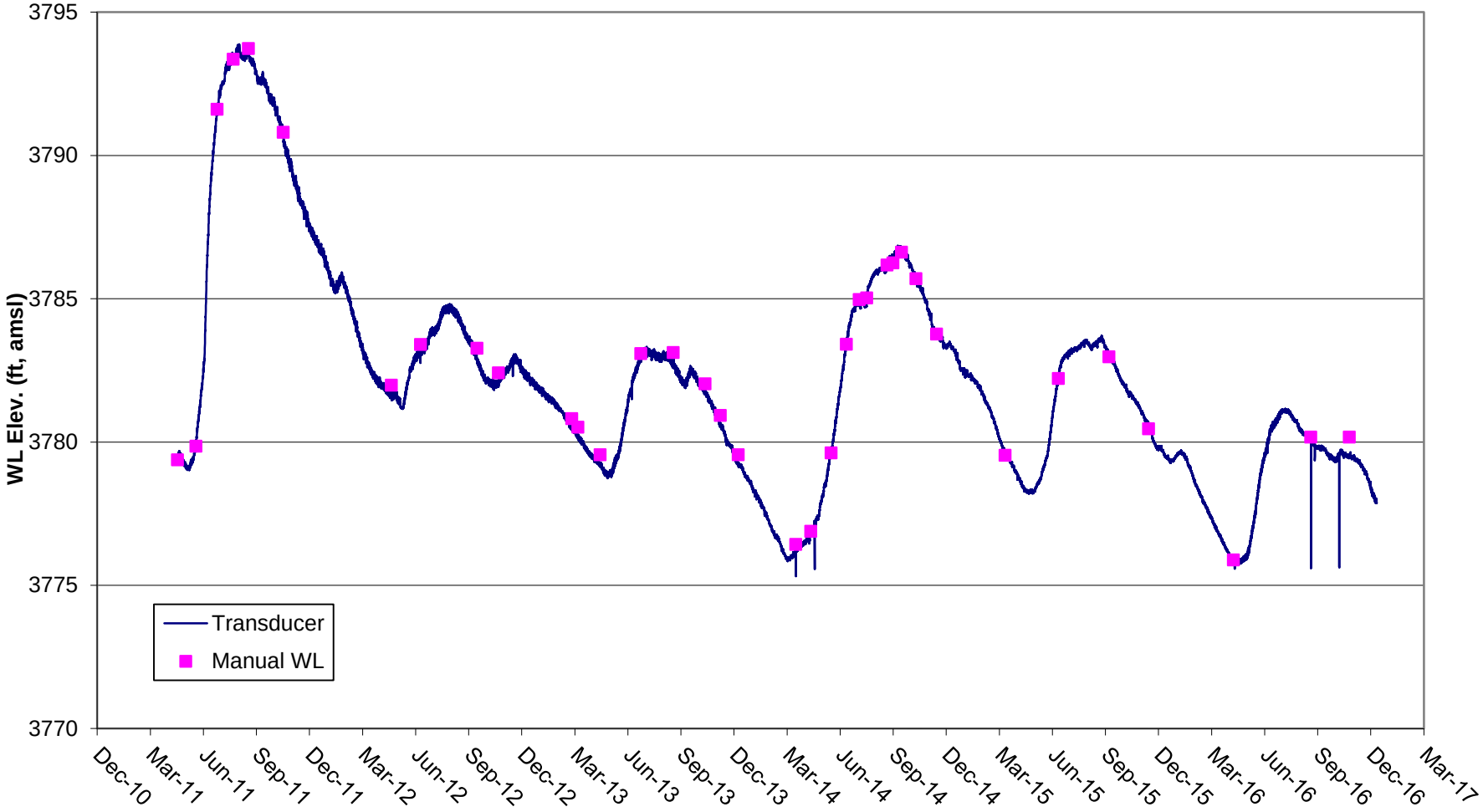
EH-103


WL Elev. (ft, amsl)
3874
3872
3870
3868
3866
3864
3862
3860
Transducer
Manual WL
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17

