FINAL

BASELINE MONITORING REPORT

2023 Annual Baseline Monitoring Report
Red Devil Mine, Alaska

Order Number: 140L6322P0046

Submitted to:
U.S. DEPARTMENT OF INTERIOR
BUREAU OF LAND MANAGEMENT
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ACRONYMS AND ABBREVIATIONS

BLM	Bureau of Land Management
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	contaminant of concern
DO	dissolved oxygen
DoD	Department of Defense
DQO	Data Quality Objectives
E&E	Ecology and Environment Inc.
EPA	U.S. Environmental Protection Agency
FS	Feasibility Study
IDW	Investigation Derived Waste
mg/L	milligrams per liter
MPA	Main Processing Area
MPC	measurement performance criteria
MS	mass spectrometry
MS/MSD	matrix spike/matrix spike duplicates
MW	Monitoring Well
ng/L	nanograms per liter
No.	Number
ORP	oxidation reduction potential
PARCC	Precision, Accuracy, Representativeness, Completeness, and. Comparability
PPE	personal protective equipment
QAPP	Quality Assurance Project Plan
QC	Quality Control
RDM	Red Devil Mine
Report	2023 Annual Baseline Monitoring Report
RI	Remedial Investigation
RPD	relative percent difference

ACRONYMS AND ABBREVIATIONS (CONCLUDED)

SMA	Surface Mined Area
Sundance	Sundance Consulting, Inc.
TAL	Target Analyte List
TDS	Total dissolved solids
TSS	Total suspended solids
Work Plan	Final Work Plan, Groundwater and Surface Water Baseline Monitoring, Red Devil Mine, Alaska

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1 INTRODUCTION

This 2023 Annual Baseline Monitoring Report (Report) presents the findings of the 2023 spring and fall baseline groundwater and surface water monitoring efforts performed at the Red Devil Mine (RDM) site (Figure 1-1). The RDM is an abandoned mercury mine and ore processing facility located on public lands managed by the Bureau of Land Management (BLM) in southwest Alaska. Historical mining activities included underground and surface mining and ore processing. On-site ore processing included crushing, retorting/furnacing, milling, and flotation. Sundance Consulting, Inc. (Sundance), prepared this Report on behalf of the BLM under Order Number (No.) 140L6322P00460001.

This Report summarizes the field activities, procedures, and results for the 2023 spring and fall baseline monitoring of groundwater and surface water efforts performed at RDM site.

1.1 PURPOSE AND OBJECTIVES

The purpose of baseline monitoring was to collect surface water and groundwater samples, as well as stream discharge and groundwater elevation data during spring and fall to inform remedial actions at the RDM. Baseline monitoring expands upon work that began during the 2011–2014 Remedial Investigation (RI) (Ecology and Environment, Inc. [E&E], 2014) and continued through the 2015–2018 Supplemental RI (E&E, 2018) and simultaneous annual baseline monitoring for groundwater and surface water during spring and fall. The objectives are to:

- Characterize the seasonal variability in groundwater and surface water hydrology and quality; and
- Characterize the long-term (multiple year) variability in groundwater and surface water hydrology and quality.

1.2 PROJECT LOCATION, SETTING, AND AREAS

The RDM site is located approximately 250 miles west of Anchorage, Alaska. Located on the southwest bank of the Kuskokwim River, approximately 2 miles southeast of the village of Red Devil, the site is 8 miles northwest of the village of Sleetmute, and 75 miles northeast of Aniak, the largest village in the region. Fifteen villages are located downstream of Red Devil on the Kuskokwim River. The legal description for the RDM site is Township 19 North, Range 44 West, Southeast Quarter of Section 6, Sleetmute D-4 Quadrangle, Seward Meridian. The RDM site's approximate coordinates are 61° 45' 38.1" north latitude and 157° 18' 42.7" west longitude (North American Datum 1927). The RDM site is in a remote location, and access to the site is available by boat or barge on the Kuskokwim River or by means of an airstrip at the nearby village of Red Devil. An unimproved road leads from the airstrip through the village of Red Devil to the RDM site. Access to the RDM site is restricted by two locked gates, one on the unimproved road and a boat landing along the Kuskokwim River.

Historical mining operations left tailings and other remnants that have affected local soil, surface water, sediment, and groundwater. Based on the locations of tailings and other features, baseline monitoring is focused on surface water and groundwater in the following areas as shown on historical Figure 1-2 (E&E, 2021):

- **Main Processing Area (MPA)**—The MPA contained most of the former site structures and was where ore beneficiation and mineral processing was conducted. The area is split by Red Devil Creek. Underground mine openings (e.g., shafts, adits, and stopes to the surface) and ore processing and mine support facilities (e.g., housing and warehousing) were located on the west side of Red Devil Creek until 1955. After 1955, all ore processing was conducted at structures and facilities on the east side of Red Devil Creek.
    - The MPA includes three monofills, which are essentially landfills that contain demolished mine structure debris and other material. Two of the monofills, #1 and #3, are unlined. Monofill #2, on the east side of Red Devil Creek, is an engineered and lined containment structure for building debris and materials from the demolished post 1955 retort structure.
- **Surface Mined Area (SMA)**—The SMA is located west of the MPA where historical surface exploration and mining occurred. The SMA is partially underlain by underground mine workings. The "Dolly Sluice" and "Rice Sluice" and their respective deltas on the bank of the Kuskokwim River are associated with the SMA.
- **Vicinity of Proposed Repository**—The Proposed Repository is located uphill of the SMA on the north side of Red Devil Creek.
- **Red Devil Creek**—Red Devil Creek extends from a reservoir upstream of the MPA to the creek's delta at its confluence with the Kuskokwim River.
- **Seep (RD05)**—The Seep is located on the north bank of Red Devil Creek downgradient of the former mine operations and tailings area.

2 BASELINE MONITORING FIELD ACTIVITIES

All field activities were performed in accordance with the Final Work Plan, Groundwater and Surface Water Baseline Monitoring, Red Devil Mine, Alaska ([Work Plan], BLM, 2019), and the addendum to the Work Plan (Sundance, 2023a). Field activities included tailgate safety meetings, the assessment of the operational status of the monitoring well network, synaptic measurement of groundwater elevations, downloading of transducer data, groundwater sampling, Red Devil Creek and Seep discharge gauging, and surface water sampling. All field documentation, including Tailgate Safety Field Forms, Monitoring Well Integrity Checklists, field notebooks, groundwater sampling forms, surface water sampling forms, and calibration logs, and groundwater elevation logs are provided in Appendix A. Photographic documentation is provided in Appendix B and includes a photograph index log with detailed descriptions included in the caption of each photograph collected during the field activities.

Spring and fall field activities occurred between 14 June 2023 and 20 June 2023, and 19 September 2023 and 07 September 2023, respectively. For the spring sampling event, the field team consisted of the field team lead, Site Health and Safety Officer, George Garner, and Field Technician, Will Martin (Sundance, 2023b). For the fall sampling event, the field team consisted of the field team lead, Site Health and Safety Office, George Garner, and Field Technician, Nick Potter. A tailgate safety meeting was held with the field team before the start of each day. As field conditions changed during the day because of type of activity or site conditions, participants had undocumented impromptu safety breaks to discuss changing conditions and how they may apply to health and safety during field visit activities. Tailgate safety meeting forms are provided in Appendix A.

An initial site walk was conducted to assess the site conditions, assess the operational status of the monitoring well network, clear the trail system from recent deadfall from the previous winter and summer seasons, perform a synaptic measurement of groundwater elevations across the site within a 24-hour period, and download transducer data. The initial site walk was followed by low-flow groundwater sampling and field maintenance of groundwater monitoring wells. After completing groundwater well sampling, the field team performed surface water discharge measurements within Red Devil Creek and Seep and surface water sampling of Red Devil Creek. Each baseline monitoring field activity is further described in the following sections. Associated field documentation of the monitoring well survey, groundwater sampling, and surface water sampling are provided in Appendix A.

2.1 GROUNDWATER ELEVATIONS

Groundwater elevation during the spring and fall 2023 baseline monitoring events consisted of the following:

- Measuring static water levels at all accessible monitoring wells at the RDM site within a 24-hour period to collect a “synaptic snapshot” of groundwater levels.
- Downloading of continuous water level measurements from pressure transducers installed within specific monitoring wells.

The groundwater static water levels were measured on 14 June 2023 and 09 September 2023. Static water level measurements were augmented with the continuous water level measurements

collected from pressure transducers installed within specific monitoring wells between fall 2017 and fall 2023, as described in the Work Plan (BLM, 2019, and Sundance, 2023a).

Synaptic groundwater elevations for spring and fall 2023 are shown on Figure 2-1 and Figure 2-2, respectively, and tabulated in Table 2-1. Pressure transducer data recorded between September 2020 and September 2023 were downloaded during the spring and fall 2023 field events, and the transducers were then reinstalled on monitoring wells MW50, MW51, MW53, MW54, MW56, MW57, MW58, and MW59, as noted on Figure 1-1. Pressure transducer data logger files containing depth of submersion time series data were corrected for barometric pressure and converted to groundwater elevations using the data collected from the MW59 barologger. The resulting groundwater elevation time series plots are presented on Figure 2-3.

2.2 RED DEVIL CREEK AND SEEP DISCHARGE GAUGING

During the 2023 baseline monitoring spring and fall events, Red Devil Creek and Seep discharge gauging was conducted at five locations along Red Devil Creek between the creek's mouth at the Kuskokwim River and the historical reservoir south-southwest of the MPA. Surface water monitoring locations are illustrated on Figure 1-1.

Surface water discharge was measured using the mid-section method at creek monitoring locations following the mid-section methodology described in the Work Plan (BLM, 2019). At the Seep (RD05), discharge was measured using the timed fill method described in the Work Plan (BLM, 2019). Surface water discharge values are tabulated in Table 2-2.

2.3 GROUNDWATER SAMPLING

Groundwater sampling during the 2023 baseline monitoring spring and fall events was conducted at 28 existing monitoring wells identified on Figure 1-1. All monitoring wells were sampled using dedicated bladder pumps. Groundwater samples were collected for the following analyses:

- Total target analyte list (TAL) metals by U.S. Environmental Protection Agency (EPA) Method 6010D/6020B
- Total low-level mercury by EPA Method 1631E
- Dissolved low-level mercury by EPA Method 1631E
- Field water quality parameters including temperature, specific conductivity, dissolved oxygen (DO), pH, oxidation reduction potential (ORP), and turbidity

Field water quality measurements were collected at each monitoring well prior to groundwater sample collection. Groundwater samples were collected using low-flow sampling methodologies described in the Work Plan (BLM, 2019) with a dedicated bladder pump with a maximum flow rate of 0.5 liters per minute. Analytical data for groundwater samples collected during the spring and fall events are tabulated in Table 2-3 and Table 2-4, respectfully.

2.4 SURFACE WATER SAMPLING

Surface water sampling during the 2023 baseline monitoring spring and fall events was conducted at five locations from just upstream of RDM (historical reservoir) to the point where Red Devil Creek discharges into the Kuskokwim River as identified on Figure 1-1.

Surface water samples were collected for the following analyses and methods:

- Total TAL metals by EPA Method 6010D/6020B
- Total low-level mercury by EPA Method 1631E
- Total suspended solids (TSS) by Method SM 2540D
- Total dissolved solids (TDS) by Method SM 2540C
- Inorganic ions by Method MCAWW 300.0
- Nitrate/nitrite (as N) by Method MCAWW 353.2
- Field water quality parameters, including temperature, specific conductivity, DO, pH, ORP, and turbidity

Surface water samples were collected using a battery-operated peristaltic pump outfitted with certified-clean, dedicated silicone tubing following sampling methodologies described in the Work Plan (BLM, 2019). Analytical data for surface water samples during the spring and fall events are tabulated in Table 2-5 and Table 2 6, respectively.

2.5 SAMPLE HANDLING

Sample handling (e.g., chain-of-custody and field documentation) was conducted as described in the Work Plan (BLM, 2019).

2.6 QUALITY CONTROL SAMPLES

Field quality control (QC) samples, including field duplicates and matrix spike/matrix spike duplicates (MS/MSD), were collected for all matrices (e.g., groundwater and surface water) and analytes as described in the Work Plan (BLM, 2019).

2.7 INVESTIGATION-DERIVED WASTE MANAGEMENT

Investigation-derived waste (IDW) generated during the 2023 baseline monitoring spring and fall events included the following:

- Monitoring well purge water.
- Used dedicated and disposable sampling equipment, personal protective equipment (PPE), and paper towels.
- Decontamination fluids generated during groundwater sampling.

IDW was managed in accordance with the Work Plan (BLM, 2019). Purge water, decontamination water, paper towels, used tubing, and disposable PPE were disposed of in accordance with the procedures described in the Work Plan (BLM, 2019 and Sundance, 2023a).

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3 VARIANCES

During the 2023 baseline monitoring spring and fall field activities, the following deviations were made from the Work Plan (BLM, 2019). These deviations did not affect project data quality objectives (DQOs) or final conclusions and recommendations. Deviations resulted from field conditions, field observations, field access, available resources on a remote site, and schedule adjustments. Deviations were documented in the field logbooks provided in Appendix A. There were three deviations from the Work Plan (BLM, 2019):

- MW12 was not gauged in spring or fall due to a blockage inside the well casing. The well is no longer measurable.
- Total mercury analysis was not analyzed by the analytical laboratory during the fall 2023 event at MW46 due to only one sample container collected in the field for both total and dissolved mercury analysis. The analytical laboratory only analyzed dissolved mercury at MW46 during the fall 2023 event.
- Analytical methods 300 and 310.1 were not analyzed by the analytical laboratory during the fall 2023 event for monitoring location RD08B; however, the duplicate sample collected from RD08B (0923RD99SW) was analyzed for both methods.

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4 BASELINE MONITORING RESULTS

4.1 GROUNDWATER ELEVATION AND SURFACE WATER DISCHARGE MONITORING

Groundwater elevations for all active groundwater wells at RDM were collected during a single 24-hour period during both the spring and fall sampling events. Table 2-1 presents depth to groundwater measurements and calculated groundwater elevations for monitoring wells during the spring and fall 2023 baseline monitoring events. Transducer data were collected from monitoring wells during the same period to allow for pressure and groundwater depth correction. Table 2-1 presents the physically measured groundwater elevations, not the groundwater elevations calculated by pressure transducers.

Surface water discharge measurements were collected during both spring and fall events. Estimated surface water discharge calculations for Red Devil Creek surface water stations during the spring and fall 2023 baseline monitoring events are presented in Table 2-2.

Based on static water elevations, stream elevations, and discharge measurements along Red Devil Creek, and excluding transducer data, groundwater potentiometric surface and surface water discharge maps for the spring and fall 2023 baseline monitoring were generated and are presented on Figure 2-1 and Figure 2-2.

Pressure transducer data was not used to create the potentiometric groundwater surface maps (Figure 2-1 and Figure 2-2).

Pressure transducer data logger files containing depth of submersion time series data were corrected for barometric pressure and converted to groundwater elevations. The resulting groundwater elevation time series plots are presented on Figure 2-3. Spring and fall groundwater well and stream gauging data is included in Appendix C.

4.1.1 Groundwater Results

Analytical results for groundwater samples collected during the 2023 spring and fall baseline monitoring event are presented in Table 2-3 and Table 2-4. Maps of all sampling locations with corresponding analytical results for antimony, arsenic, total low-level mercury, and dissolved low level mercury are presented on Figure 4-1 through Figure 4-6. Analytical Laboratory Data reports are included in Appendix E. Analytical results are consistent with past sampling results.

4.1.2 2023 Spring Groundwater Results

Twenty-eight primary groundwater samples were collected during the 2023 spring monitoring event. Duplicate samples were collected from the following monitoring wells per the Final Baseline Quality Assurance Project Plan (QAPP), which is included as an appendix to the Work Plan (BLM, 2019): MW10, MW49, and MW52. A summary for analytical results for groundwater samples is provided in Table 2-3 and shown on Figure 4-1 through Figure 4-3.

- Antimony was detected in all groundwater samples except for MW45, MW46, and MW51. Antimony concentrations ranged from 0.00015 J to 0.35 milligrams per liter (mg/L) with the highest concentration in groundwater sample 0623MW33GW.

- Arsenic was detected in all groundwater samples except for MW47. Arsenic concentrations ranged from 0.00027 J to 3.0 mg/L with the highest concentration in groundwater sample 0623MW42GW.
- Total mercury was detected in all groundwater samples. Total mercury concentrations ranged from 2.9 to 16,000 nanograms per liter (ng/L) with the highest concentration in groundwater sample 0623MW42GW.
- Dissolved mercury was detected in all groundwater samples. Dissolved mercury concentrations ranged from 0.79 to 4,100 ng/L with the highest concentration in groundwater sample 0623MW42GW.

4.1.3 2023 Fall Groundwater Results

Twenty-eight primary groundwater samples were collected during the 2023 fall event. Duplicate samples were collected from the following three monitoring wells per the QAPP in the Work Plan (BLM, 2019): MW16, MW17, and MW43. A summary for analytical results for groundwater samples is provided in Table 2-4 and shown on Figure 4-4 through Figure 4-6.

- Antimony was detected in 17 of 28 groundwater samples. Antimony concentrations ranged from 0.0008 J to 1.1 mg/L with the highest concentration in groundwater sample 0923MW16GW.
- Arsenic was detected in 27 of the 28 primary groundwater samples. Groundwater sample 0923MW47GW was non-detect. Arsenic concentrations ranged from 0.00029 J to 1.5 mg/L with the highest concentration in groundwater sample 0923MW46GW.
- Total mercury was detected in all groundwater samples. Total mercury concentrations ranged from 1.3 J+ to 4,800 ng/L with the highest concentration in groundwater sample 0923MW42GW. Total mercury analysis was not conducted by the analytical laboratory for well MW46.
- Dissolved mercury was detected in all groundwater samples. Dissolved mercury concentrations ranged from 0.49 J to 970 ng/L with the highest concentration in groundwater sample 0923MW27GW.

4.2 SURFACE WATER RESULTS

Analytical results of surface water sampling conducted during the 2023 spring and fall baseline monitoring events are presented in Table 2-5 and Table 2-6. Data quality assurance review memoranda are provided in Appendix E. Maps of all sampling locations with corresponding analytical results for antimony, arsenic, mercury are presented on Figure 3-7 through Figure 3-8. Analytical results are consistent with past sampling results.

4.2.1 2023 Spring Surface Water Results

During the 2023 spring baseline monitoring event, five surface water samples and one field duplicate sample, 0623RD99SW (field duplicate of 0623RD08BSW), were collected from Red Devil Creek. A summary of analytical results for spring surface water samples is provided in Table 2 5 and shown on Figure 3-7.

- Antimony was detected in all surface water samples. Antimony concentrations ranged from 0.0016 to 0.18 mg/L with the highest concentration in surface water sample 0623RD08BSW.
- Arsenic was detected in all surface water samples. Arsenic concentrations ranged from 0.0013 to 1.2 mg/L with the highest concentration in surface water sample 0623RD05SW.
- Mercury was detected in all surface water samples. Mercury concentrations ranged from 2.9 to 1,700 ng/L with the highest concentration in surface water sample 0623RD08BSW.

4.2.2 2023 Fall Surface Water Results

During the 2023 fall baseline monitoring event, five surface water samples and one field duplicate sample, 0923RD99SW (field duplicate of 0923RD08BSW), were collected from Red Devil Creek. A summary for analytical results for fall surface water samples is provided in Table 2-6 and shown on Figure 4-8.

- Antimony was detected in all surface water samples. Antimony concentrations ranged from 0.0015 to 0.22 mg/L, with the highest concentration in surface water sample 0923RD99SW (field duplicate of 0923RD08BSW).
- Arsenic was detected in all surface water samples. Arsenic concentrations ranged from 0.0012 to 0.96 mg/L with the highest concentration in surface water sample 0923RD05SW.

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5 DATA USABILITY ASSESSMENT

A third-party data validation was performed on 100% of the surface water and groundwater analytical data generated during the 2023 spring and fall sampling events. The validation was inclusive of validation levels Stage 2B (90%) and Stage 4 (10%). The data were validated in accordance with the QAPP (BLM, 2019), EPA National Functional Guidelines for Inorganic Superfund Methods Data Review (EPA, 2017), and the Department of Defense (DoD) Quality Systems Manual for Environmental Laboratories Version 5.1 (DoD, 2017).

DQOs are both qualitative and quantitative statements that define the type, quality, and quantity of data necessary to support the decision-making process during project activities. To ensure the collection of data of the type and quality required for project decision-making, data validation results were evaluated for the DQO data quality indicators of precision, bias (accuracy), representativeness, comparability, and completeness (formerly precision, accuracy, representativeness, completeness, and comparability [PARCC] parameters), as outlined in the QAPP. Data quality indicators were evaluated according to analytical and field QC activity and associated measurement performance criteria (MPC). The results of the evaluation were used to assess data usability and completeness.

Spring surface water and groundwater samples were qualified as non-detect (U) for low-level detections or estimated (J or J+) in method blanks, continuing calibration blanks, initial calibration blanks, equipment blanks, or trip blank samples for metals, low-level mercury, and general chemistry analyses for one or more of the following analytes during the spring sampling event:

- Antimony
- Barium
- Chromium
- Low-Level Mercury
- Manganese
- Nickel
- Nitrate/Nitrite
- Potassium
- Silver
- Thallium
- Zinc

During the spring sampling event, metals field duplicate pairs 0623MW98GW / 0623MW17GW, 0623MW99GW / 0623MW10GW, 062397GW / 0623MW55GW, and 0623RD99SW / 0623RD08SW had relative percent differences (RPDs) lower than the control limit for mercury. Associated sample results in the field duplicate pairs outside of control limits were qualified as (J) for detects. The total mercury results for 0623MW99GW and 0623MW10GW were qualified as estimated (J).

Fall surface water and groundwater data were qualified as non-detect (U) for low-level detections or estimated (J or J+) in method blanks, continuing calibration blanks, initial calibration blanks, equipment blanks, or trip blank samples for metals and low-level mercury analyses for one or more of the following analytes during the fall sampling event:

- Chromium
- Cobalt
- Copper
- Iron
- Lead
- Manganese
- Nickel
- Thallium
- Vanadium
- Zinc
- Low-Level Mercury

Accuracy/bias qualifications did not impact data usability.

Analytical laboratory reports are provided in Appendix D. Further detailed data validation and quality assessment information is provided in the Data Validation Reports in Appendix E.

5.1 DATA USABILITY ASSESSMENT

The analytical data completeness for the fall and spring sampling events is 100%. No sample results were rejected or unsuitable for use in project decision-making. Metals, mercury, and anion samples were qualified as estimated (J or U) for low-level field and analytical blank contamination during both events, indicating minor uncertainty in sample representativeness. In addition, sample results were qualified as estimated (J or U) for minor deviations in accuracy/bias and field precision during both sampling events, indicating minor uncertainty. However, qualified data are considered acceptable for use in project decision-making.

6 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

During the 2023 Annual Baseline Monitoring field efforts, samples were collected from groundwater monitoring wells in three areas: the MPA, the SMA, and the vicinity of the Proposed Repository. Additionally, surface water samples were collected from Red Devil Creek and a perennial seep that discharges into Red Devil Creek. The analytical results of these groundwater and surface water samples were reviewed and compared with historical data to identify concentration trends.

6.1 GROUNDWATER

The groundwater analytical results from the 2023 sampling efforts are consistent with results from historical sampling efforts at RDM as seen in Final 2020 Baseline Monitoring Report, Red Devil Mine, Alaska (E&E, 2021).

Groundwater elevation results for the 2023 sampling efforts are consistent with trends defined during the RI/Feasibility Study (FS).

The water table surface in the upper SMA and the MPA mimics topography and flows toward Red Devil Creek. Groundwater flow in the lower SMA is locally perturbed by historical mine workings. Although the underground workings have very likely collapsed, this tunnel network is much more conductive than the surrounding bedrock. Consequently, the water table is depressed around the workings. Because the conductivity of the bedrock aquifer is relatively low, the depressed water table extends only a short distance outside of the zone where the tunnel network is prevalent, creating a very steep gradient. The overall effect of the underground workings is very localized (refer to Figure 2-1 and Figure 2-2). In general, groundwater flow within the entire SMA is toward Red Devil Creek.

Continuous groundwater elevation data recorded in 2023 using transducers extends the temporal trends established in previous years, as shown on Figure 2-3. In late spring, groundwater elevations rise quickly to a maximum elevation that correlates with spring breakup. The seasonal maximum elevation lasts only a few days, followed by a recession that extends until the following spring. Water table elevations vary slightly over the summer and fall months in response to local precipitation. Once subsurface freezing becomes prevalent during the winter, water table elevations decrease steadily until the following spring breakup, which is typically in May.

The concentrations of the three primary contaminants of concern (COCs), antimony, arsenic, and mercury, in the groundwater samples from the 2023 baseline monitoring events are within the range expected based on review of data collected during the RI and previous baseline monitoring. Measured concentrations of COCs in individual monitoring wells reflect conditions at that location. The highest COC concentrations occur in the monitoring wells installed in tailings/waste rock in the MPA. Concentrations of these primary COCs are highly variable in the SMA, reflecting the influence of natural mineralization in the immediate vicinity of each monitoring well. In general, groundwater COC concentrations do not appear to be influenced by seasonal water level fluctuations. Minor fluctuations can be seen in some monitoring wells but are generally not consistent across all monitoring wells. Graphs of groundwater primary COC concentrations and water level measurements for all monitoring wells are presented on Figure 6-1 and Figure 6-2.

6.2 SURFACE WATER

The surface water analytical results from the 2023 sampling efforts are consistent with results from historical sampling efforts at RDM as seen in Final 2020 Baseline Monitoring Report, Red Devil Mine (E&E, 2021).

The 2023 concentrations of the three primary COCs, antimony, arsenic, and mercury, in the surface water samples are within the range established during the RI. The highest concentrations were detected in samples collected from the Seep (RD05) and RD08B. Comparison of COC concentrations with stream discharge data indicates no correlation. Graphs of surface water primary COC concentrations and discharge measurements for all locations are found on Figure 6-3 and Figure 6-4.

6.3 RECOMMENDATIONS

Groundwater sampling and analysis has evolved through the RI/FS phases of this Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) project from characterization to baseline monitoring. Initial goals of groundwater sampling and analysis were consistent with the overall objectives of the RI and were focused primarily on the area along the lower reach of Red Devil Creek referred to as the MPA. Additional monitoring wells have been installed since the initial RI was completed that have broadened our understanding of flow within the bedrock aquifer in areas that are influenced by natural mineralization but are not affected by the tailings and waste rock. The BLM selected a preferred remedial action alternative in 2020 that involves consolidating tailings/waste rock in an engineered repository located in the SMA. Consequently, groundwater characterization emphasizing the area dominated by tailings and a broad range of potential contaminants has transitioned to baseline monitoring of upper elevations (upgradient of the tailings) and more focus on the contaminants that are responsible for most of the environmental risk estimated for the site.

Based on the data collected during the two mobilizations covered by this report, continued monitoring of the same scope is recommended until the Record of Decision is complete and the remedial action has been determined. Baseline monitoring should continue to meet remedial action objectives.

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FIGURES

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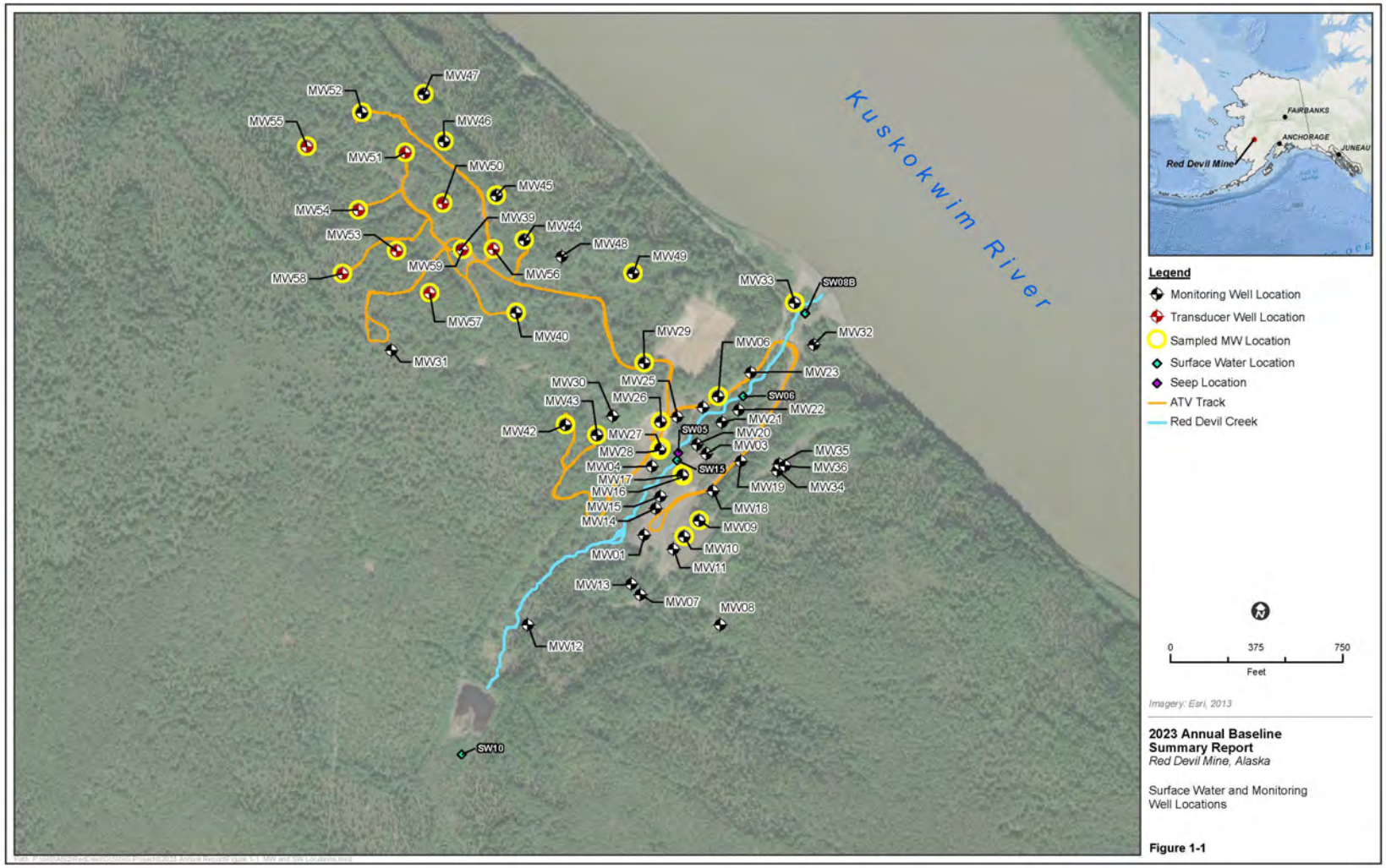
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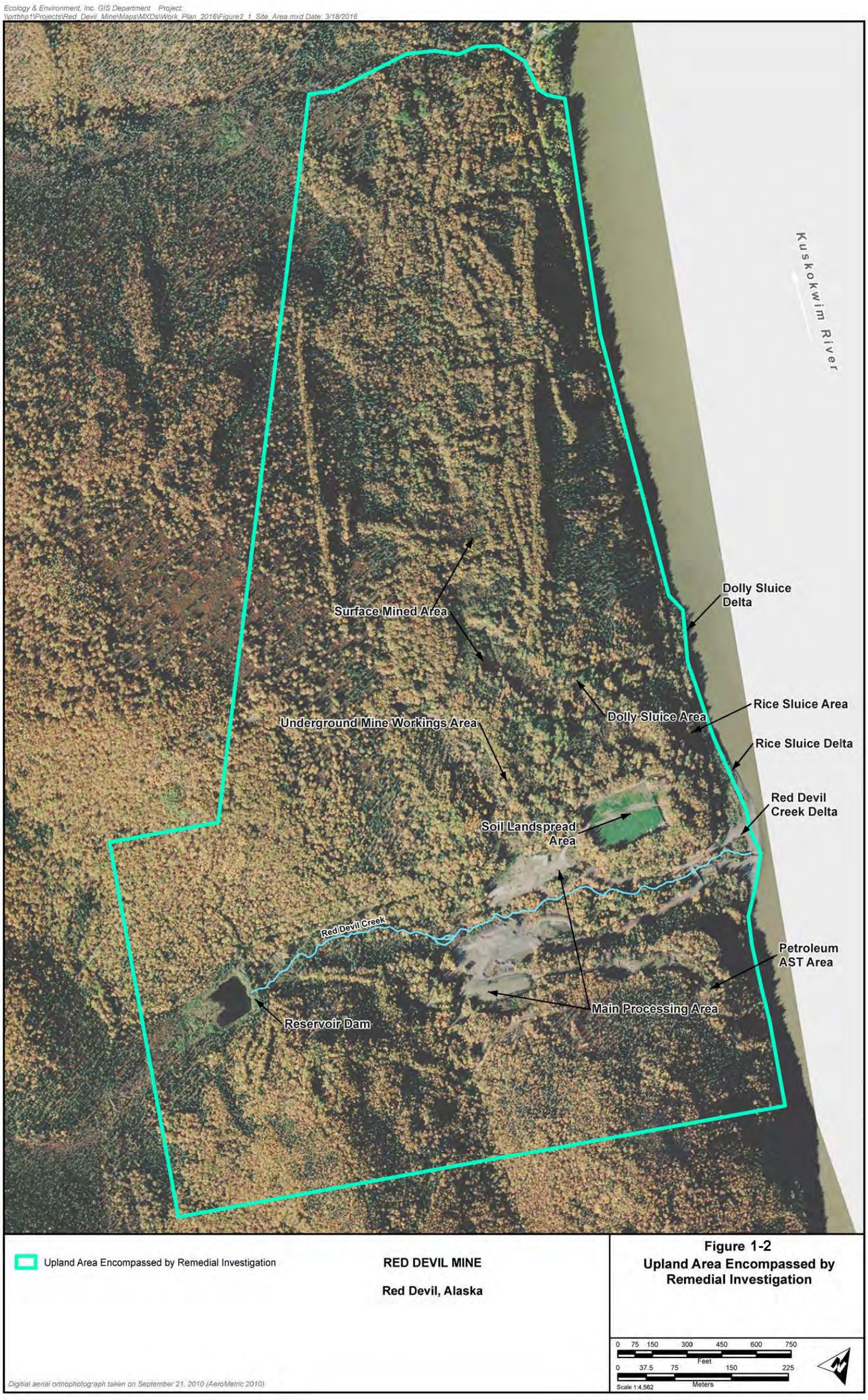
Surface Water and Monitoring Well Locations
Figure 1-1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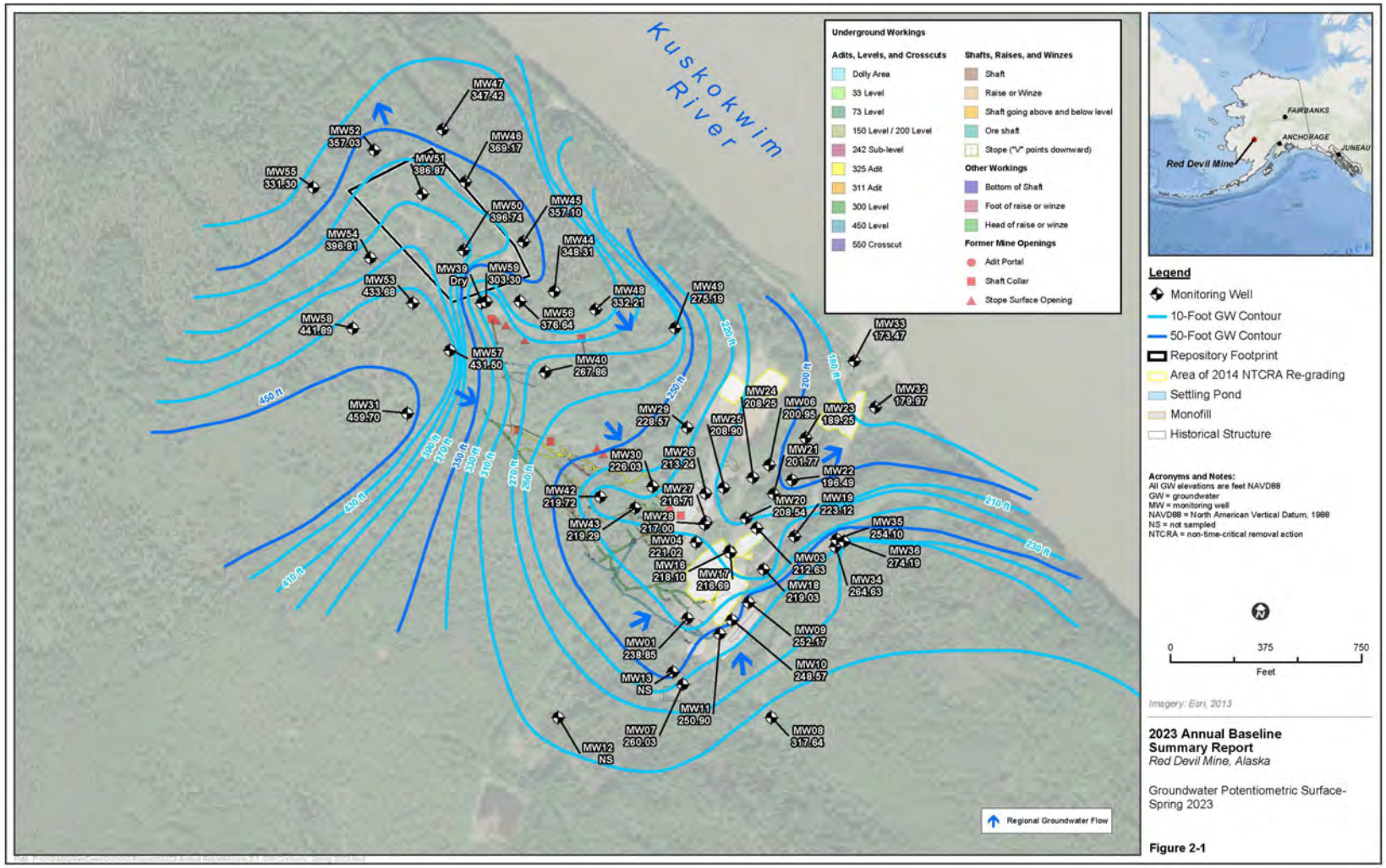
Kuskokwim River
Surface Mined Area
Dolly Sluice Delta
Dolly Sluice Area
Rice Sluice Area
Rice Sluice Delta
Underground Mine Workings Area
Red Devil Creek Delta
Soil Landspread Area
Red Devil Creek
Petroleum AST Area
Main Processing Area
Reservoir Dam
Upland Area Encompassed by Remedial Investigation
RED DEVIL MINE
Red Devil, Alaska
Figure 1-2
Upland Area Encompassed by Remedial Investigation
0 75 150 300 450 600 750
Feet
0 37.5 75 150 225
Meters
Scale 1:4,562
Digitial aerial orthophotograph taken on September 21, 2010 (AeroMetric 2010)


Kuskokwim River
Underground Workings
Adits, Levels, and Crosscuts
Dolly Area
33 Level
73 Level
150 Level / 200 Level
242 Sub-level
325 Adit
311 Adit
300 Level
450 Level
550 Crosscut
Shafts, Raises, and Winzes
Shaft
Raise or Winze
Shaft going above and below level
Ore shaft
Stope ("V" points downward)
Other Workings
Bottom of Shaft
Foot of raise or winze
Head of raise or winze
Former Mine Openings
Adit Portal
Shaft Collar
Stope Surface Opening
MW47 347.42
MW52 357.03
MW46 369.17
MW55 331.30
MW51 386.87
MW50 396.74
MW45 357.10
MW54 396.81
MW44 348.31
MW39 Dry
MW59 303.30
MW53 433.68
MW49 332.21
MW49 275.19
MW58 441.89
MW56 376.84
MW33 173.47
MW57 431.50
MW40 267.86
MW32 179.97
MW31 459.70
MW29 228.57
MW24 208.25
MW06 200.95
MW23 189.25
MW25 208.90
MW30 226.03
MW26 213.24
MW21 201.77
MW22 196.49
MW42 219.72
MW27 216.71
MW20 208.54
MW19 223.12
MW43 219.29
MW28 217.00
MW35 254.10
MW04 221.02
MW36 274.19
MW03 212.63
MW16 218.10
MW17 216.69
MW34 264.63
MW18 219.03
MW09 252.17
MW01 238.85
MW10 248.57
MW13 NS
MW11 250.90
MW07 260.03
MW08 317.64
MW12 NS
450 ft
430 ft
410 ft
390 ft
370 ft
350 ft
330 ft
310 ft
290 ft
270 ft
250 ft
230 ft
210 ft
190 ft
170 ft
150 ft
Regional Groundwater Flow
FAIRBANKS
ANCHORAGE
JUNEAU
Red Devil Mine
Legend
Monitoring Well
10-Foot GW Contour
50-Foot GW Contour
Repository Footprint
Area of 2014 NTCRA Re-grading
Settling Pond
Monofill
Historical Structure
Acronyms and Notes:
All GW elevations are feet NAVD88
GW = groundwater
MW = monitoring well
NAVD88 = North American Vertical Datum, 1988
NS = not sampled
NTCRA = non-time-critical removal action
0
375
750
Feet
Imagery: Esri, 2013
2023 Annual Baseline Summary Report
Red Devil Mine, Alaska
Groundwater Potentiometric Surface-Spring 2023
Figure 2-1