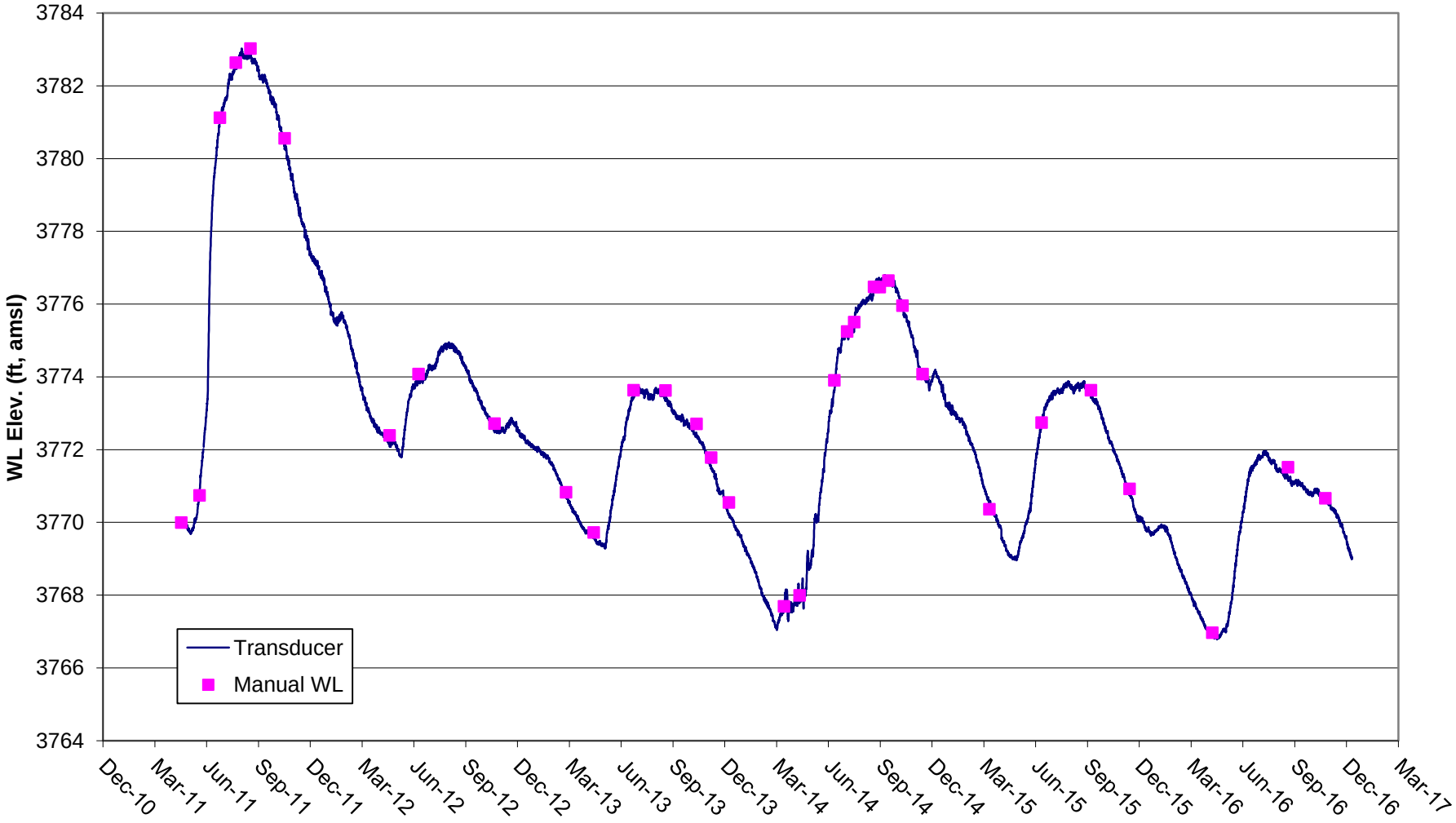
EH-127

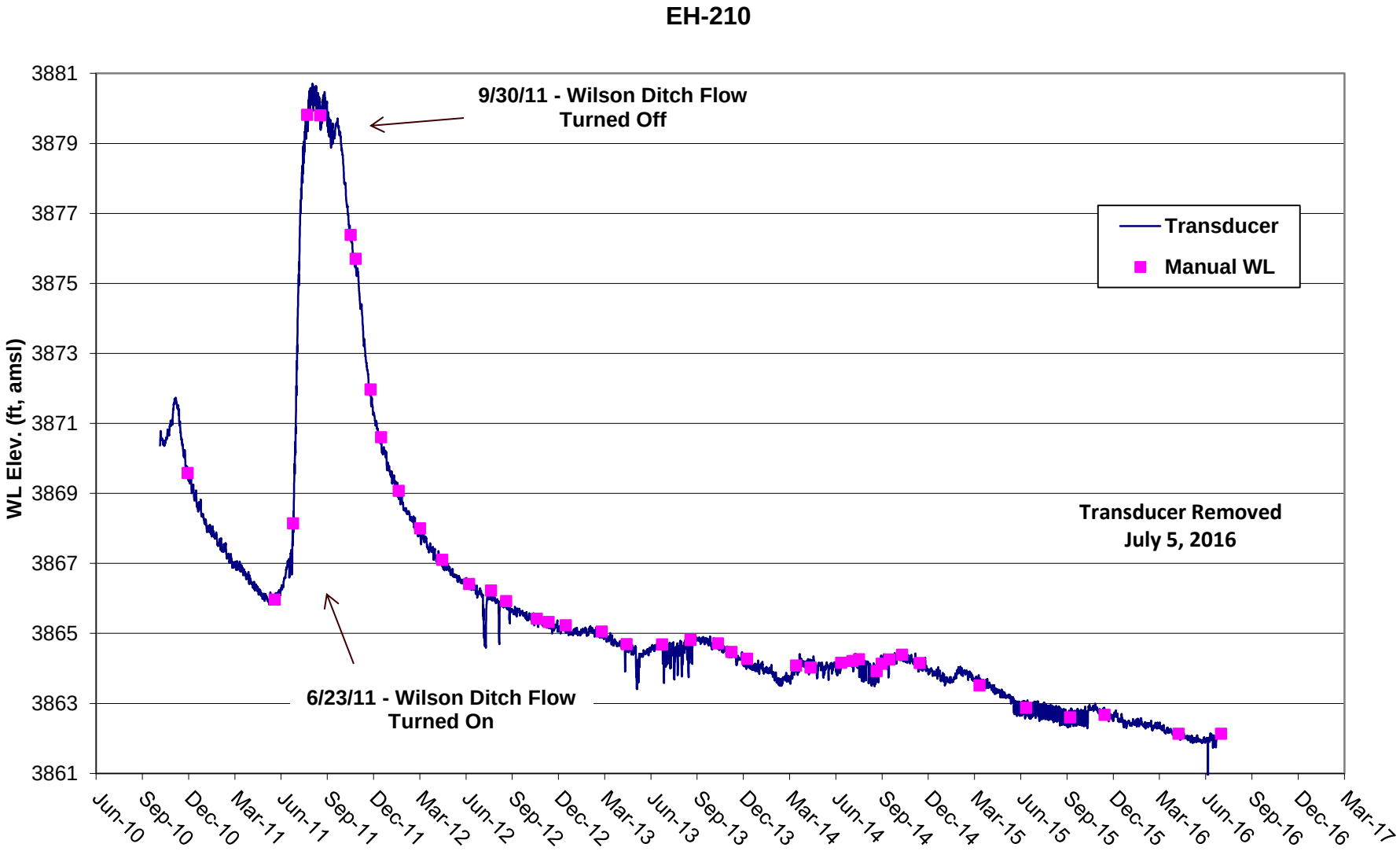

Transducer Removed
July 5, 2016
WL Elev. (ft, amsl)
3844
3842
3840
3838
3836
3834
3832
3830
3828
3826
3824
3822
Transducer
Manual WL
Apr-10
Jul-10
Sep-10
Dec-10
Apr-11
Jul-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jul-13
Sep-13
Dec-13
Mar-14
Jul-14
Sep-14
Dec-14
Apr-15
Jul-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17

EH-141

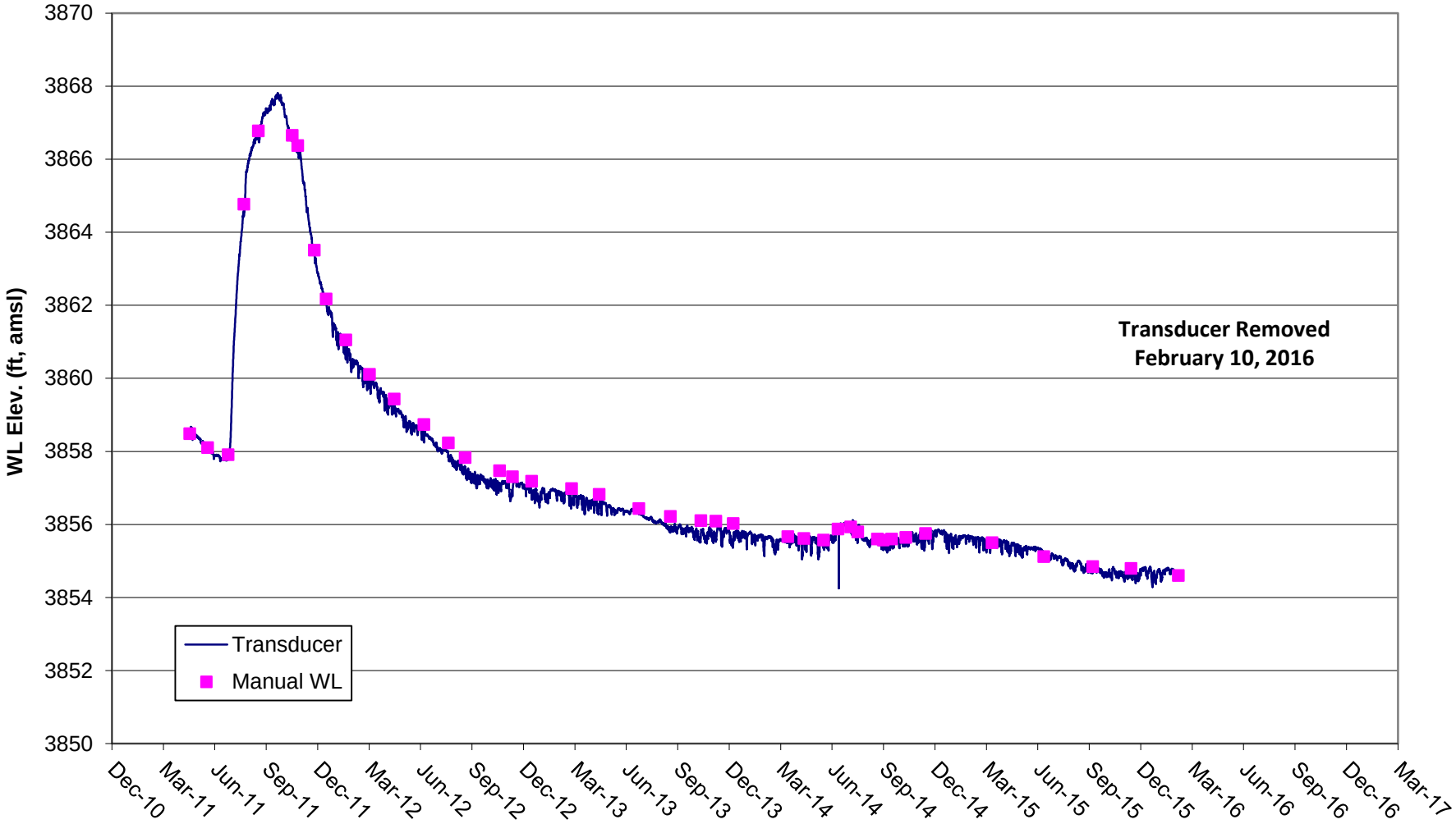

WL Elev. (ft, amsl)
3795
3790
3785
3780
3775
3770
Transducer
Manual WL
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17