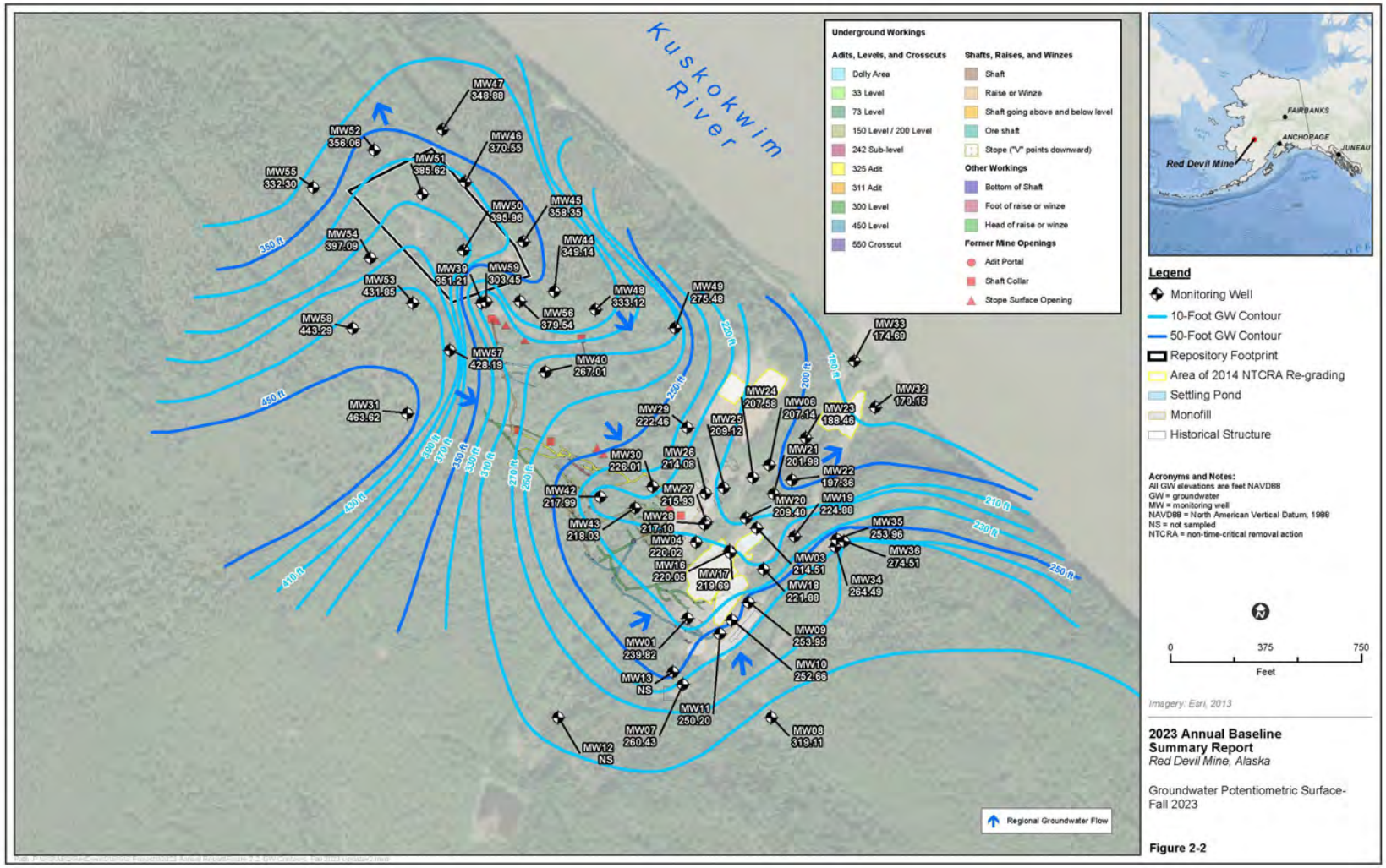
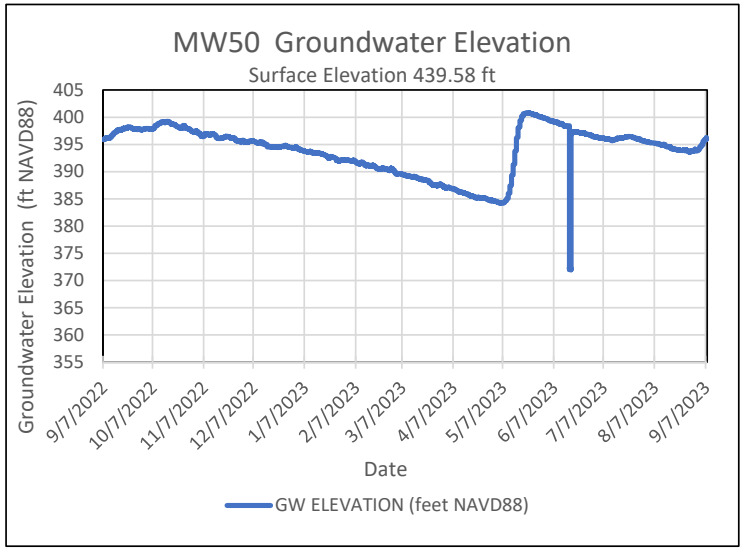
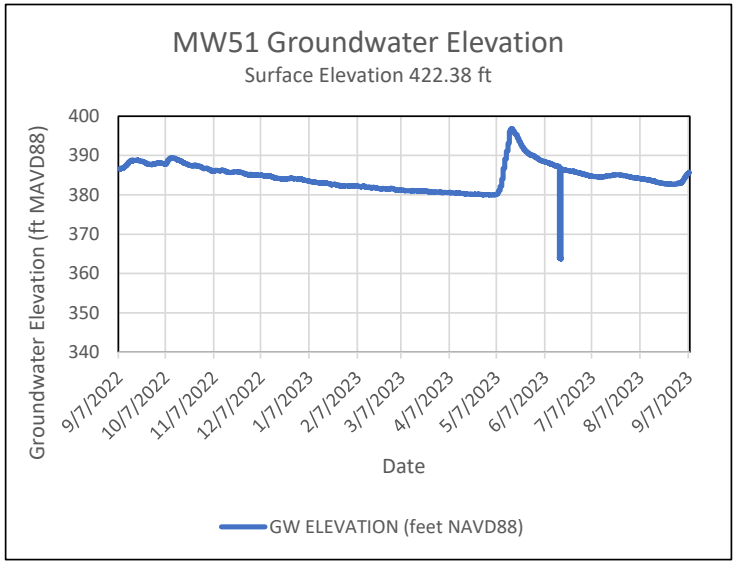
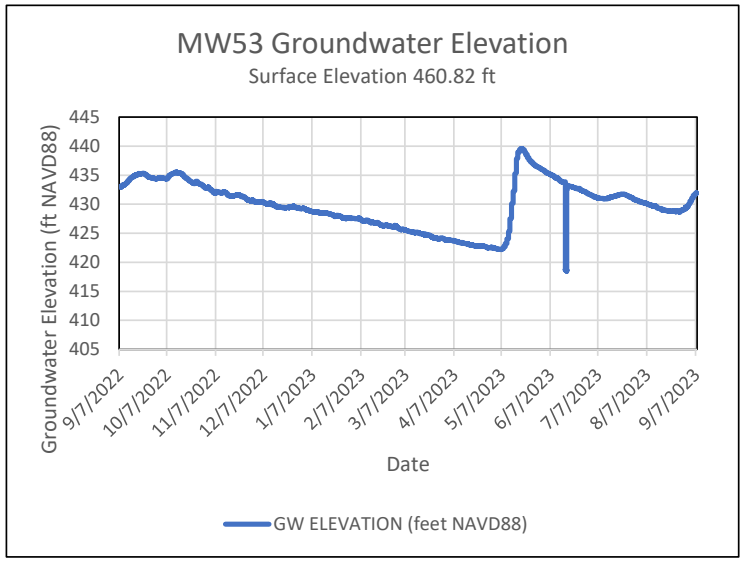

Kuskokwim River
Underground Workings
Adits, Levels, and Crosscuts
Dolly Area
33 Level
73 Level
150 Level / 200 Level
242 Sub-level
325 Adit
311 Adit
300 Level
450 Level
550 Crosscut
Shafts, Raises, and Winzes
Shaft
Raise or Winze
Shaft going above and below level
Ore shaft
Stope ("V" points downward)
Other Workings
Bottom of Shaft
Foot of raise or winze
Head of raise or winze
Former Mine Openings
Adit Portal
Shaft Collar
Stope Surface Opening
MW47 348.88
MW52 356.06
MW46 370.55
MW55 332.30
MW51 385.62
MW50 395.96
MW45 358.35
MW54 397.09
MW44 349.14
MW39 351.21
MW59 303.45
MW53 431.85
MW49 333.12
MW49 275.48
MW58 443.29
MW56 379.54
MW33 174.69
MW57 428.19
MW40 267.01
MW31 463.62
MW24 207.58
MW32 179.15
MW29 222.46
MW06 207.14
MW23 188.46
MW25 209.12
MW30 226.01
MW26 214.08
MW21 201.98
MW22 197.36
MW42 217.99
MW27 215.93
MW20 209.40
MW19 224.89
MW43 218.03
MW28 217.10
MW35 253.96
MW04 220.02
MW36 274.51
MW16 220.05
MW03 214.51
MW17 219.69
MW34 264.49
MW18 221.88
MW09 253.95
MW01 239.82
MW10 252.66
MW13 NS
MW11 250.20
MW07 260.43
MW08 319.11
MW12 NS
Regional Groundwater Flow
FAIRBANKS
ANCHORAGE
JUNEAU
Red Devil Mine
Legend
Monitoring Well
10-Foot GW Contour
50-Foot GW Contour
Repository Footprint
Area of 2014 NTCRA Re-grading
Settling Pond
Monofill
Historical Structure
Acronyms and Notes:
All GW elevations are feet NAVD88
GW = groundwater
MW = monitoring well
NAVD88 = North American Vertical Datum, 1988
NS = not sampled
NTCRA = non-time-critical removal action
0
375
750
Feet
Imagery: Esri, 2013
2023 Annual Baseline Summary Report
Red Devil Mine, Alaska
Groundwater Potentiometric Surface-Fall 2023
Figure 2-2

Figure 2-3: Groundwater Elevation Plots







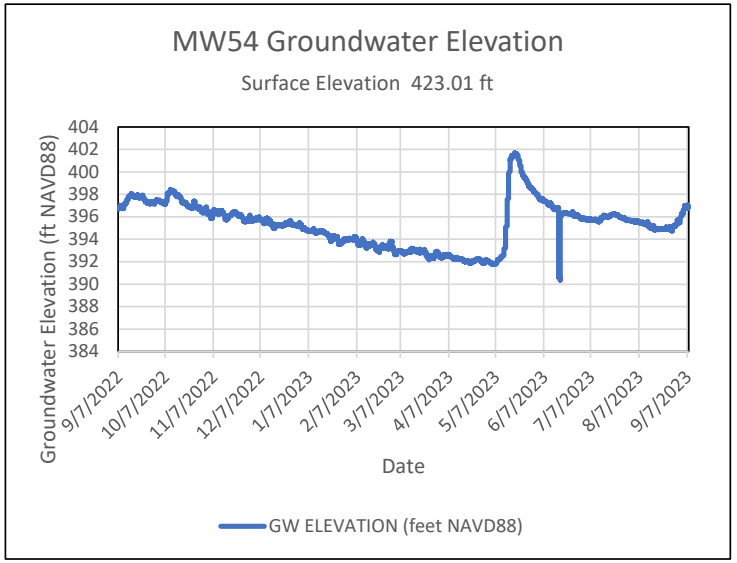
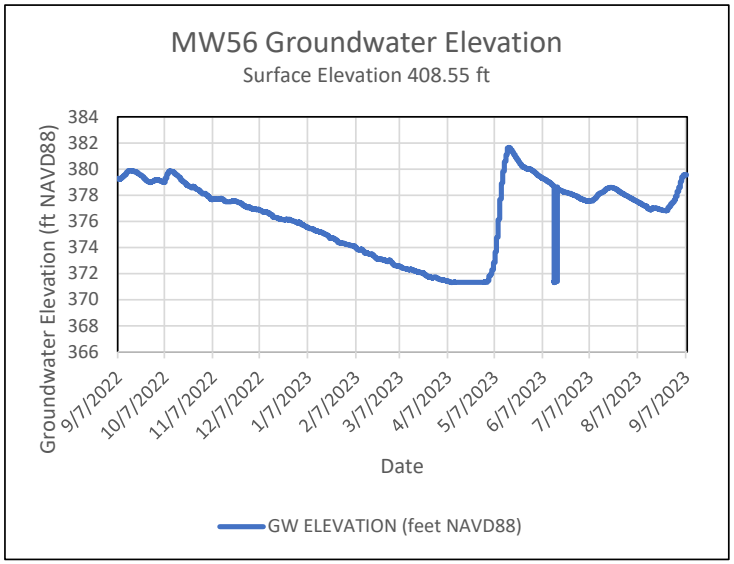
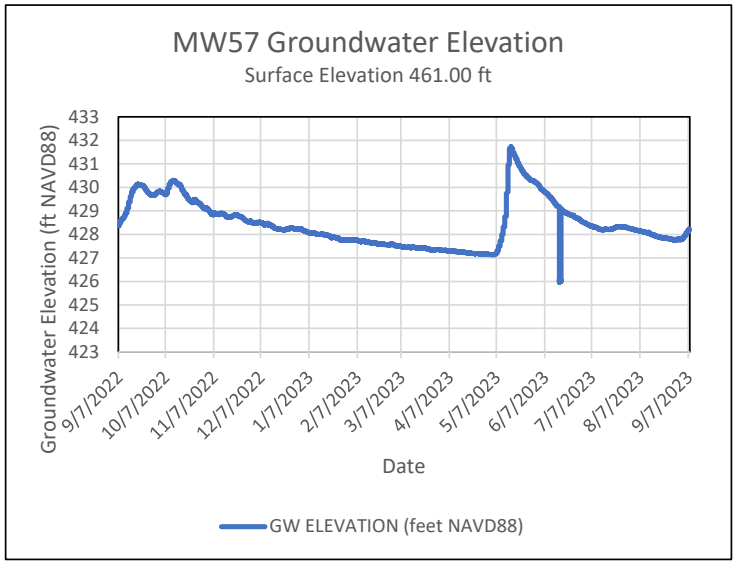
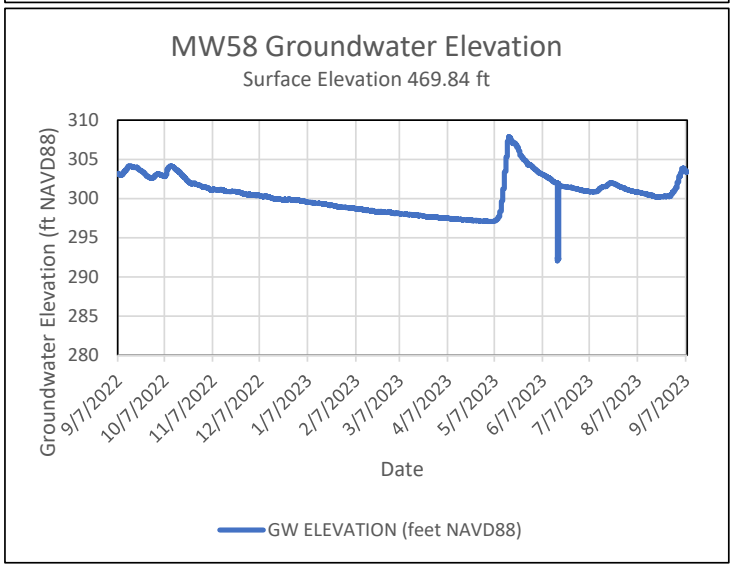
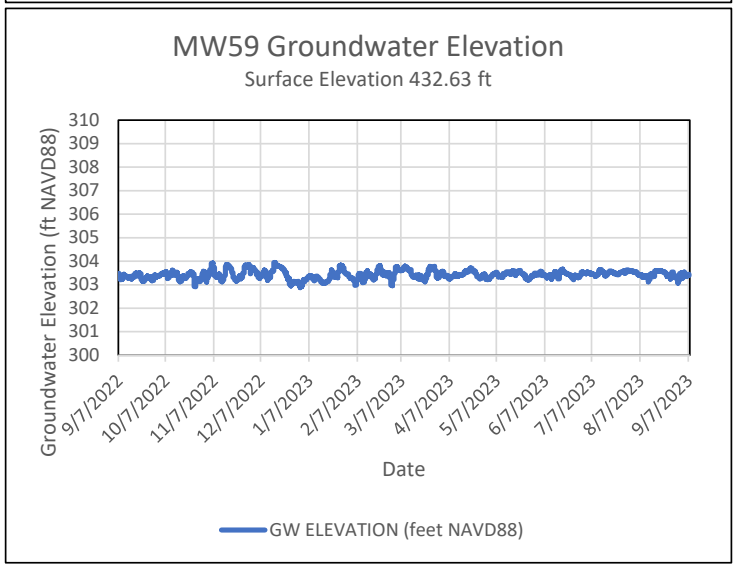