EH-142

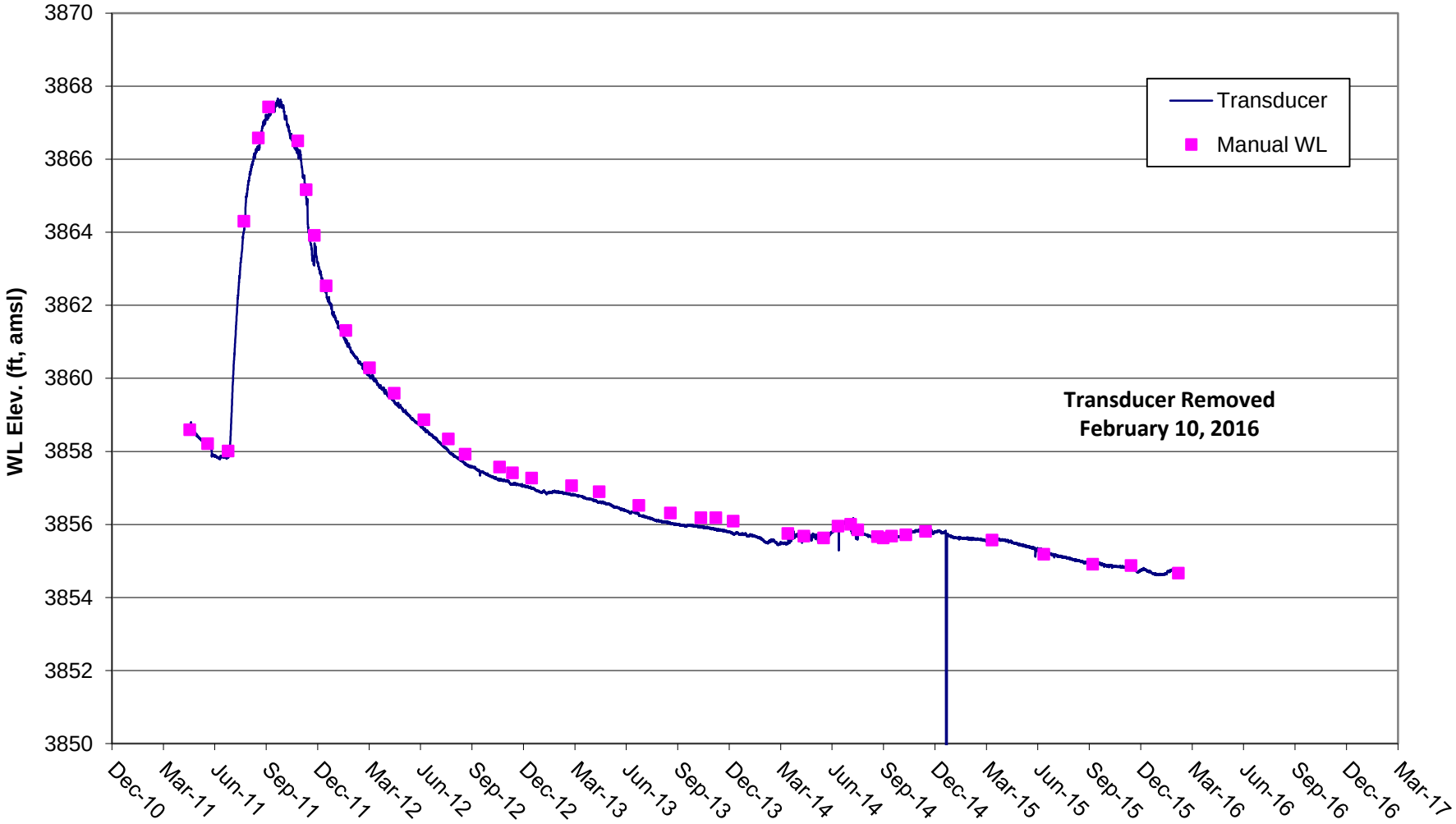

WL Elev. (ft, amsl)
3784
3782
3780
3778
3776
3774
3772
3770
3768
3766
3764
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Transducer
Manual WL

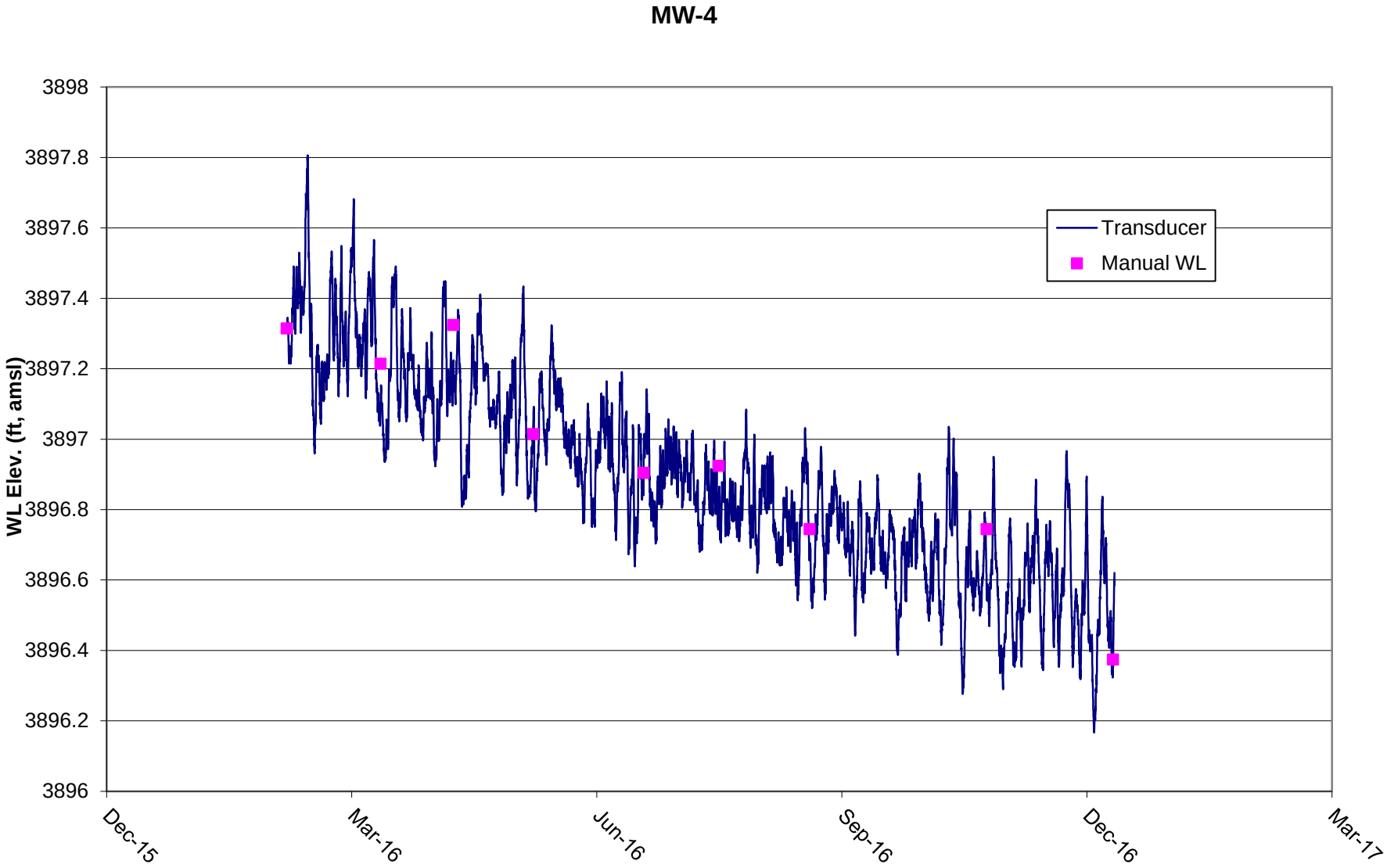

EH-210
WL Elev. (ft, amsl)
3881
3879
3877
3875
3873
3871
3869
3867
3865
3863
3861
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
9/30/11 - Wilson Ditch Flow Turned Off
6/23/11 - Wilson Ditch Flow Turned On
Transducer Removed July 5, 2016
Transducer
Manual WL

EH-211

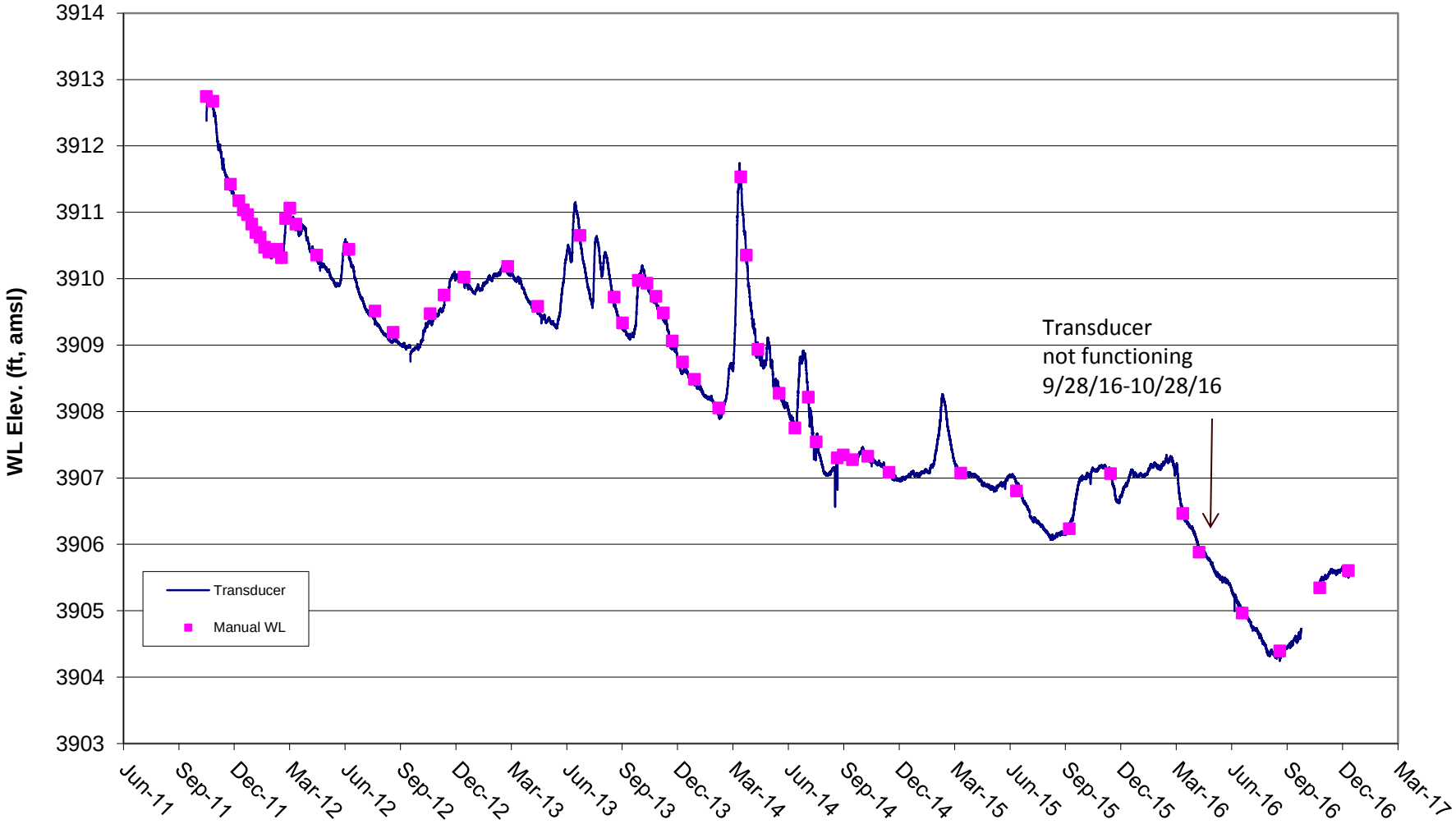

WL Elev. (ft, amsl)
3870
3868
3866
3864
3862
3860
3858
3856
3854
3852
3850
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Transducer
Manual WL
Transducer Removed
February 10, 2016