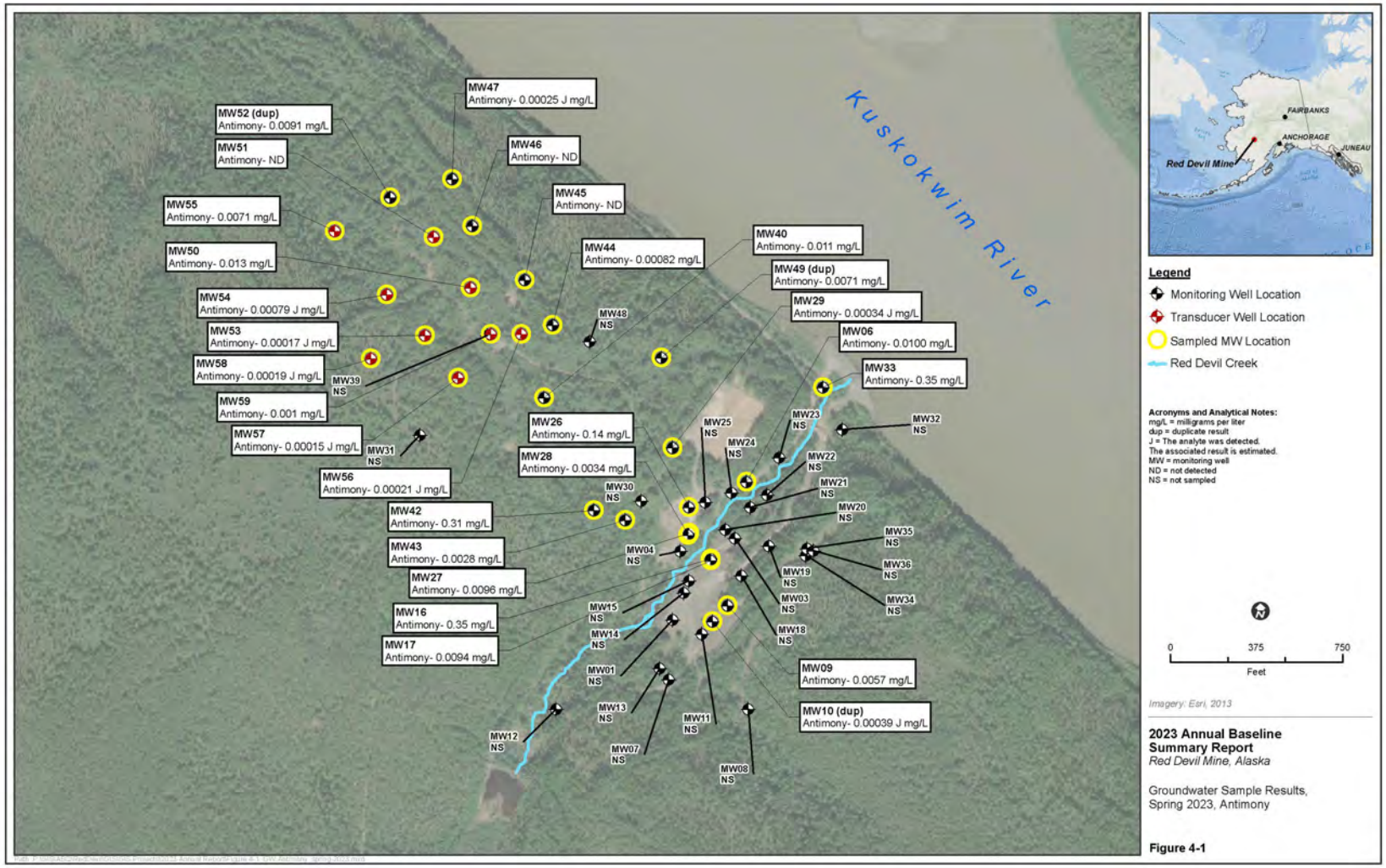
Figure 2-3: Groundwater Elevation Plots

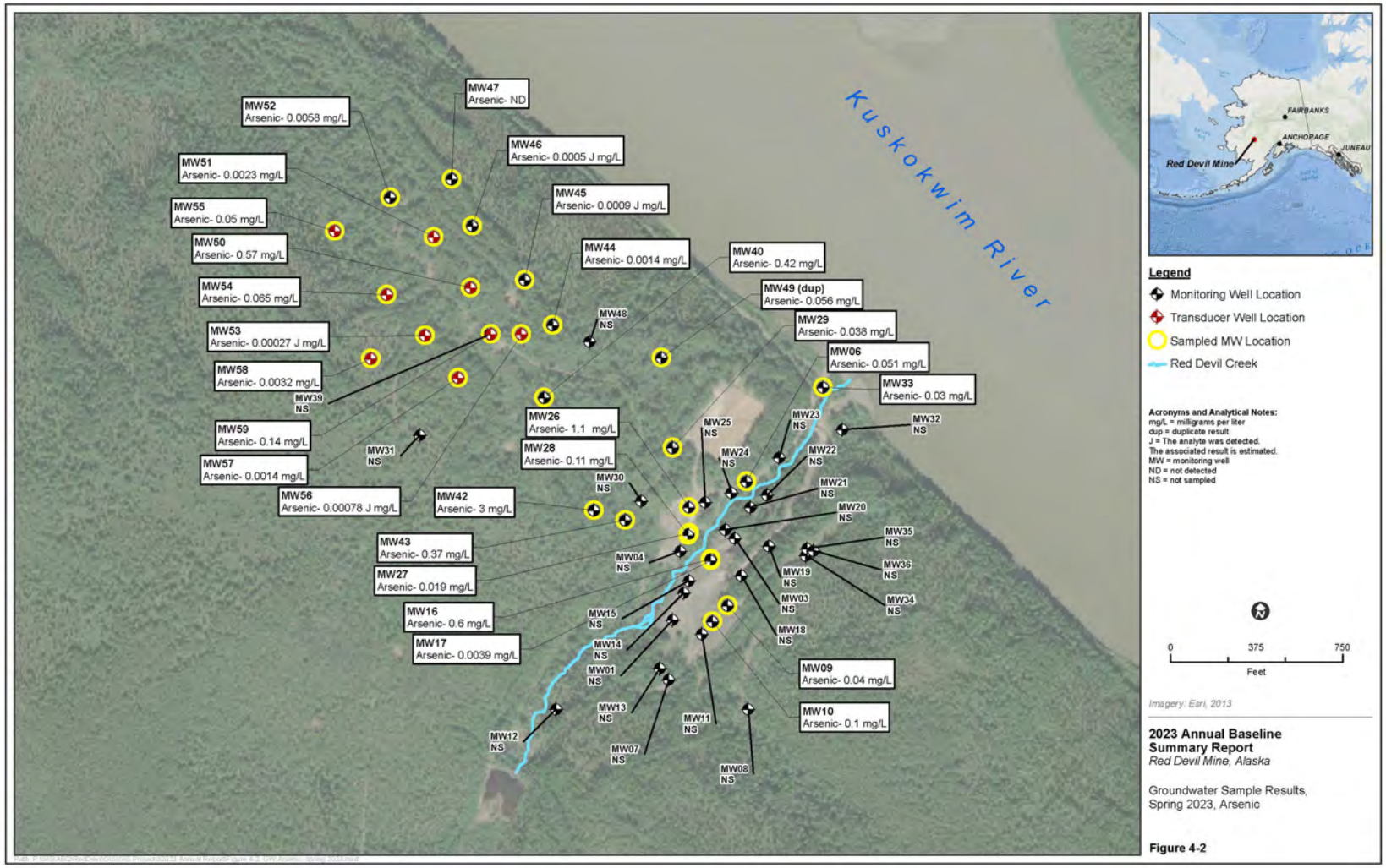


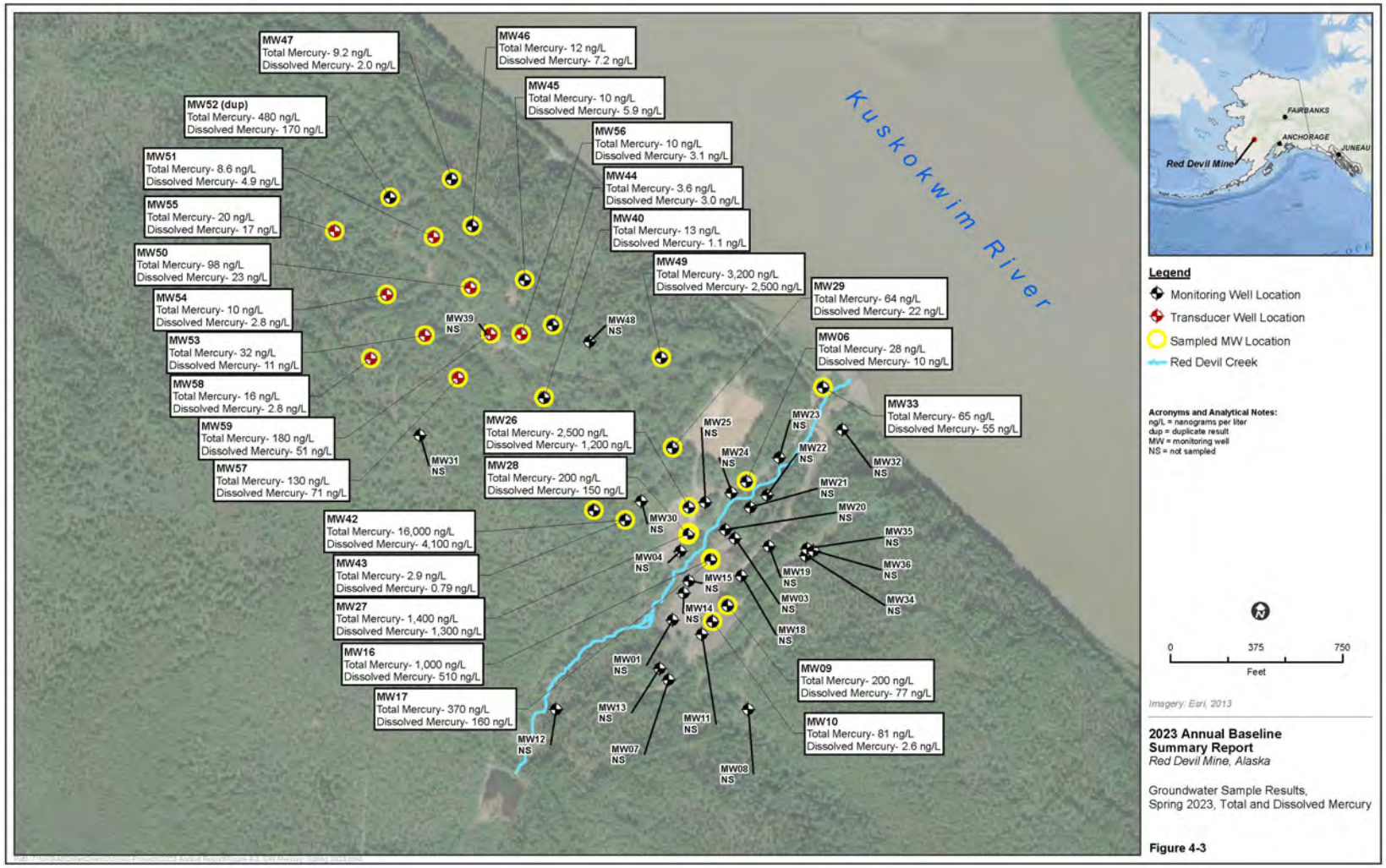


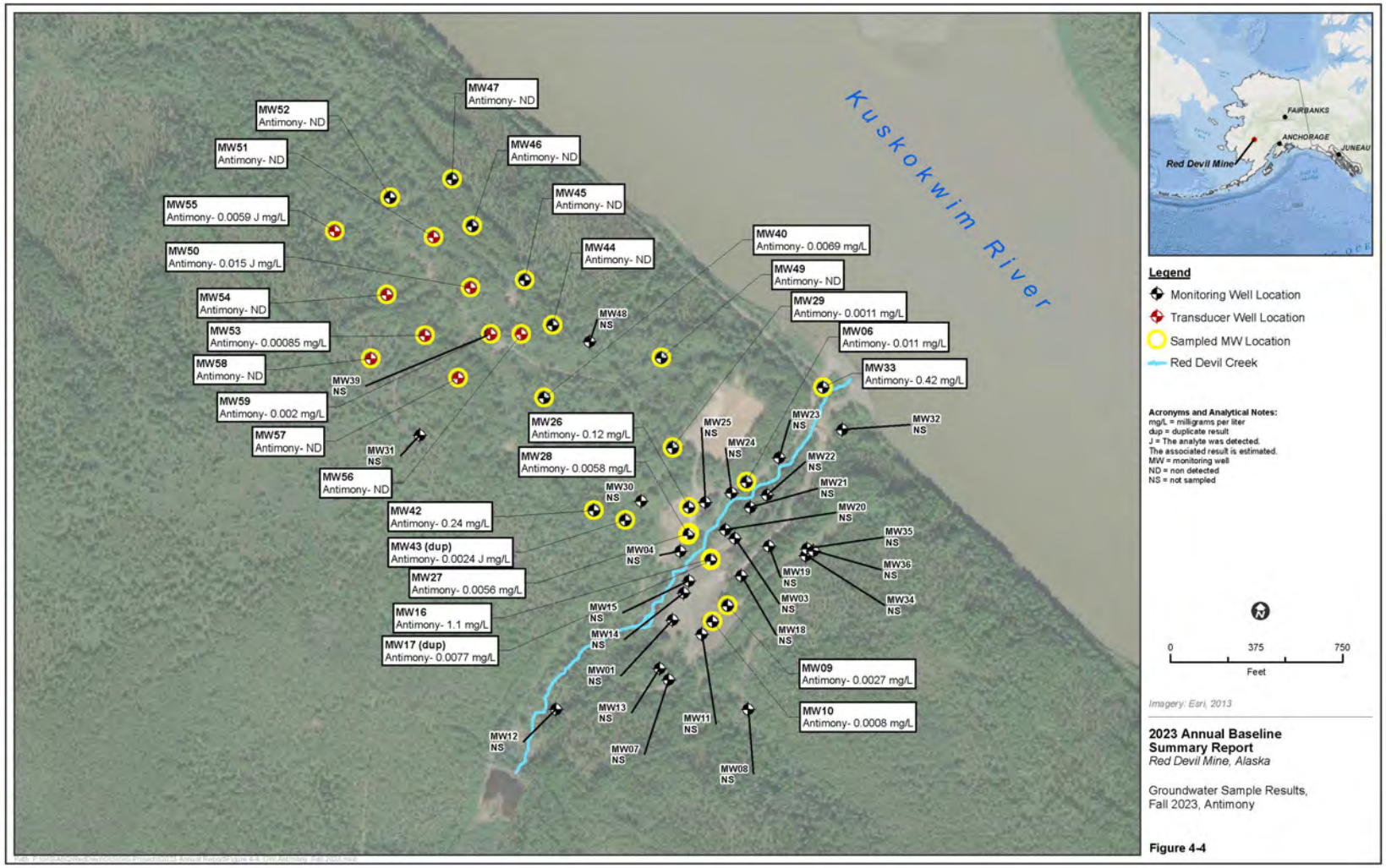


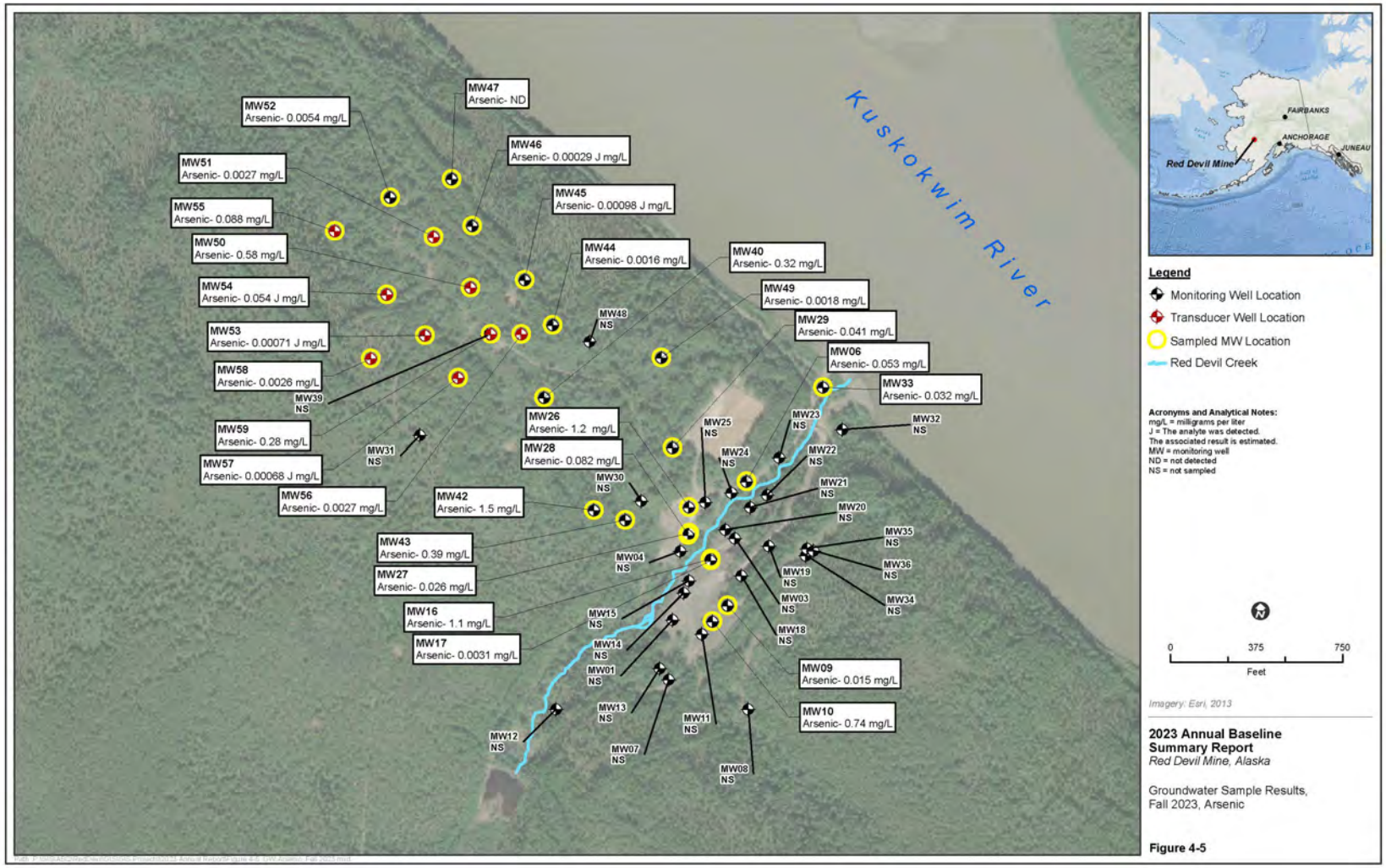


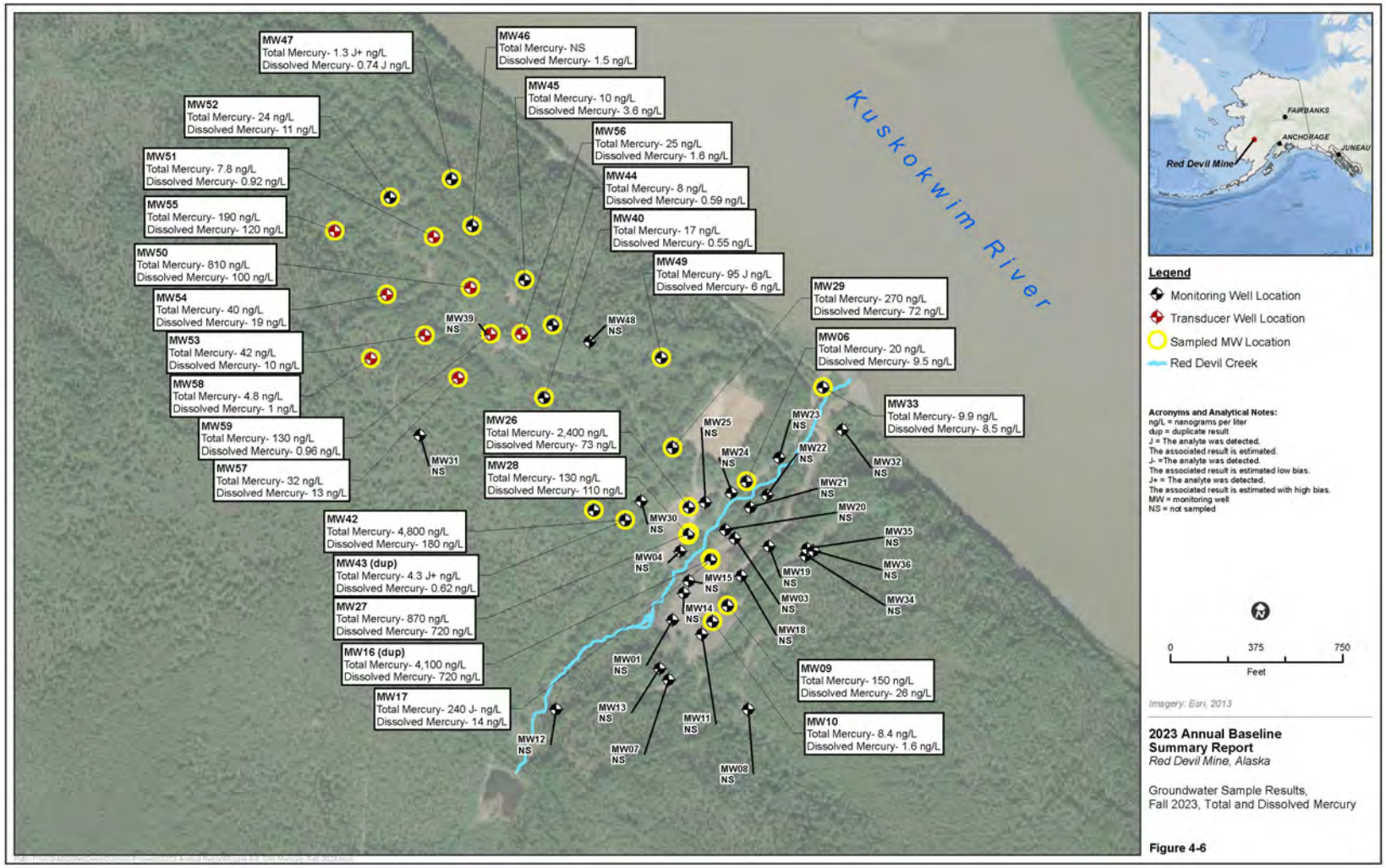

Kuskokwim River
MW47
Antimony- 0.00025 J mg/L
MW52 (dup)
Antimony- 0.0091 mg/L
MW51
Antimony- ND
MW46
Antimony- ND
MW45
Antimony- ND
MW55
Antimony- 0.0071 mg/L
MW50
Antimony- 0.013 mg/L
MW44
Antimony- 0.00082 mg/L
MW40
Antimony- 0.011 mg/L
MW49 (dup)
Antimony- 0.0071 mg/L
MW54
Antimony- 0.00079 J mg/L
MW29
Antimony- 0.00034 J mg/L
MW53
Antimony- 0.00017 J mg/L
MW48
NS
MW06
Antimony- 0.0100 mg/L
MW58
Antimony- 0.00019 J mg/L
MW39
NS
MW33
Antimony- 0.35 mg/L
MW59
Antimony- 0.001 mg/L
MW26
Antimony- 0.14 mg/L
MW57
Antimony- 0.00015 J mg/L
MW31
NS
MW28
Antimony- 0.0034 mg/L
MW56
Antimony- 0.00021 J mg/L
MW30
NS
MW42
Antimony- 0.31 mg/L
MW43
Antimony- 0.0028 mg/L
MW27
Antimony- 0.0096 mg/L
MW16
Antimony- 0.35 mg/L
MW17
Antimony- 0.0094 mg/L
MW04
NS
MW15
NS
MW14
NS
MW01
NS
MW13
NS
MW12
NS
MW07
NS
MW11
NS
MW08
NS
MW09
Antimony- 0.0057 mg/L
MW10 (dup)
Antimony- 0.00039 J mg/L
MW25
NS
MW24
NS
MW23
NS
MW32
NS
MW22
NS
MW21
NS
MW20
NS
MW35
NS
MW36
NS
MW19
NS
MW03
NS
MW34
NS
MW18
NS
FAIRBANKS
ANCHORAGE
JUNEAU
Red Devil Mine
Legend
Monitoring Well Location
Transducer Well Location
Sampled MW Location
Red Devil Creek
Acronyms and Analytical Notes:
mg/L = milligrams per liter
dup = duplicate result
J = The analyte was detected. The associated result is estimated.
MW = monitoring well
ND = not detected
NS = not sampled
0
375
750
Feet
Imagery: Esri, 2013
2023 Annual Baseline Summary Report
Red Devil Mine, Alaska
Groundwater Sample Results, Spring 2023, Antimony
Figure 4-1