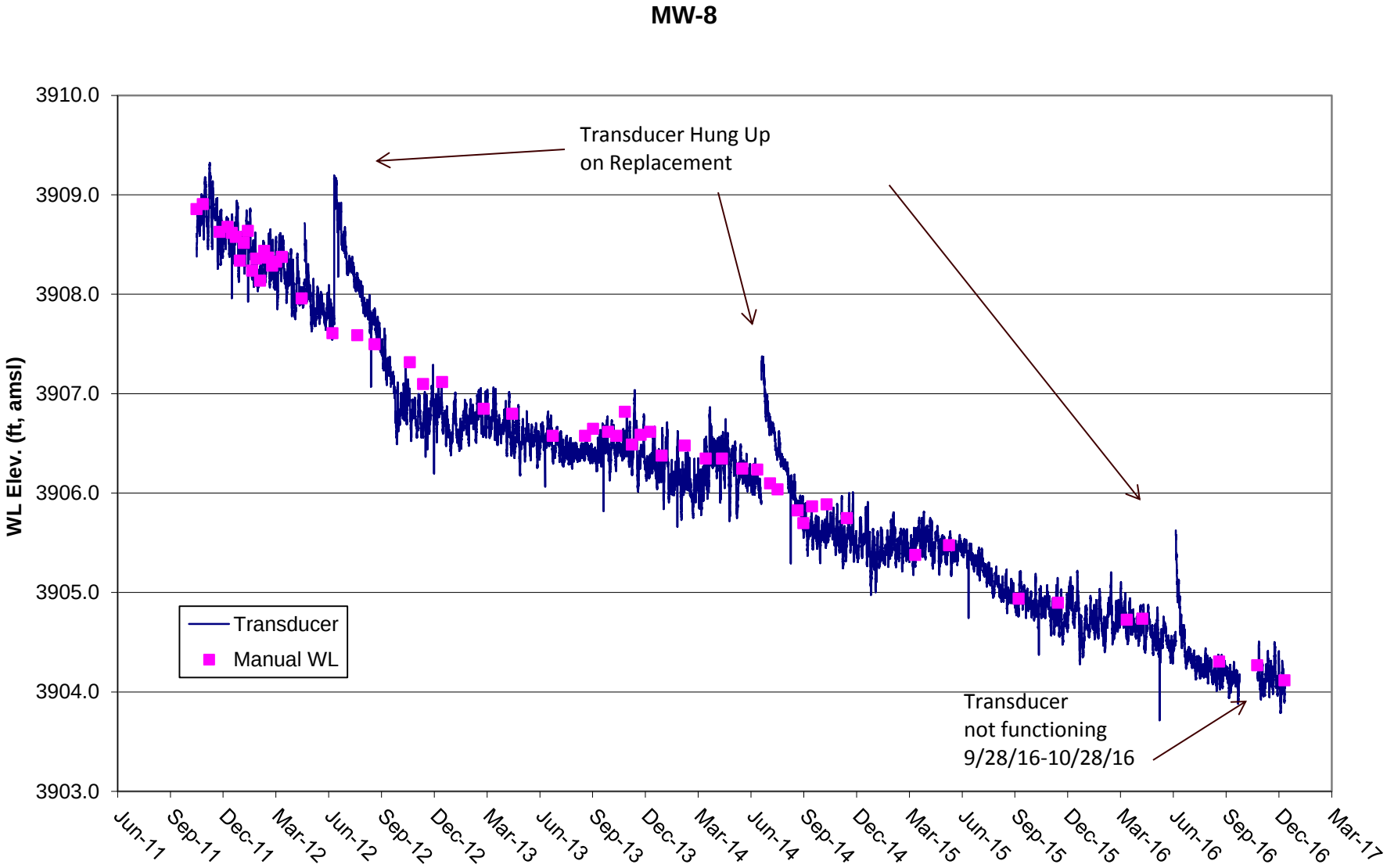
EH-212

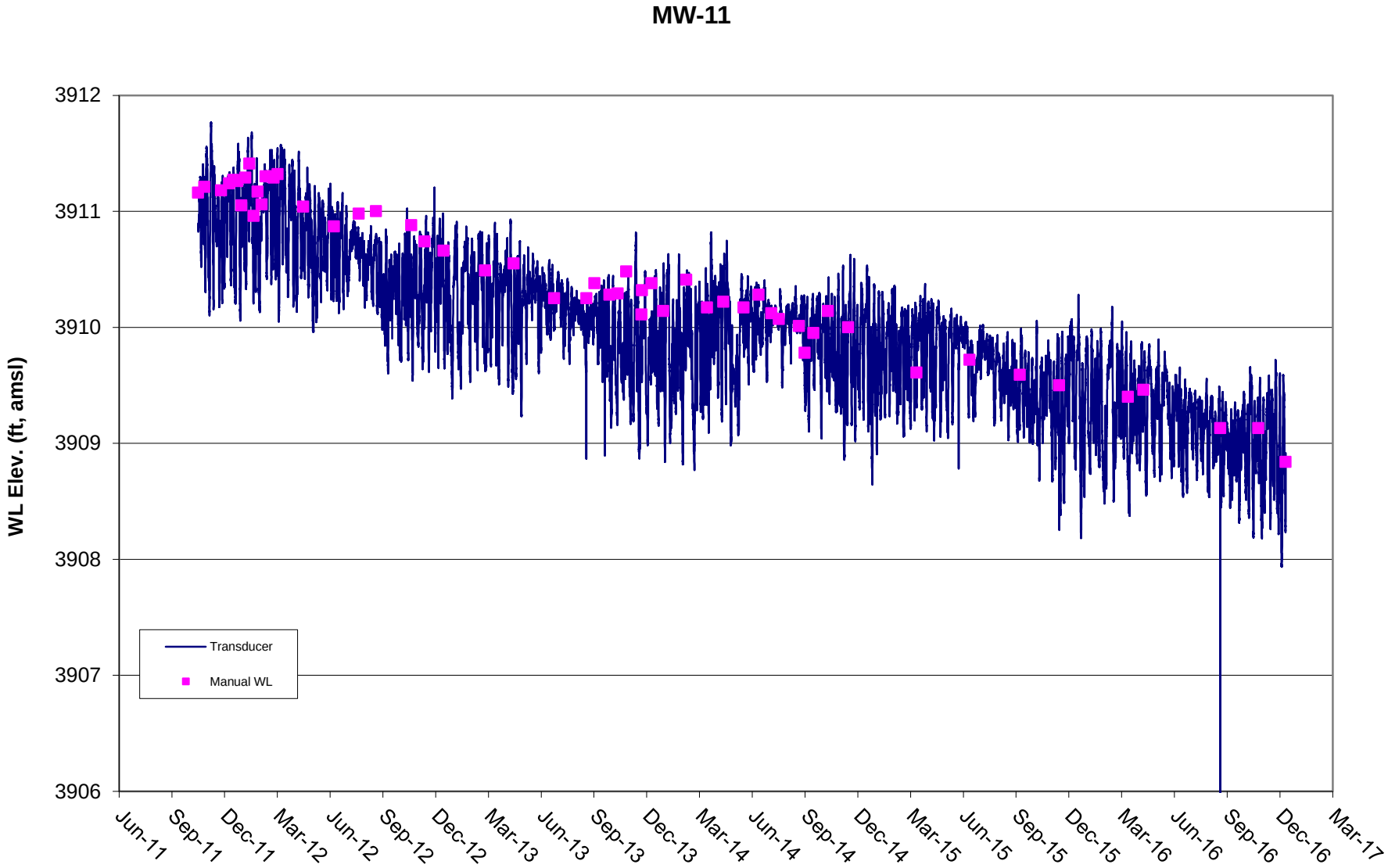

WL Elev. (ft, amsl)
3870
3868
3866
3864
3862
3860
3858
3856
3854
3852
3850
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Transducer
Manual WL
Transducer Removed
February 10, 2016


MW-4
WL Elev. (ft, amsl)
3898
3897.8
3897.6
3897.4
3897.2
3897
3896.8
3896.6
3896.4
3896.2
3896
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Transducer
Manual WL

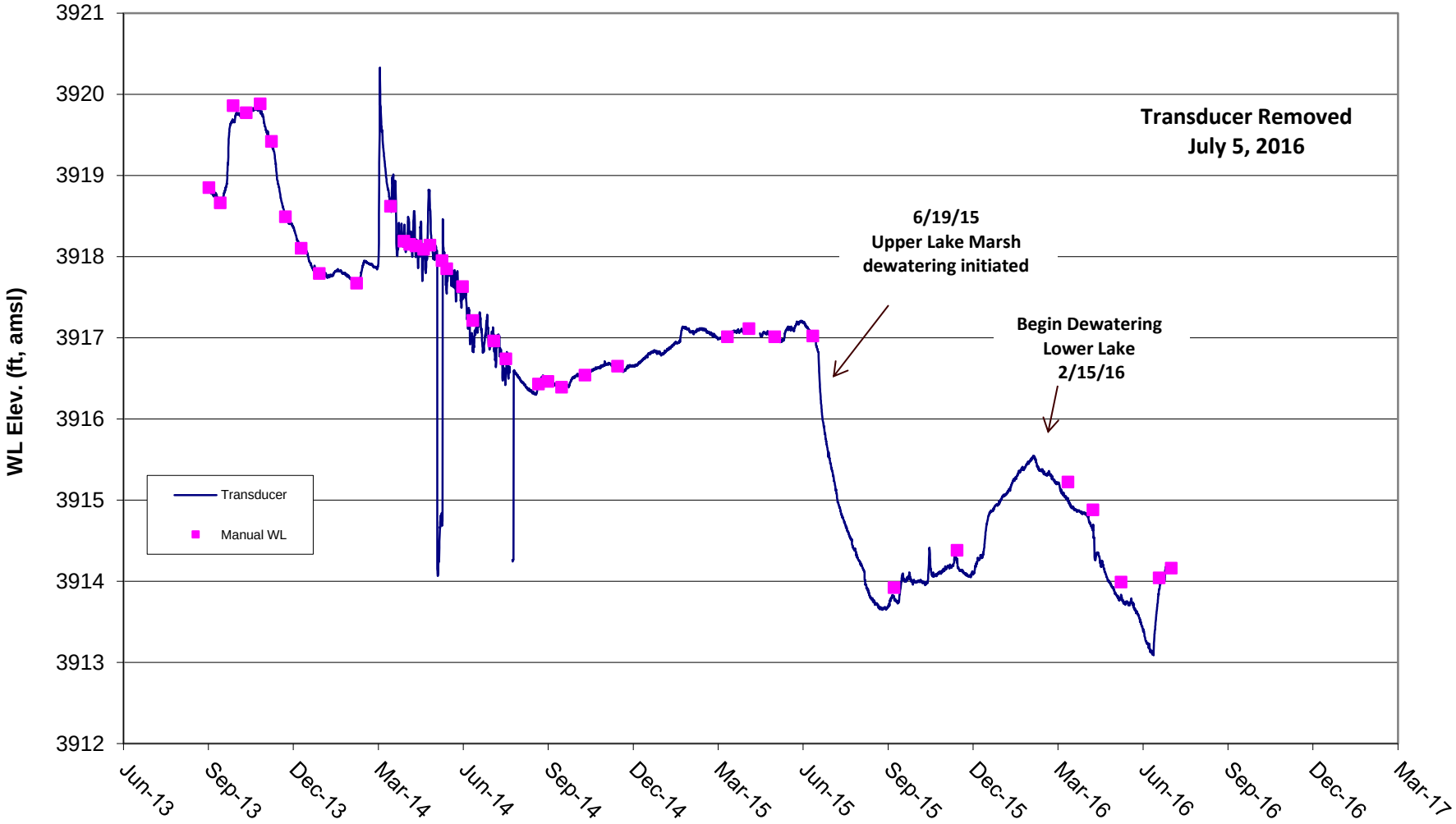
MW-6


WL Elev. (ft, amsl)
3914
3913
3912
3911
3910
3909
3908
3907
3906
3905
3904
3903
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Transducer
Manual WL
Transducer
not functioning
9/28/16-10/28/16


MW-8
WL Elev. (ft, amsl)
3910.0
3909.0
3908.0
3907.0
3906.0
3905.0
3904.0
3903.0
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Transducer Hung Up
on Replacement
Transducer
not functioning
9/28/16-10/28/16
Transducer
Manual WL


MW-11
WL Elev. (ft, amsl)
3912
3911
3910
3909
3908
3907
3906
Transducer
Manual WL
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17

PPCRPZ-02


WL Elev. (ft, amsl)
3921
3920
3919
3918
3917
3916
3915
3914
3913
3912
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Transducer
Manual WL
Transducer Removed
July 5, 2016
6/19/15
Upper Lake Marsh
dewatering initiated
Begin Dewatering
Lower Lake
2/15/16

EXHIBITS


WELLS NEAR CANYON FERRY ROAD
ROGAN RD
TIZER DR
BALDY DR
WYLIE DR
CANYON FERRY RD
EH-144S
EH-144D
EH-144M
EH-145S
EH-145D
2843 Canyon Ferry
2853 Canyon Ferry
Irrigation Canal
Valley
Helena
Prickly
Pear
Creek
WYLIE DRIVE
US HIGHWAY 12
EAST HELENA
FORMER EAST HELENA SMELTER
LOWER LAKE
EH-143
EH-142
EH-141
EH-140
EH-139
EH-138
EH-137
EH-131
EH-136
EH-130
EH-135
EH-134
EH-129
EH-126
EH-127
EH-70
EH-125
EH-133
EH-209
EH-120
EH-132
EH-208
EH-124
EH-119
EH-117
EH-128
EH-116
EH-113
EH-53
EH-62
EH-54
EH-114
EH-111
EH-112
EH-123
EH-118
EH-206
EH-115
EH-105
EH-65
EH-64
EH-63
EH-107
EH-57
EH-57A
EH-109
EH-110
EH-104
EH-100
SD-1
EH-50
EH-61
EH-103
EH-60
EH-51
EH-102
EH-52
EH-212
EH-211
EH-200
EH-210
EH-205
EH-201
EH-202
EH-204
EH-203
EH-66
EH-67
EH-122
EH-68
EH-69
EH-55
EH-56
EHTW-3
EHMW-3
IW-02
IW-01
PZ-9B
PZ-9A
PZ-36C
PZ-36A
PZ-36B
PZ-33B
PZ-103
PZ-102
ASIW-2
ASIW-1
East-PZ-1
East-PZ-2
East-PZ-7
East-PZ-4
East-PZ-5
AIRLIQNORTH
AIRLIQSOUTH
Amchem4
SP-5
SP-3
SP-4
DH-48
DH-63
DH-49
DH-24
DH-82
DH-50
DH-64
DH-51
STW-1
DH-1
PBTW-2
PBTW-1
PRB-2
PRB-1
PRB-3
DH-66
DH-16
DH-17
DH-78
DH-83
DH-8
DH-36
DH-58
DH-9
DH-73
DH-13
DH-12
DH-18
SDMW-1
SDMW-5
SDMW-2
DH-79
DH-62
DH-61
DH-33
TW-1
DH-57
TW-2
DH-21
DH-32
DH-34
DH-35
DH-23
DH-77
SDMW-3
SDMW-4
DH-37
DH-31
DH-38
DH-27
DH-30
DH-71
DH-2
DH-22
DH-80
DH-59
DH-72
DH-42
DH-19R
DH-47
DH-61
DH-70
DH-5
DH-5A
DH-4
DH-14
APSD-7
APSD-8
DH-20
MW-2
MW-3
MW-6
MW-7
MW-1
MW-4
MW-10
MW-5
MW-11
MW-9
MW-8
DH-3
ULTP-1
ULTP-2
PPCRPZ-02
PPCRPZ-01
PPCRPZ-03
GPPZ-06
PPCRPZ-04
GPPZ-12
GPPZ-14
ULM-PZ-1
ULM-PZ-2
PPCRPZ-05
GPPZ-18
PPCRPZ-06
PPCRPZ-07
DH-10A
DH-52
DH-53
DH-7
DH-65
DH-56
DH-75
DH-74
DH-55
DH-76
DH-11
DH-6
DH-15
DH-54
DH-67
DH-83
DH-76
DH-11
DH-5
DH-4
DH-14
DH-61
DH-20
ULTP-1
DH-3
DH-2
DH-8
DH-13
DH-12
DH-18
DH-36
DH-58
DH-9
DH-73
DH-55
DH-11
DH-70
DH-22
DH-80
DH-59
DH-72
DH-42
DH-19R
DH-47
DH-61
DH-5
DH-5A
DH-4
DH-14
APSD-7
PZ-103
APSD-8
PZ-102
AIRLIQNORTH
AIRLIQSOUTH
East-PZ-2
East-PZ-7
East-PZ-4
East-PZ-5
ASIW-2
ASIW-1
East-PZ-1
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
LEGEND
Monitoring Wells/Piezometers
Residential / Water Supply Wells
N
0 200 400 800 1,200
Scale in Feet
Hydrometrics, Inc.
Consulting Scientists and Engineers
2015-2016 WATER RESOURCES MONITORING REPORT EAST HELENA FACILITY
2015-2016 CAMP MONITORING WELL AND RESIDENTIAL / MUNICIPAL WATER SUPPLY WELL MONITORING NETWORK
EXHIBIT
1
Path: V:\10022\GIS\2015-2016 GW Report\Exhibit1_WellLocations.mxd
Date Saved: 5/31/2017 5:48:26 PM

0 200 400 800 1,200

Scale in Feet

N

Airport N-S (Aug 2002)

Airport S-S (Aug 2002)

Spokane Bedrock (West of Helena)

NOTE: Spokane Formation well located approximately 10 miles west; data obtained from Thamke (2000).