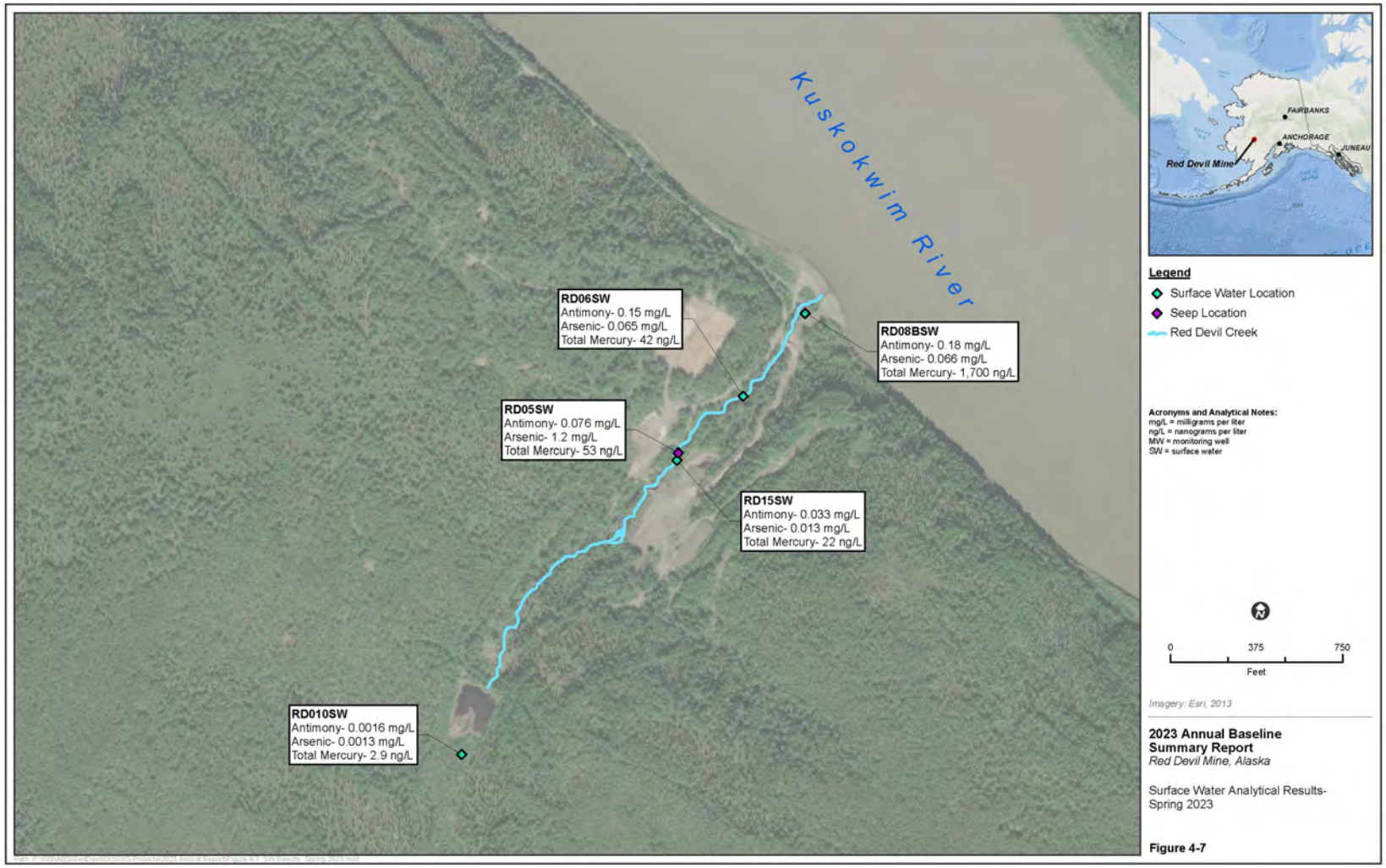

Kuskokwim River
MW47
Arsenic- ND
MW52
Arsenic- 0.0058 mg/L
MW46
Arsenic- 0.0005 J mg/L
MW51
Arsenic- 0.0023 mg/L
MW45
Arsenic- 0.0009 J mg/L
MW55
Arsenic- 0.05 mg/L
MW50
Arsenic- 0.57 mg/L
MW44
Arsenic- 0.0014 mg/L
MW40
Arsenic- 0.42 mg/L
MW54
Arsenic- 0.065 mg/L
MW49 (dup)
Arsenic- 0.056 mg/L
MW48
NS
MW29
Arsenic- 0.038 mg/L
MW53
Arsenic- 0.00027 J mg/L
MW06
Arsenic- 0.051 mg/L
MW58
Arsenic- 0.0032 mg/L
MW33
Arsenic- 0.03 mg/L
MW39
NS
MW26
Arsenic- 1.1 mg/L
MW25
NS
MW23
NS
MW32
NS
MW59
Arsenic- 0.14 mg/L
MW31
NS
MW28
Arsenic- 0.11 mg/L
MW24
NS
MW22
NS
MW57
Arsenic- 0.0014 mg/L
MW30
NS
MW21
NS
MW56
Arsenic- 0.00078 J mg/L
MW42
Arsenic- 3 mg/L
MW20
NS
MW35
NS
MW43
Arsenic- 0.37 mg/L
MW04
NS
MW36
NS
MW27
Arsenic- 0.019 mg/L
MW19
NS
MW03
NS
MW34
NS
MW16
Arsenic- 0.6 mg/L
MW15
NS
MW18
NS
MW17
Arsenic- 0.0039 mg/L
MW14
NS
MW09
Arsenic- 0.04 mg/L
MW01
NS
MW13
NS
MW11
NS
MW10
Arsenic- 0.1 mg/L
MW12
NS
MW07
NS
MW08
NS
FAIRBANKS
ANCHORAGE
JUNEAU
Red Devil Mine
Legend
Monitoring Well Location
Transducer Well Location
Sampled MW Location
Red Devil Creek
Acronyms and Analytical Notes:
mg/L = milligrams per liter
dup = duplicate result
J = The analyte was detected.
The associated result is estimated.
MW = monitoring well
ND = not detected
NS = not sampled
0
375
750
Feet
Imagery: Esri, 2013
2023 Annual Baseline
Summary Report
Red Devil Mine, Alaska
Groundwater Sample Results,
Spring 2023, Arsenic
Figure 4-2


MW47
Total Mercury- 9.2 ng/L
Dissolved Mercury- 2.0 ng/L
MW46
Total Mercury- 12 ng/L
Dissolved Mercury- 7.2 ng/L
MW45
Total Mercury- 10 ng/L
Dissolved Mercury- 5.9 ng/L
MW52 (dup)
Total Mercury- 480 ng/L
Dissolved Mercury- 170 ng/L
MW56
Total Mercury- 10 ng/L
Dissolved Mercury- 3.1 ng/L
MW51
Total Mercury- 8.6 ng/L
Dissolved Mercury- 4.9 ng/L
MW44
Total Mercury- 3.6 ng/L
Dissolved Mercury- 3.0 ng/L
MW55
Total Mercury- 20 ng/L
Dissolved Mercury- 17 ng/L
MW40
Total Mercury- 13 ng/L
Dissolved Mercury- 1.1 ng/L
MW50
Total Mercury- 98 ng/L
Dissolved Mercury- 23 ng/L
MW49
Total Mercury- 3,200 ng/L
Dissolved Mercury- 2,500 ng/L
MW29
Total Mercury- 64 ng/L
Dissolved Mercury- 22 ng/L
MW54
Total Mercury- 10 ng/L
Dissolved Mercury- 2.8 ng/L
MW39
NS
MW48
NS
MW06
Total Mercury- 28 ng/L
Dissolved Mercury- 10 ng/L
MW53
Total Mercury- 32 ng/L
Dissolved Mercury- 11 ng/L
MW58
Total Mercury- 16 ng/L
Dissolved Mercury- 2.8 ng/L
MW33
Total Mercury- 65 ng/L
Dissolved Mercury- 55 ng/L
MW59
Total Mercury- 180 ng/L
Dissolved Mercury- 51 ng/L
MW26
Total Mercury- 2,500 ng/L
Dissolved Mercury- 1,200 ng/L
MW25
NS
MW23
NS
MW31
NS
MW57
Total Mercury- 130 ng/L
Dissolved Mercury- 71 ng/L
MW28
Total Mercury- 200 ng/L
Dissolved Mercury- 150 ng/L
MW24
NS
MW22
NS
MW32
NS
MW21
NS
MW20
NS
MW42
Total Mercury- 16,000 ng/L
Dissolved Mercury- 4,100 ng/L
MW30
NS
MW35
NS
MW43
Total Mercury- 2.9 ng/L
Dissolved Mercury- 0.79 ng/L
MW04
NS
MW36
NS
MW15
NS
MW19
NS
MW27
Total Mercury- 1,400 ng/L
Dissolved Mercury- 1,300 ng/L
MW03
NS
MW34
NS
MW14
NS
MW18
NS
MW16
Total Mercury- 1,000 ng/L
Dissolved Mercury- 510 ng/L
MW01
NS
MW09
Total Mercury- 200 ng/L
Dissolved Mercury- 77 ng/L
MW17
Total Mercury- 370 ng/L
Dissolved Mercury- 160 ng/L
MW13
NS
MW11
NS
MW10
Total Mercury- 81 ng/L
Dissolved Mercury- 2.6 ng/L
MW12
NS
MW07
NS
MW08
NS
Kuskokwim River
FAIRBANKS
ANCHORAGE
JUNEAU
Red Devil Mine
Legend
Monitoring Well Location
Transducer Well Location
Sampled MW Location
Red Devil Creek
Acronyms and Analytical Notes:
ng/L = nanograms per liter
dup = duplicate result
MW = monitoring well
NS = not sampled
0
375
750
Feet
Imagery: Esri, 2013
2023 Annual Baseline Summary Report
Red Devil Mine, Alaska
Groundwater Sample Results, Spring 2023, Total and Dissolved Mercury
Figure 4-3


Kuskokwim River
MW47
Antimony- ND
MW52
Antimony- ND
MW51
Antimony- ND
MW46
Antimony- ND
MW45
Antimony- ND
MW55
Antimony- 0.0059 J mg/L
MW50
Antimony- 0.015 J mg/L
MW44
Antimony- ND
MW40
Antimony- 0.0069 mg/L
MW49
Antimony- ND
MW54
Antimony- ND
MW48
NS
MW29
Antimony- 0.0011 mg/L
MW53
Antimony- 0.00085 mg/L
MW06
Antimony- 0.011 mg/L
MW58
Antimony- ND
MW39
NS
MW33
Antimony- 0.42 mg/L
MW59
Antimony- 0.002 mg/L
MW26
Antimony- 0.12 mg/L
MW25
NS
MW23
NS
MW32
NS
MW57
Antimony- ND
MW31
NS
MW28
Antimony- 0.0058 mg/L
MW24
NS
MW22
NS
MW56
Antimony- ND
MW30
NS
MW21
NS
MW42
Antimony- 0.24 mg/L
MW20
NS
MW43 (dup)
Antimony- 0.0024 J mg/L
MW04
NS
MW35
NS
MW27
Antimony- 0.0056 mg/L
MW19
NS
MW36
NS
MW16
Antimony- 1.1 mg/L
MW15
NS
MW03
NS
MW34
NS
MW17 (dup)
Antimony- 0.0077 mg/L
MW14
NS
MW18
NS
MW09
Antimony- 0.0027 mg/L
MW01
NS
MW13
NS
MW11
NS
MW10
Antimony- 0.0008 mg/L
MW12
NS
MW07
NS
MW08
NS
FAIRBANKS
ANCHORAGE
JUNEAU
Red Devil Mine
Legend
Monitoring Well Location
Transducer Well Location
Sampled MW Location
Red Devil Creek
Acronyms and Analytical Notes:
mg/L = milligrams per liter
dup = duplicate result
J = The analyte was detected.
The associated result is estimated.
MW = monitoring well
ND = non detected
NS = not sampled
0
375
750
Feet
Imagery: Esri, 2013
2023 Annual Baseline Summary Report
Red Devil Mine, Alaska
Groundwater Sample Results, Fall 2023, Antimony
Figure 4-4


MW47
Arsenic- ND
MW52
Arsenic- 0.0054 mg/L
MW46
Arsenic- 0.00029 J mg/L
MW51
Arsenic- 0.0027 mg/L
MW45
Arsenic- 0.00098 J mg/L
MW55
Arsenic- 0.088 mg/L
MW50
Arsenic- 0.58 mg/L
MW44
Arsenic- 0.0016 mg/L
MW40
Arsenic- 0.32 mg/L
MW54
Arsenic- 0.054 J mg/L
MW49
Arsenic- 0.0018 mg/L
MW48
NS
MW29
Arsenic- 0.041 mg/L
MW53
Arsenic- 0.00071 J mg/L
MW06
Arsenic- 0.053 mg/L
MW58
Arsenic- 0.0026 mg/L
MW33
Arsenic- 0.032 mg/L
MW39
NS
MW26
Arsenic- 1.2 mg/L
MW25
NS
MW23
NS
MW32
NS
MW59
Arsenic- 0.28 mg/L
MW28
Arsenic- 0.082 mg/L
MW24
NS
MW22
NS
MW31
NS
MW57
Arsenic- 0.00068 J mg/L
MW30
NS
MW21
NS
MW56
Arsenic- 0.0027 mg/L
MW42
Arsenic- 1.5 mg/L
MW20
NS
MW35
NS
MW43
Arsenic- 0.39 mg/L
MW04
NS
MW36
NS
MW27
Arsenic- 0.026 mg/L
MW19
NS
MW03
NS
MW34
NS
MW16
Arsenic- 1.1 mg/L
MW15
NS
MW18
NS
MW17
Arsenic- 0.0031 mg/L
MW14
NS
MW09
Arsenic- 0.015 mg/L
MW01
NS
MW13
NS
MW11
NS
MW10
Arsenic- 0.74 mg/L
MW12
NS
MW07
NS
MW08
NS
Kuskokwim River
FAIRBANKS
ANCHORAGE
JUNEAU
Red Devil Mine
Legend
Monitoring Well Location
Transducer Well Location
Sampled MW Location
Red Devil Creek
Acronyms and Analytical Notes:
mg/L = milligrams per liter
J = The analyte was detected.
The associated result is estimated.
MW = monitoring well
ND = not detected
NS = not sampled
0
375
750
Feet
Imagery: Esri, 2013
2023 Annual Baseline Summary Report
Red Devil Mine, Alaska
Groundwater Sample Results, Fall 2023, Arsenic
Figure 4-5


MW47
Total Mercury- 1.3 J+ ng/L
Dissolved Mercury- 0.74 J ng/L
MW46
Total Mercury- NS
Dissolved Mercury- 1.5 ng/L
MW45
Total Mercury- 10 ng/L
Dissolved Mercury- 3.6 ng/L
MW52
Total Mercury- 24 ng/L
Dissolved Mercury- 11 ng/L
MW56
Total Mercury- 25 ng/L
Dissolved Mercury- 1.6 ng/L
MW51
Total Mercury- 7.8 ng/L
Dissolved Mercury- 0.92 ng/L
MW44
Total Mercury- 8 ng/L
Dissolved Mercury- 0.59 ng/L
MW55
Total Mercury- 190 ng/L
Dissolved Mercury- 120 ng/L
MW40
Total Mercury- 17 ng/L
Dissolved Mercury- 0.55 ng/L
MW50
Total Mercury- 810 ng/L
Dissolved Mercury- 100 ng/L
MW49
Total Mercury- 95 J ng/L
Dissolved Mercury- 6 ng/L
MW54
Total Mercury- 40 ng/L
Dissolved Mercury- 19 ng/L
MW29
Total Mercury- 270 ng/L
Dissolved Mercury- 72 ng/L
MW39 NS
MW48 NS
MW53
Total Mercury- 42 ng/L
Dissolved Mercury- 10 ng/L
MW06
Total Mercury- 20 ng/L
Dissolved Mercury- 9.5 ng/L
MW58
Total Mercury- 4.8 ng/L
Dissolved Mercury- 1 ng/L
MW33
Total Mercury- 9.9 ng/L
Dissolved Mercury- 8.5 ng/L
MW59
Total Mercury- 130 ng/L
Dissolved Mercury- 0.96 ng/L
MW26
Total Mercury- 2,400 ng/L
Dissolved Mercury- 73 ng/L
MW25 NS
MW23 NS
MW31 NS
MW57
Total Mercury- 32 ng/L
Dissolved Mercury- 13 ng/L
MW28
Total Mercury- 130 ng/L
Dissolved Mercury- 110 ng/L
MW24 NS
MW22 NS
MW32 NS
MW21 NS
MW20 NS
MW42
Total Mercury- 4,800 ng/L
Dissolved Mercury- 180 ng/L
MW30 NS
MW35 NS
MW43 (dup)
Total Mercury- 4.3 J+ ng/L
Dissolved Mercury- 0.62 ng/L
MW04 NS
MW36 NS
MW15 NS
MW19 NS
MW27
Total Mercury- 870 ng/L
Dissolved Mercury- 720 ng/L
MW03 NS
MW34 NS
MW14 NS
MW18 NS
MW16 (dup)
Total Mercury- 4,100 ng/L
Dissolved Mercury- 720 ng/L
MW01 NS
MW09
Total Mercury- 150 ng/L
Dissolved Mercury- 26 ng/L
MW17
Total Mercury- 240 J- ng/L
Dissolved Mercury- 14 ng/L
MW13 NS
MW11 NS
MW10
Total Mercury- 8.4 ng/L
Dissolved Mercury- 1.6 ng/L
MW12 NS
MW07 NS
MW08 NS
Kuskokwim River
FAIRBANKS
ANCHORAGE
JUNEAU
Red Devil Mine
Legend
Monitoring Well Location
Transducer Well Location
Sampled MW Location
Red Devil Creek
Acronyms and Analytical Notes:
ng/L = nanograms per liter
dup = duplicate result
J = The analyte was detected.
The associated result is estimated.
J- =The analyte was detected.
The associated result is estimated low bias.
J+ = The analyte was detected.
The associated result is estimated with high bias.
MW = monitoring well
NS = not sampled
0
375
750
Feet
Imagery: Esri, 2013
2023 Annual Baseline Summary Report
Red Devil Mine, Alaska
Groundwater Sample Results,
Fall 2023, Total and Dissolved Mercury
Figure 4-6


Kuskokwim River
RD06SW
Antimony- 0.15 mg/L
Arsenic- 0.065 mg/L
Total Mercury- 42 ng/L
RD08BSW
Antimony- 0.18 mg/L
Arsenic- 0.066 mg/L
Total Mercury- 1,700 ng/L
RD05SW
Antimony- 0.076 mg/L
Arsenic- 1.2 mg/L
Total Mercury- 53 ng/L
RD15SW
Antimony- 0.033 mg/L
Arsenic- 0.013 mg/L
Total Mercury- 22 ng/L
RD010SW
Antimony- 0.0016 mg/L
Arsenic- 0.0013 mg/L
Total Mercury- 2.9 ng/L
FAIRBANKS
ANCHORAGE
JUNEAU
Red Devil Mine
Legend
Surface Water Location
Seep Location
Red Devil Creek
Acronyms and Analytical Notes:
mg/L = milligrams per liter
ng/L = nanograms per liter
MW = monitoring well
SW = surface water
0
375
750
Feet
Imagery: Esri, 2013
2023 Annual Baseline Summary Report
Red Devil Mine, Alaska
Surface Water Analytical Results- Spring 2023
Figure 4-7

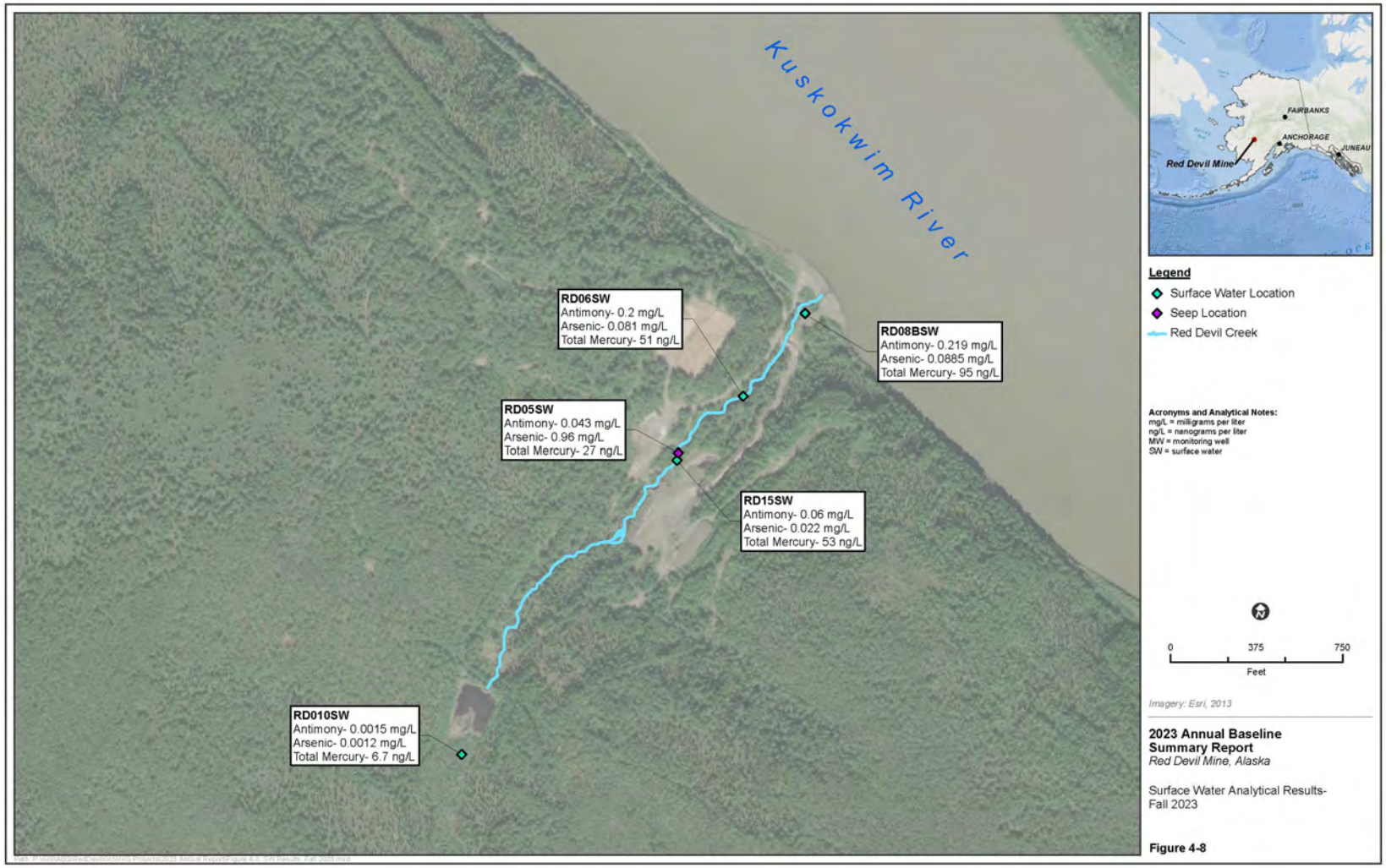

Kuskokwim River
RD06SW
Antimony- 0.2 mg/L
Arsenic- 0.081 mg/L
Total Mercury- 51 ng/L
RD08BSW
Antimony- 0.219 mg/L
Arsenic- 0.0885 mg/L
Total Mercury- 95 ng/L
RD05SW
Antimony- 0.043 mg/L
Arsenic- 0.96 mg/L
Total Mercury- 27 ng/L
RD15SW
Antimony- 0.06 mg/L
Arsenic- 0.022 mg/L
Total Mercury- 53 ng/L
RD010SW
Antimony- 0.0015 mg/L
Arsenic- 0.0012 mg/L
Total Mercury- 6.7 ng/L
FAIRBANKS
ANCHORAGE
JUNEAU
Red Devil Mine
Legend
Surface Water Location
Seep Location
Red Devil Creek
Acronyms and Analytical Notes:
mg/L = milligrams per liter
ng/L = nanograms per liter
MW = monitoring well
SW = surface water
0
375
750
Feet
Imagery: Esri, 2013
2023 Annual Baseline Summary Report
Red Devil Mine, Alaska
Surface Water Analytical Results- Fall 2023
Figure 4-8

Figure 6-1. Historical Groundwater Analytical Plots

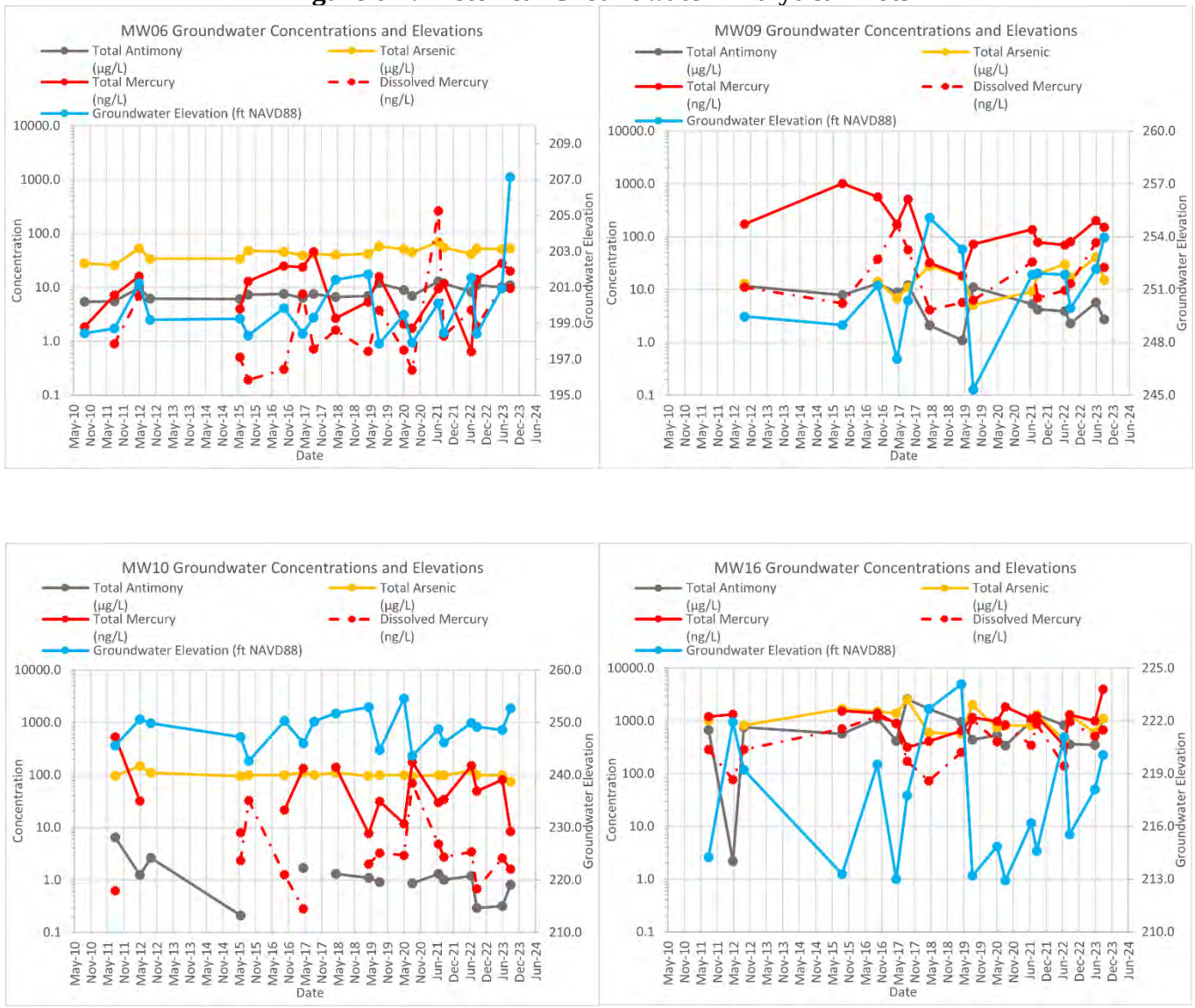


Figure 6-1. Historical Groundwater Analytical Plots

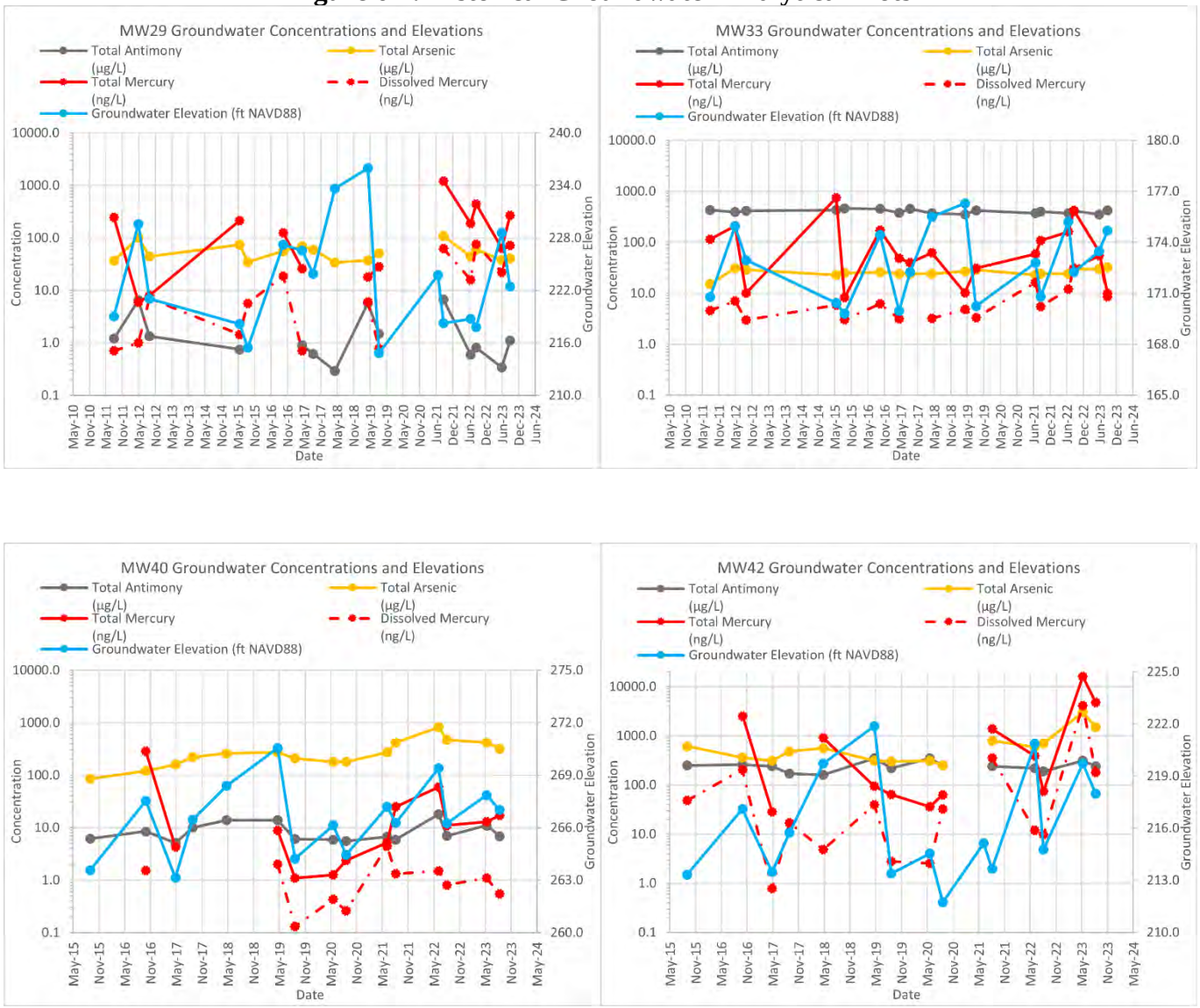


Figure 6-1. Historical Groundwater Analytical Plots

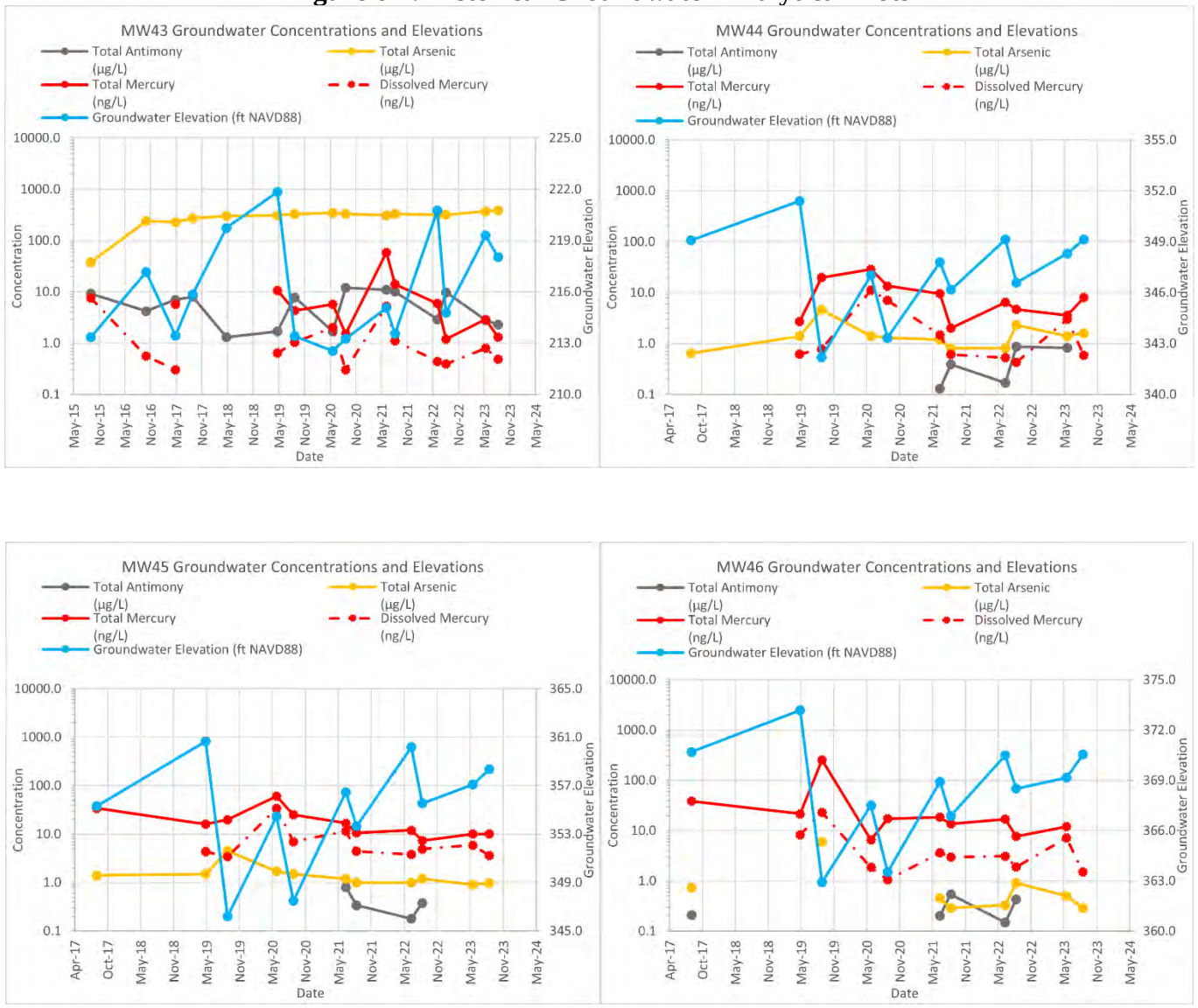


Figure 6-1. Historical Groundwater Analytical Plots

Figure 6-1. Historical Groundwater Analytical Plots

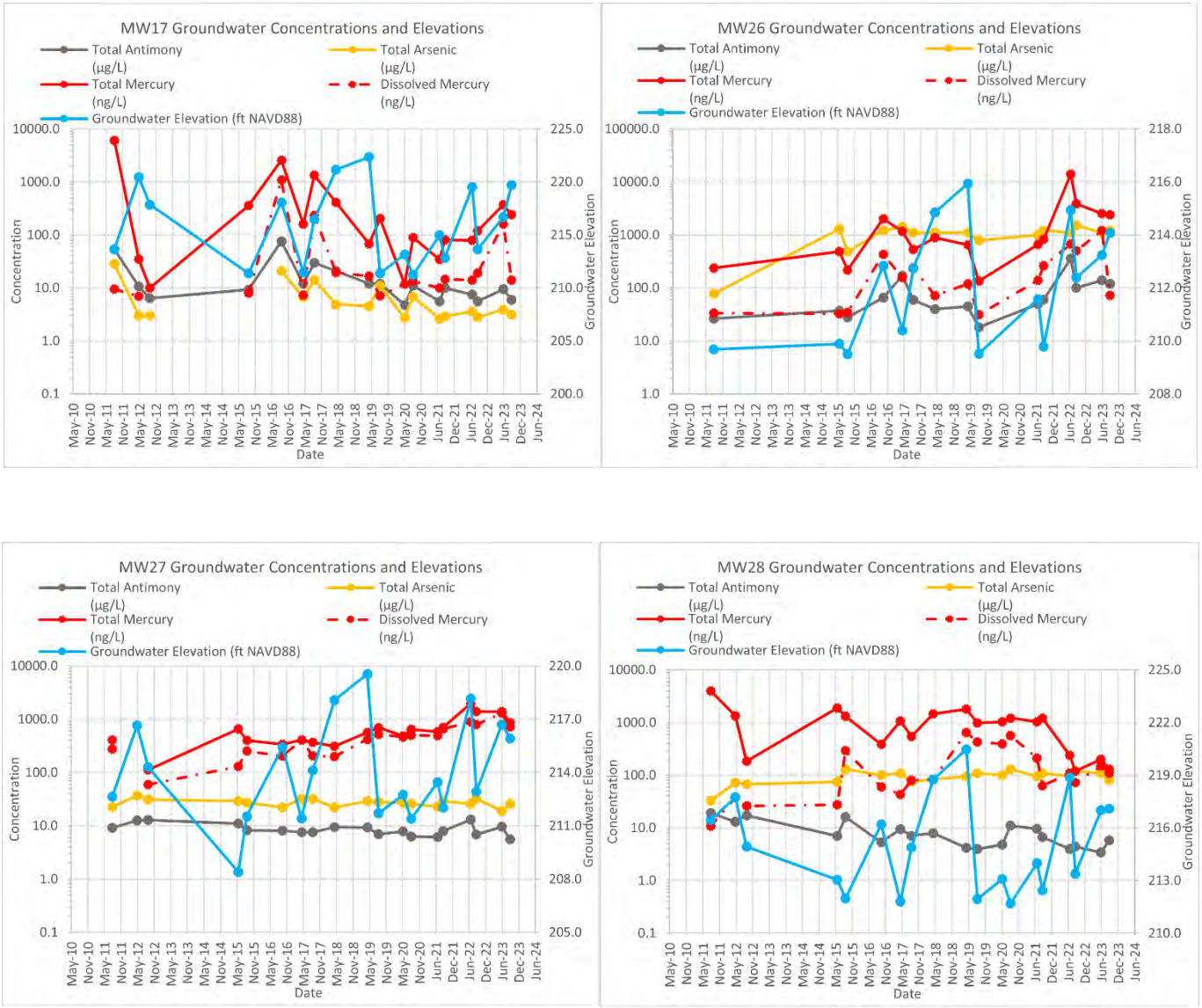


Figure 6-1. Historical Groundwater Analytical Plots

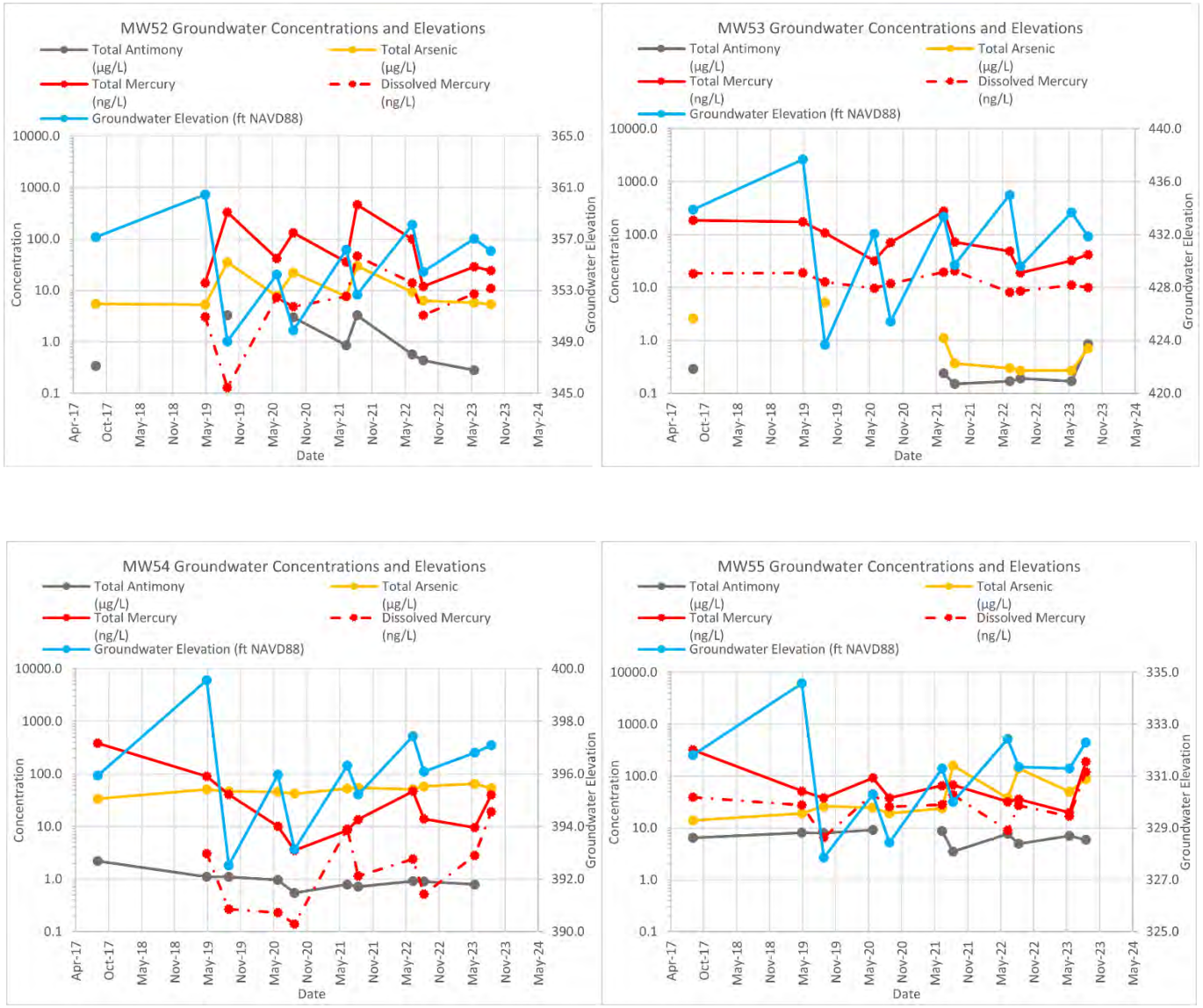


Figure 6-1. Historical Groundwater Analytical Plots

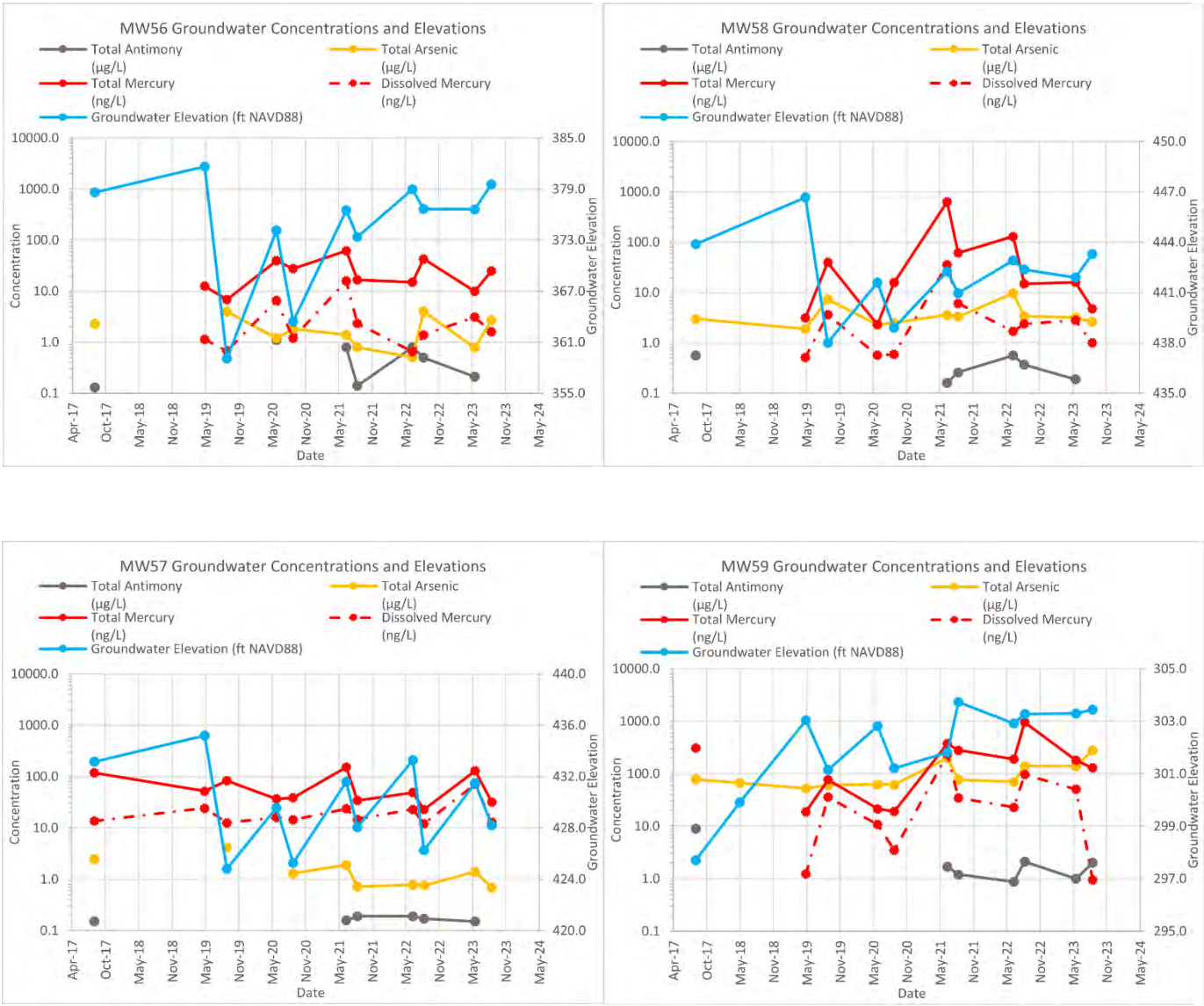
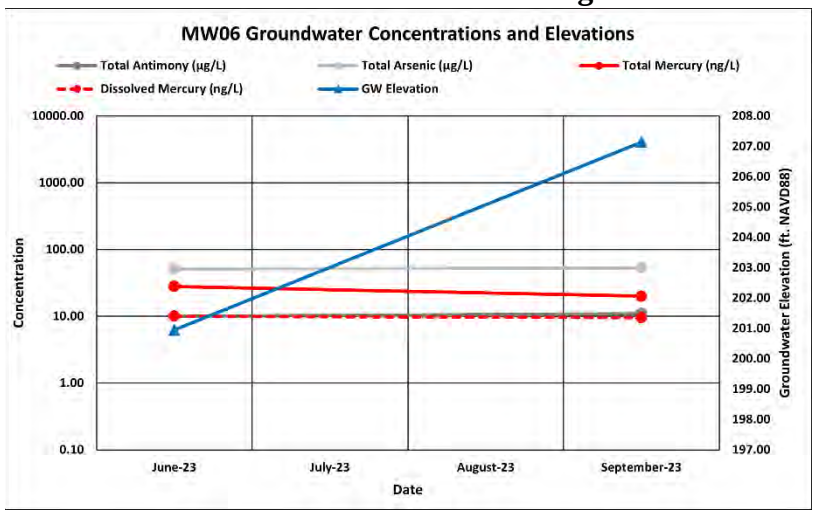
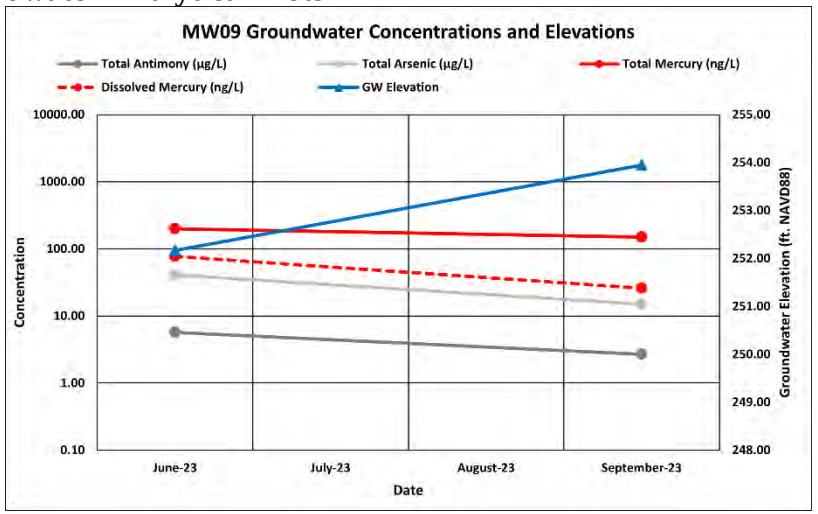