Motor Pool W (Aug 2002)

R&D Spring Upstream July 2010

EH 141 Oct 2010 | EH 141 (Oct 2016)

EH 139 Oct 2010 | EH 138 (Oct 2016)

EH 138 (Oct 2010) | EH 138 (Oct 2016)

EH 131 (Oct 2010) | EH 131 (Oct 2016)

EH 136 (Oct 2010) | EH 136 (Oct 2016)

EH 209 Oct 2010 | EH 209 June 2016

EH 126 (Oct 2010) | EH 126 (Oct 2016)

EH 120 (Oct 2010) | EH 120 (Oct 2016)

EH 132 (Oct 2010) | EH 132 (Oct 2016)

EH 124 (Oct 2010) | EH 124 (Oct 2016)

EH 54 (Oct 2010) | EH 54 (Oct 2016)

EH 208 (Oct 2010) | EH 208 June 2016

EH 206 (Oct 2010) | EH 206 (Oct 2016)

EH 111 Oct 2010 | EH 111 (Oct 2016)

EH 65 (Oct 2010) | EH 65 (Oct 2016)

EH 50 (Oct 2010) | EH 50 (Oct 2016)

EH 107 (Oct 2010) | EH 107 (Oct 2016)

EH 212 (Sept 2011) | EH 212 Oct 2015

EH 100 (Oct 2010) | EH 100 (Oct 2016)

EH 200 Oct 2010 | EH 200 Jun 2016

800 Manlove (Aug 2000) | 800 Manlove (Oct 2016)

701 Manlove (Sept 2011) | 701 Manlove (Oct 2016)

802 Manlove (Sept 2011) | 802 Manlove (Oct 2016)

DH 67 Oct 2010 | DH 67 (Oct 2016)

EH 201 Oct 2010 | EH 201 Jun 2016

EH 202 Oct 2010 | EH 202 Jun 2016

DH 17 Oct 2010 | DH 17 (Oct 2016)

DH 66 Oct 2010 | DH 66 (Oct 2016)

DH 56 (Oct 2010) | DH 56 (Oct 2016)

EH 204 Oct 2010 | EH 204 (Oct 2016)

EH 203 Oct 2010 | EH 203 Jun 2016

DH 42 (Oct 2010) | DH 42 (Oct 2016)

DH 20 (Oct 2010) | DH 20 (Oct 2016)

MW 2 (Oct 2010) | MW 2 (Jun 2016)

MW 3 (Oct 2010) | MW 3 (Jun 2016)

MW 7 (Oct 2010) | MW 7 (Jun 2016)

MW 1 (Oct 2010) | MW 1 (Jun 2016)

MW 4 (Oct 2010) | MW 4 (Jun 2016)

MW 6 (Oct 2010) | MW 6 (Jun 2016)

MW 5 (Oct 2010) | MW 5 (Jun 2016)

MW 10 (Oct 2010) | MW 10 (Jun 2016)

MW 11 (Oct 2010) | MW 11 (Jun 2016)

MW 9 (Oct 2010) | MW 9 (Jun 2016)

MW 8 (Oct 2010) | MW 8 (Jun 2016)

690 Smelter Rd Yard (Sept 2011) | 690 Smelter Rd Yard (Oct 2016)

PPCRPZ 06 (Nov 2014)

EH-141 EHTW-3 EHMW-3 EH-140 EH-139 EH-138 EH-131 EH-137 EH-136 EH-130 EH-135 EH-129 EH-134 EH-126 PZ-9A PZ-9B EH-127 EH-125 EH-70 EH-133 EH-209 EH-120 PZ-36A PZ-36B PZ-36C EH-121 EH-122 EH-66 EH-67 EH-132 WDPZ-3 EH-208 EH-124 EH-68 EH-89 EH-119 EH-117 EH-54 2-3 Gail Street 109 Gail Street 105 Gail Street 2 Gail Street 3 Gail Street 126 East Clinton EH-114 EH-118 EH-111 EH-112 EH-107 EH-65 EH-59 WDP WDPZ-2S EH-206 EH-123 EH-212 EH-211 EH-100 EH-50 EH-101 EH-51 EH-102 EH-52 EH-60 EH-61 EH-200 3845 US HWY 12 800 Manlove 802 Manlove 701 Manlove EH-201 EH-202 DH-67 SP-5 SP-3 DH-48 DH-1 SP-4 DH-15 DH-6 DH-10A DH-62 DH-63 DH-65 DH-56 DH-66 PRB-1 DH-16 DH-17 PZ-33A DH-58 DH-73 DH-9 DH-55 EH-204 DH-61 DH-62 SDMW-5 SDMW-2 DH-33 DH-34 DH-32 SDMW-3 DH-31 SDMW-4 DH-57 DH-23 EH-203 DH-2 DH-38 DH-27 DH-30 DH-71 DH-69 DH-68 DH-70 DH-5A DH-5 Lower Lake DH-14 DH-4 APSD-7 PZ-103 DH-29 APSD-2 APSD-12 MW-2 MW-3 APSD-4 APSD-10 APSD-11 PZ-102 APSD-8 DH-20 Upper Lake APSD-9 MW-6 MW-7 MW-1 MW-4 MW-10 MW-5 MW-11 MW-9 MW-8 DH-3 ULM-PZ-1 ULM-PZ-2 PPCRPZ-01 PPCRPZ-02 PPCRPZ-03 PPCRPZ-04 PPCRPZ-05 PPCRPZ-06 690 Smelter Rd Yard

LEGEND

Surficial Geology

- Qac - Alluvium/Colluvium
- Qa - Alluvium
- Qt - Terrace Gravel
- QTg - Older Gravel
- OGts - Tuff and Tuffaceous Sediment
- Ys - Spokane Formation