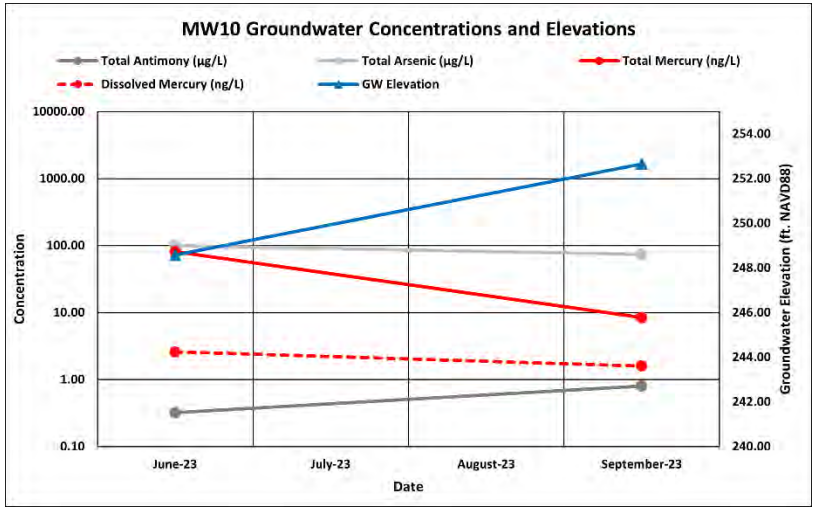


Figure 6-2. 2023 Groundwater Analytical Plots







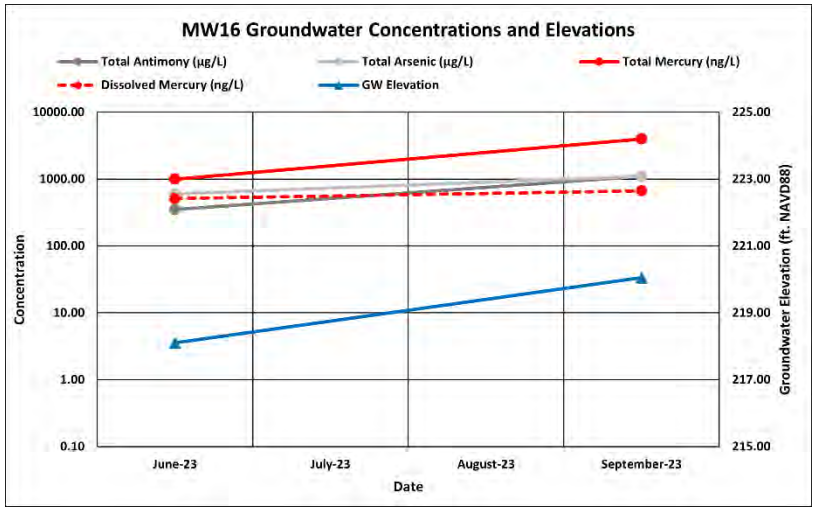
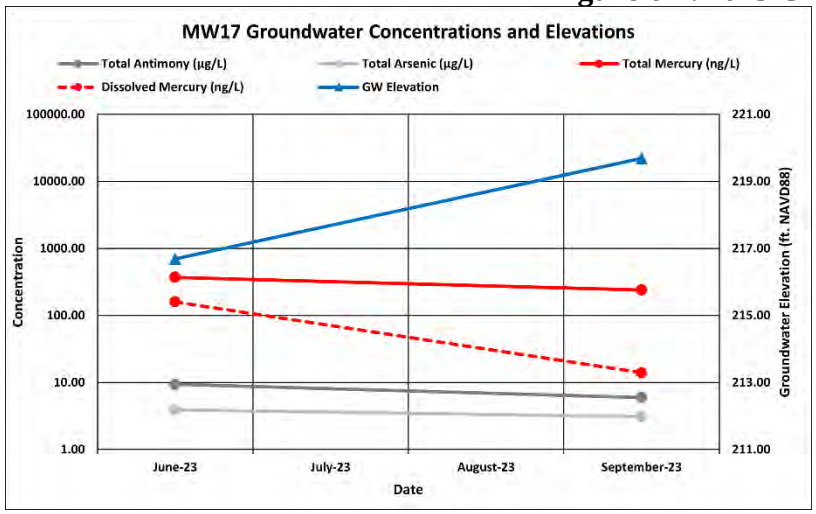
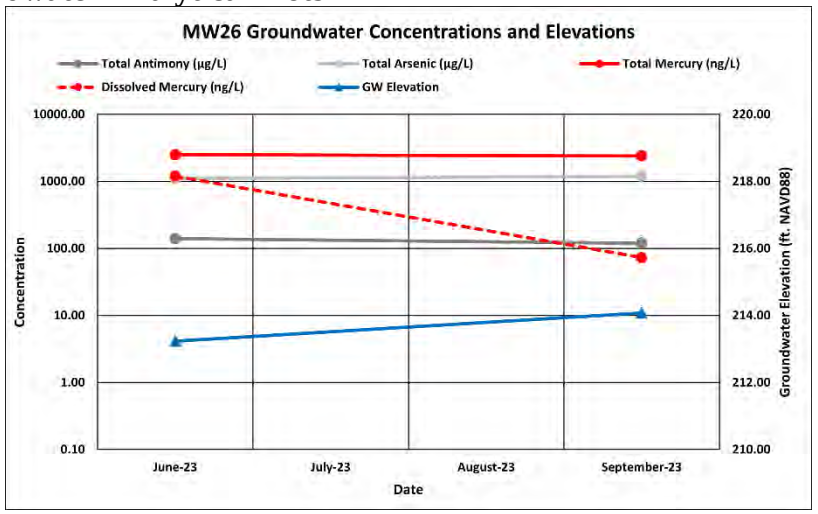
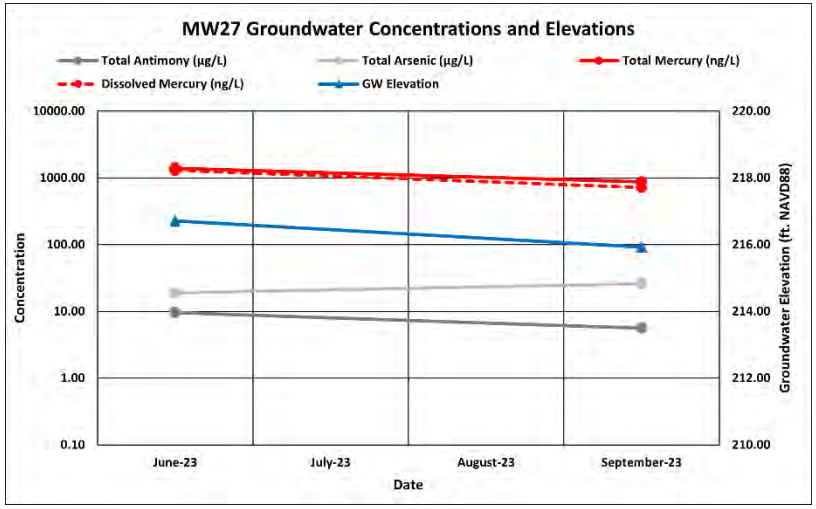


Figure 6-2. 2023 Groundwater Analytical Plots







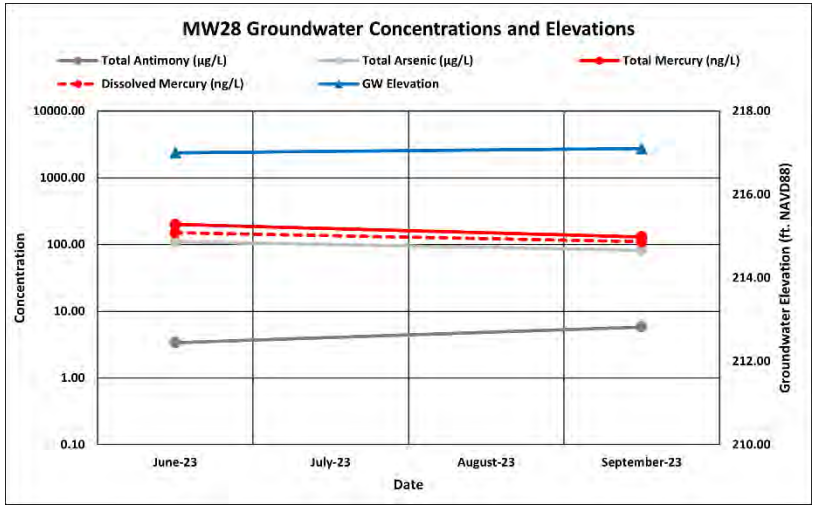
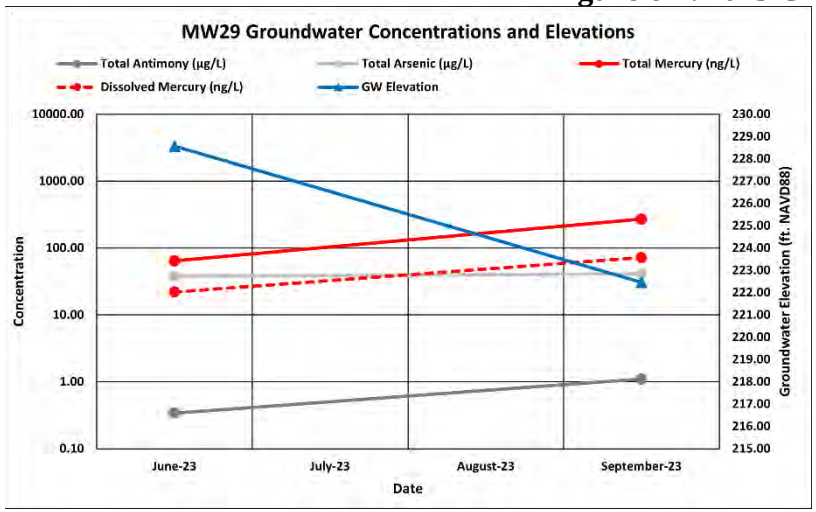
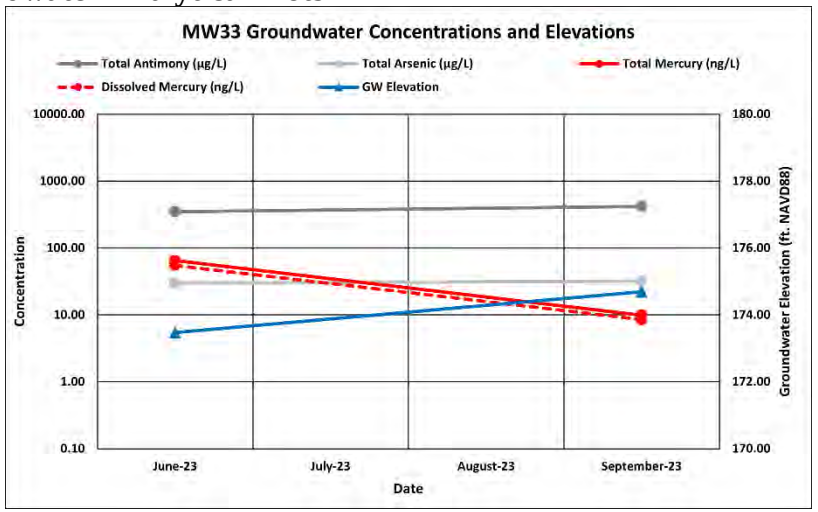
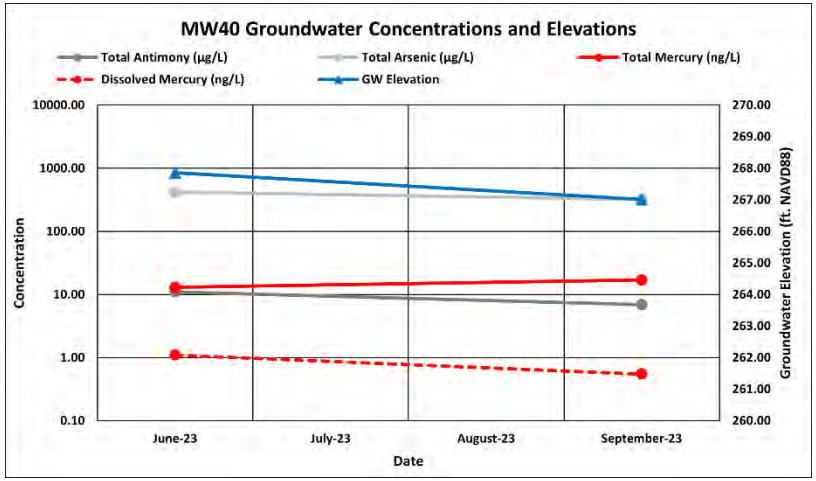


Figure 6-2. 2023 Groundwater Analytical Plots







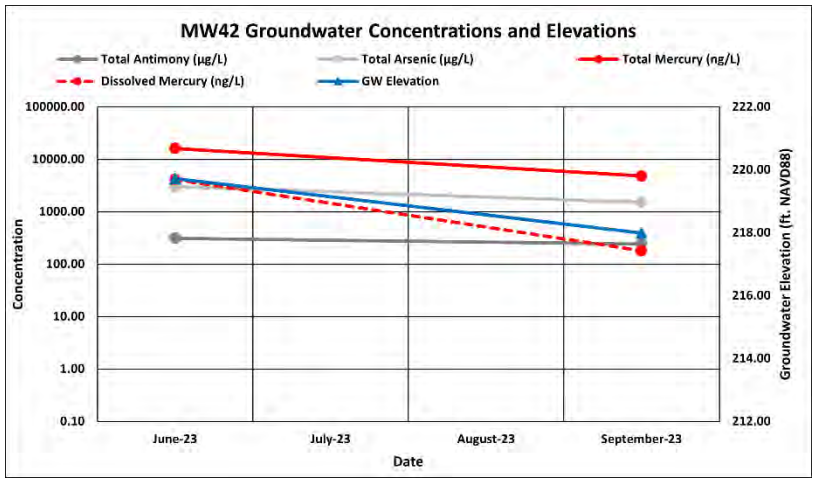
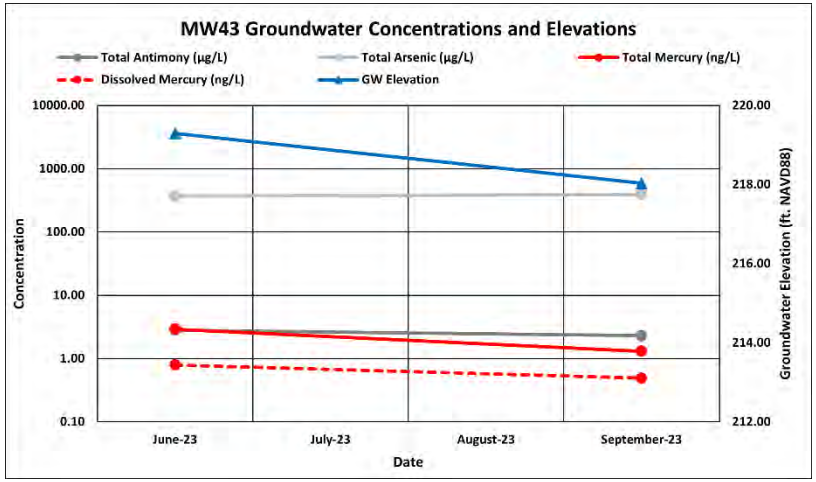
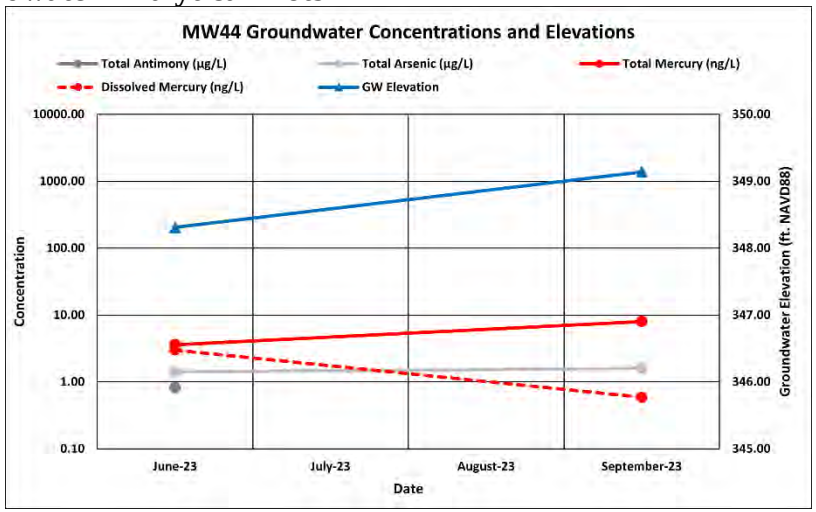
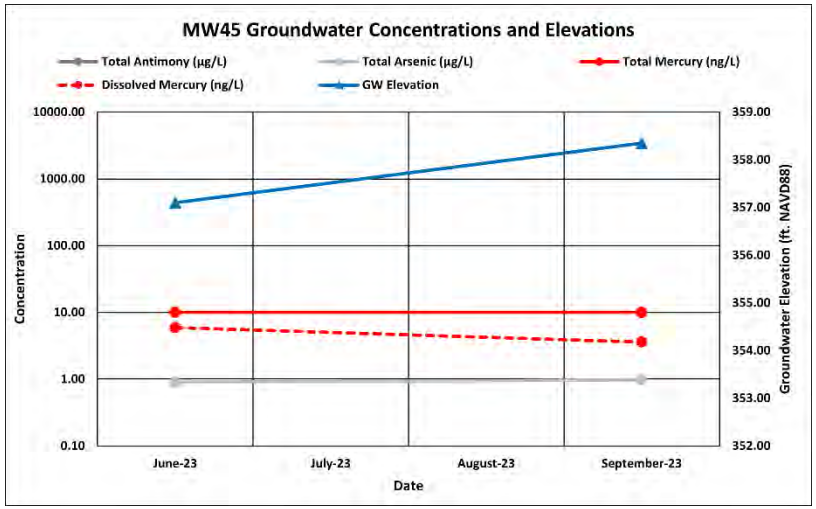