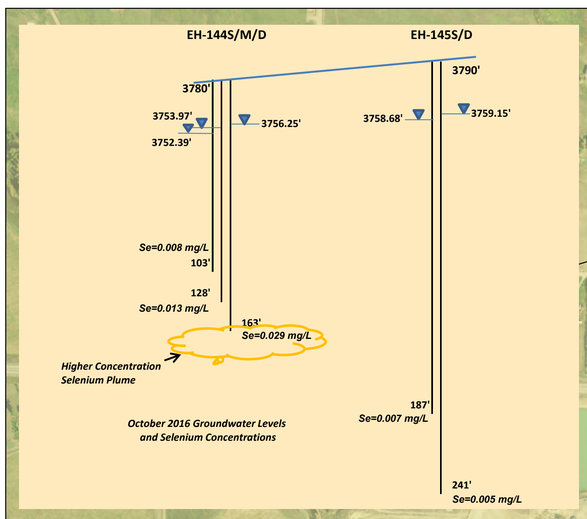
Stiff Diagram Categories

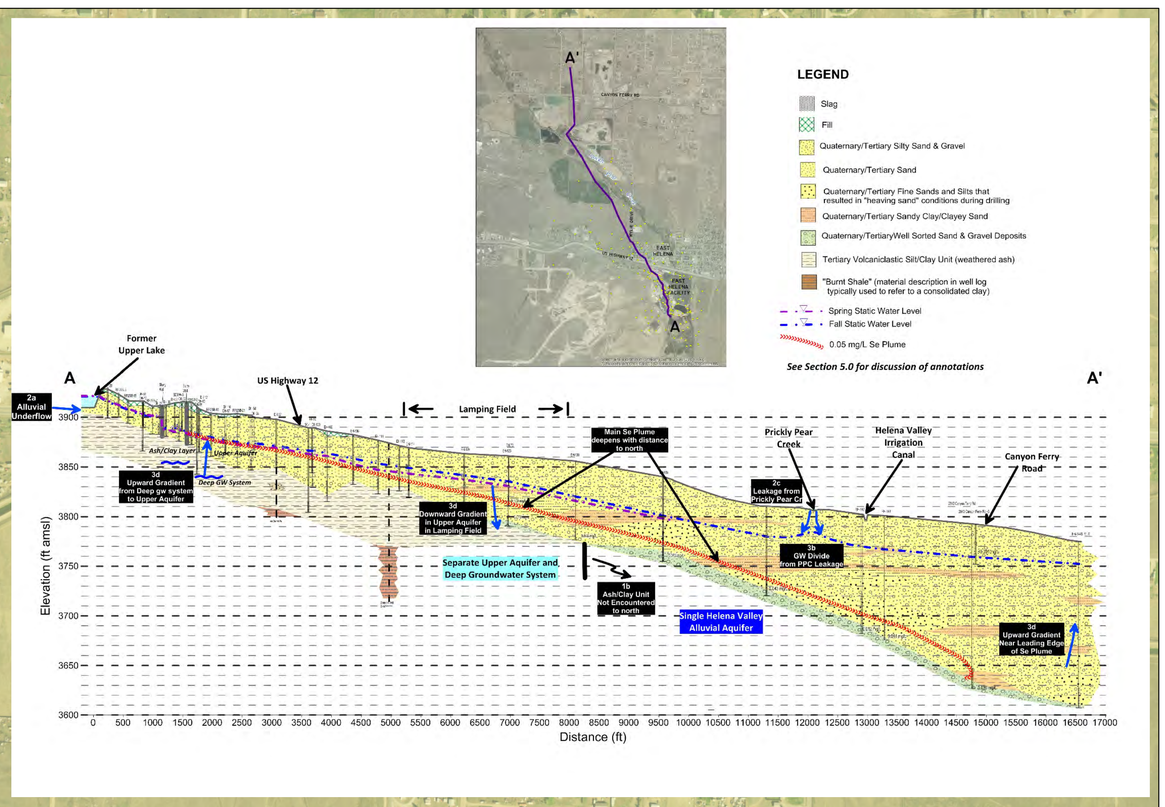
- Calcium-Bicarbonate (ambient alluvial/colluvial groundwater)
- Calcium-Bicarbonate-Sulfate
- Calcium-Sodium-Bicarbonate-Sulfate
- Magnesium-Bicarbonate (Spokane Formation bedrock groundwater)
- Sodium-Bicarbonate
- Sodium/Potassium-Sulfate (Central Plant/Slag Pile)
- Calcium-Sulfate (Western Plant)

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Hydrometrics, Inc. Consulting Scientists and Engineers	2015 - 2016 WATER RESOURCES MONITORING REPORT EAST HELENA FACILITY	**GROUNDWATER STIFF DIAGRAM COMPARISON FOR SELECTED WELLS**	**EXHIBIT 2**





3d - Upward hydraulic gradient

EH-144S/M/D

7e - NorthernSe plume stratification

3d - Upward hydraulic gradient

EH-145S/D

7a - High Se mobility; plume stability under evaluation

CANYON FERRY RD

Canal

GRAVEL PIT PONDS

Lagoon

Helena Valley

3775

Prickly Pear

3800

Creek

3825

3c - Gravel pit drain decreases groundwater divide

7

Selenium Plume Features and Geochemistry

7a. Higher mobility of selenium compared with arsenic results in further downgradient migration; northward shift in direction north of PPC
7b. Westward shift in selenium plume in Lamping Field due to loss of seasonal leachage from Wilson Ditch
7c. Lamping Field downward vertical gradient
7d. Higher Se concentrations in low K shallow zone may release Se to higher K zones through matrix diffusion
7e. Vertical stratification of Se concentrations at north end of plume

3

Groundwater Flow Patterns:

3a. Historic PPC channel - preferential groundwater flowpath through Facility
3b. Groundwater flow from south to north/northwest influenced by Prickly Pear Creek leakage causes selenium plume to parallel creek
3c. Gravel pit drain decreases groundwater mounding, flow and plume direction shift to north
3d. Variable vertical hydraulic gradients

1b - Ash/Clay Unit absent; single valley fill aquifer to north

2b

2b

2d

Qac

LAMPING FIELD

EH-70/125

3d - Downward hydraulic gradient

2d - Former Wilson Ditch Recharge

2b

SEAVER PARK

2d

7b - Westward Se plume shift

2011 Boundary

2016 Boundary

3b - Flow and Se plume parallels creek

2c - PPC Leakage

7d - Matrix diffusion from low K/high Se zone to high K/low Se zone

EH-70 EH-125

silty sand 40' 50'

0.120 mg/L

sandy gravel 59' 69'

0.053 mg/L

5

Arsenic Plume Features and Geochemistry

5a. Low redox zone in central plant site from historic hydrocarbon releases, extends into East Helena coincident with highest groundwater arsenic concentrations
5b. Arsenic migration attenuated through adsorption/coprecipitation, limits offsite extent of plume. 0.01 mg/L As plume boundary currently stable

WYLIE DRIVE

5b - Attenuated As plume; stable perimeter for 20+ years

3850

Ys

OGts

US HIGHWAY 12

Ditch

EAST HELENA

2b - Lateral Tertiary groundwater inflow

2d

Qa

4e - N Plant As Area Secondary source

5a - Low redox zone and preferential flowpath

4d - West Se Area Diminishing source mass

3d - Upward hydraulic gradient

FORMER EAST HELENA SMELTER

SLAG PILE

4f - Slag Pile Upper unfumed lift Se source

2b

4b - Former Speiss/Dross Area (<1 gpm flux)

SPEISS/DROSS SLURRY WALL

3a - Historic PPC channel

FORMER LOWER LAKE

4a - Former Acid Plant 2016 source removal area

APSD SLURRY WALL (EXCAVATED 2014)

4c - South Plant 2014/15 source removal area

Qac

OGts

Qa

FORMER UPPER LAKE/ MARSH AREA

Qt

2a - Alluvial Underflow

3925

6

6a. Tertiary groundwater flow from southwest contains background concentrations of 0.005 to 0.020 mg/L arsenic ("West Arsenic Area")

QTg

4

Historic and Current Contaminant Source Areas on Facility:

4a. Former Acid Plant (Source Removal in 2016)
4b. Speiss/Dross Area (Slurry Wall in 2007)
4c. South Plant - Tito Park, Upper Ore Storage Area, APSD Area(Source Removal 2014/15)
4d. West Selenium Area
4e. North Plant Site Arsenic Area
4f. Slag Pile

1

Project area hydrostratigraphy

1a. Facility north through Lamping Field:
Upper Aquifer - Unconsolidated Quaternary and Tertiary alluvium (sand/gravel/silt)
Altered Tertiary volcanic ash (aquitard)
Deeper Tertiary sediments (silts with lenses of sand and gravel)
1b. Absence of ash/clay aquitard 1 mile and further north of Facility, upper aquifer and deep groundwater systems merge into one valley fill aquifer

2

Groundwater recharge sources include:

2a. Inflow through Prickly Pear Creek alluvium (Qa)
2b. Lateral inflow from Tertiary sediments to east and west (OGts) and Spokane bedrock to west (Ys)
2c. Leakage from Prickly Pear Creek between the Facility and Canyon Ferry Road
2d. Loss of Wilson Ditch recharge after decommissioning

NOTE: See additional discussion of Conceptual Site Model components 1-7 in Section 5.0

LEGEND

- Monitoring Wells

Oct 2016 Potentiometric Contours

- 5-foot Contour
- 5-foot Contour (Inferred)
- Groundwater Flow Direction

Oct 2016 As Contours

- 0.011 - 0.100 mg/L
- 5.01 - 10.0 mg/L
- West Arsenic Area (Background) As Plume (Boundary Indeterminate)

Oct 2016 Se Contours

- 0.051 - 0.100 mg/L
- 1.01 - 3.0 mg/L

Surficial Geology

- Qac - Alluvium/Colluvium
- Qa - Alluvium
- Qt - Terrace Gravel
- QTg - Older Gravel
- OGts - Tuff and Tuffaceous Sediment
- Yg - Greyson Formation
- Ys - Spokane Formation

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Consulting Scientists and Engineers

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N

0 0.1 0.2 0.3 0.4 0.5

Scale in Miles

2015-2016 WATER RESOURCES MONITORING REPORT
EAST HELENA FACILITY

EAST HELENA FACILITY GROUNDWATER CONCEPTUAL SITE MODEL

EXHIBIT 3