Figure 6-2. 2023 Groundwater Analytical Plots







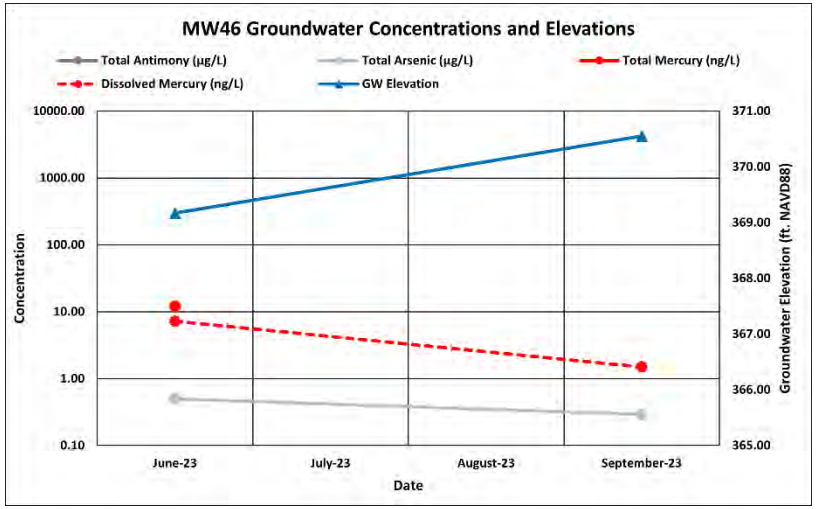
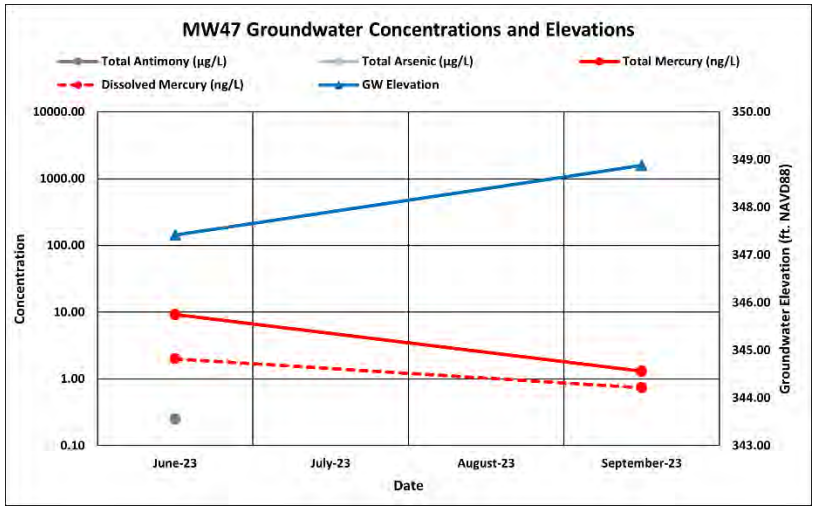
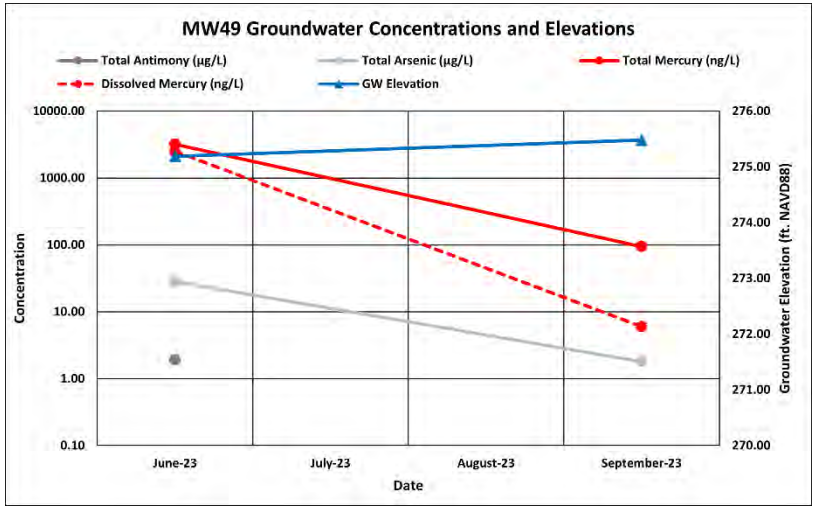
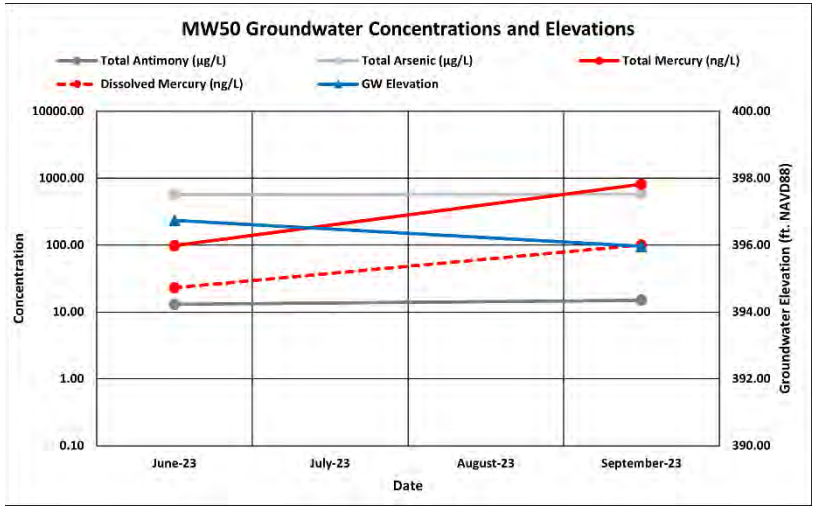


Figure 6-2. 2023 Groundwater Analytical Plots







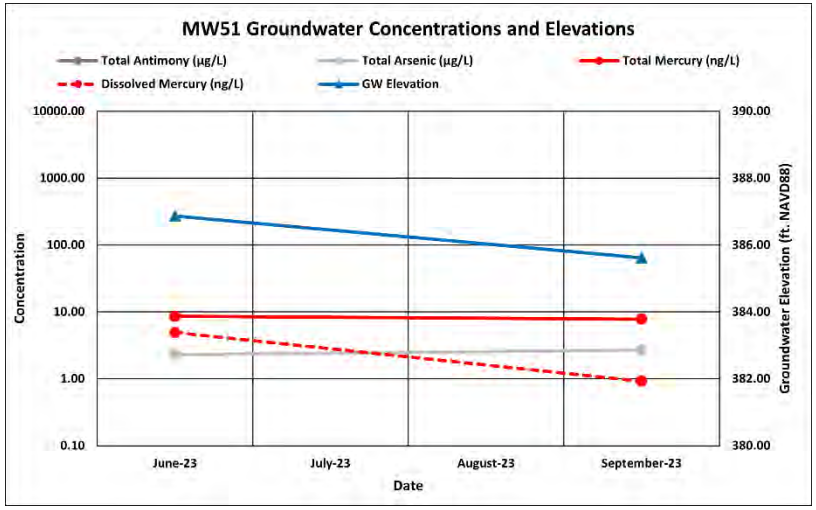
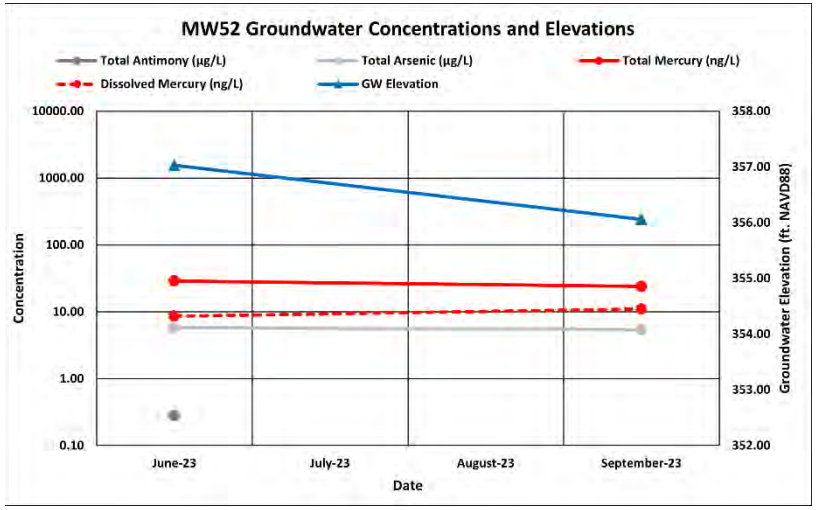
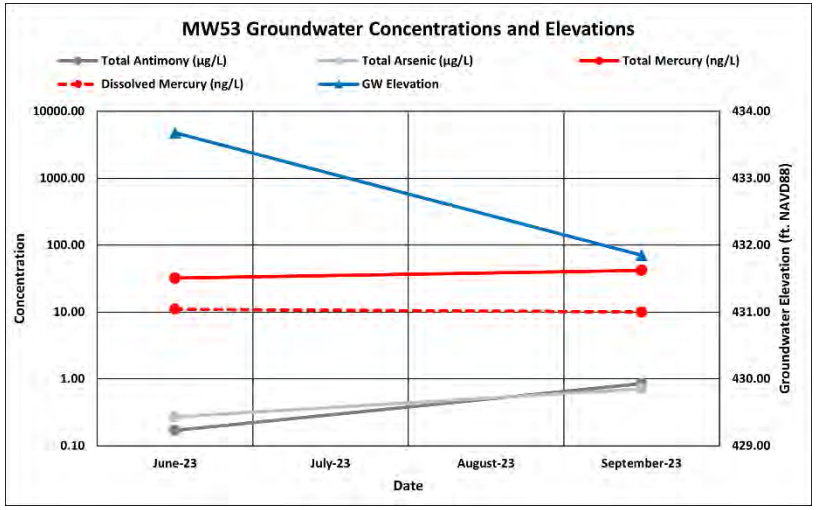
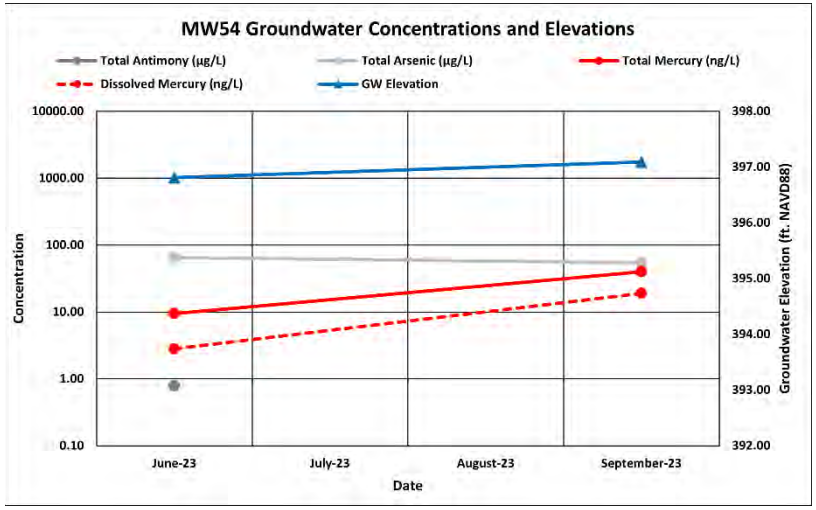


Figure 6-2. 2023 Groundwater Analytical Plots







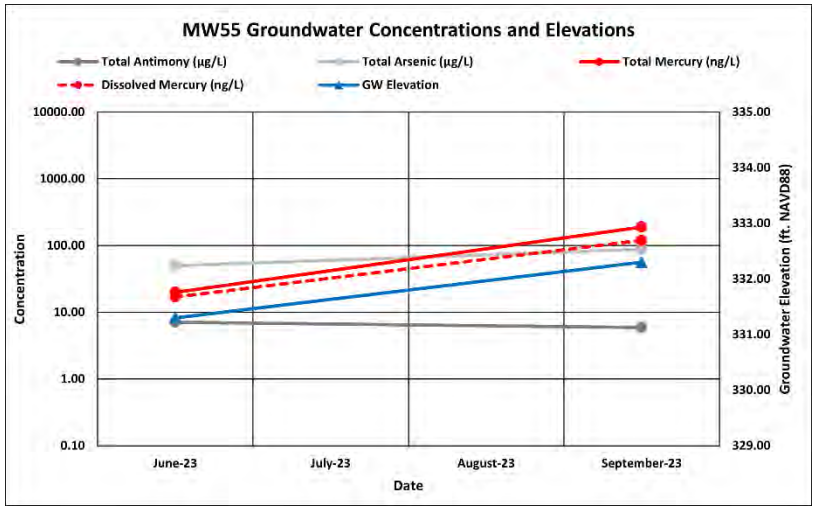
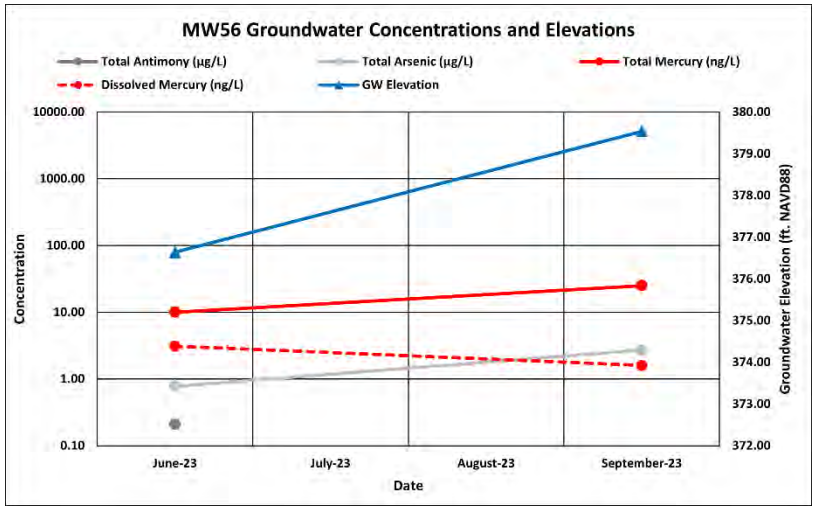
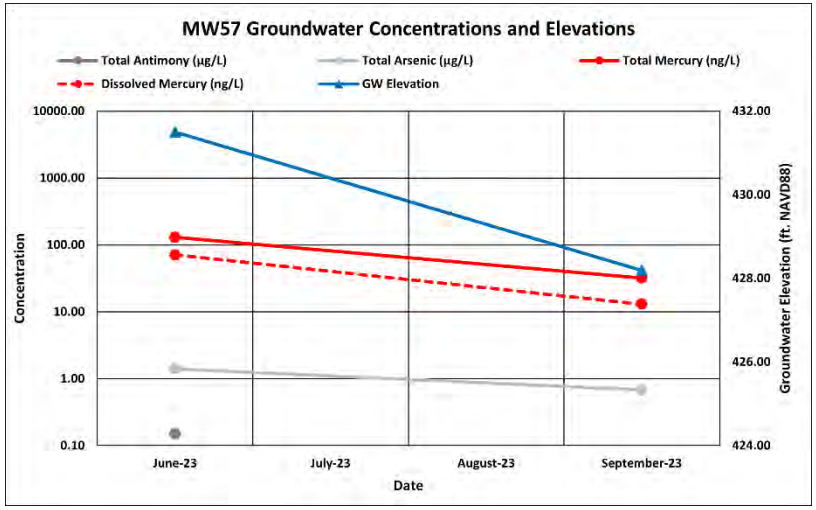
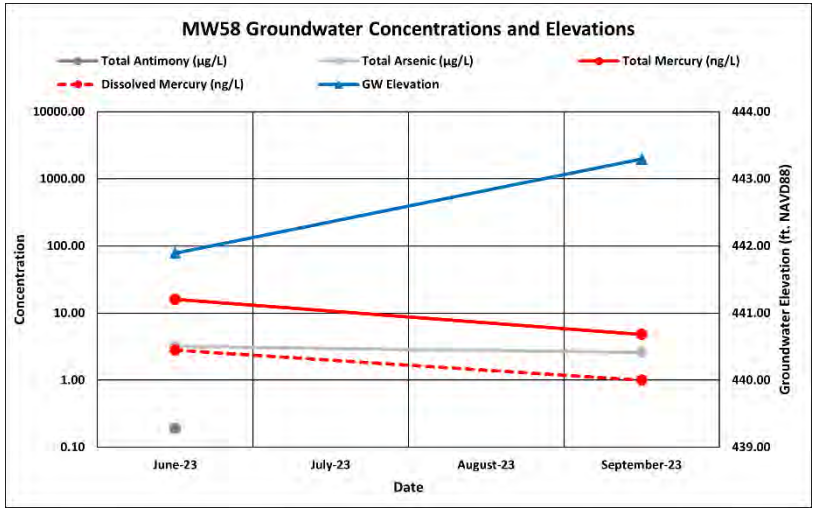


Figure 6-2. 2023 Groundwater Analytical Plots







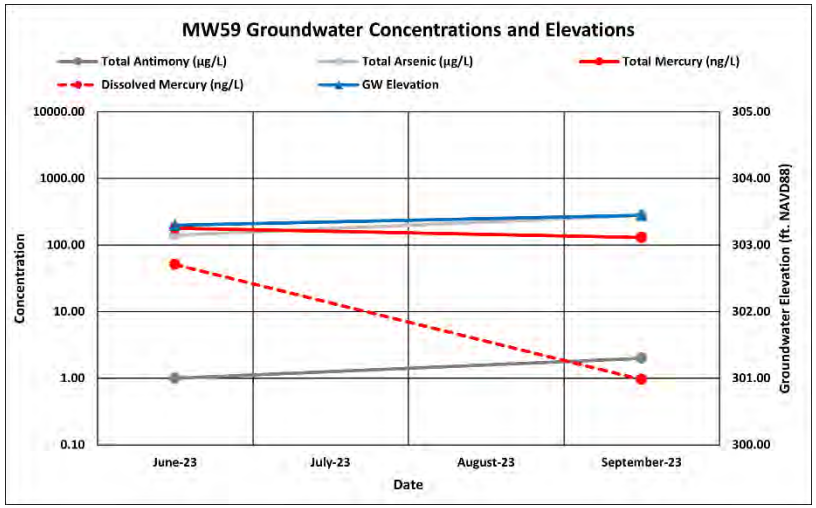
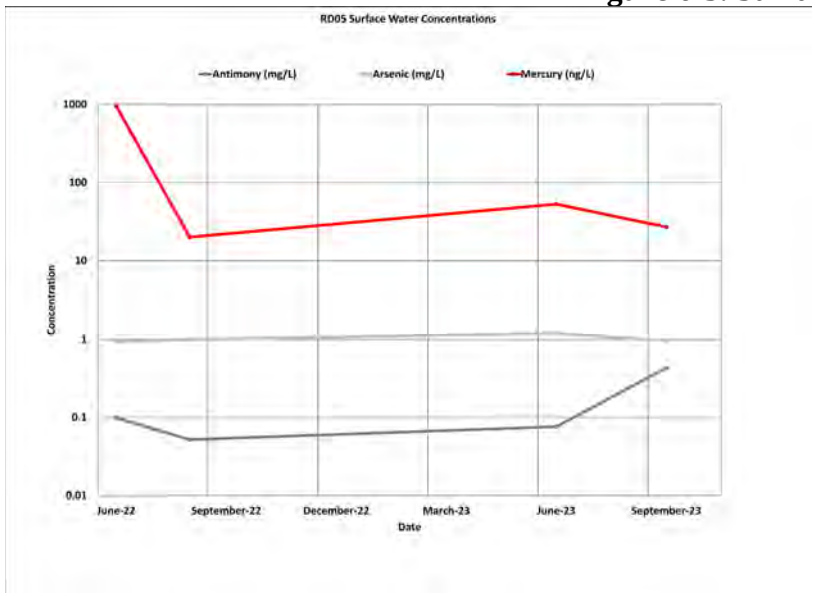
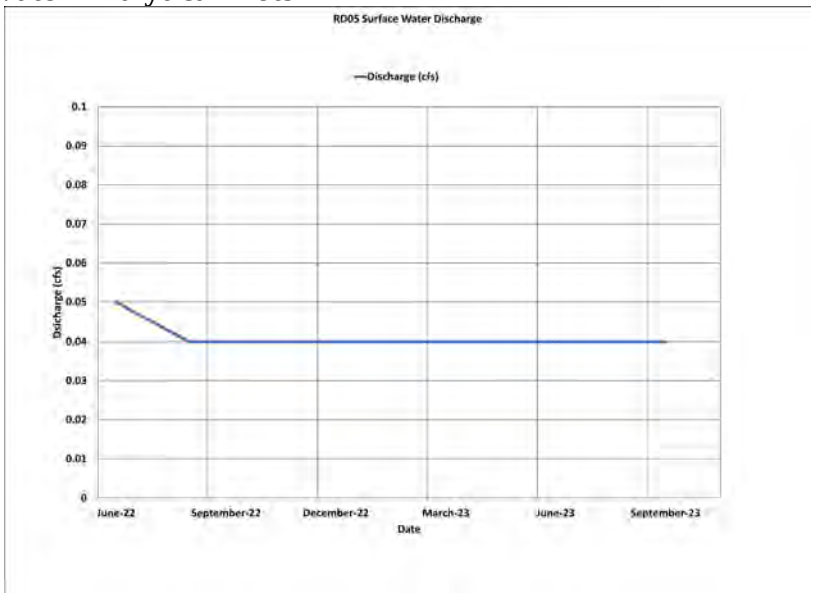
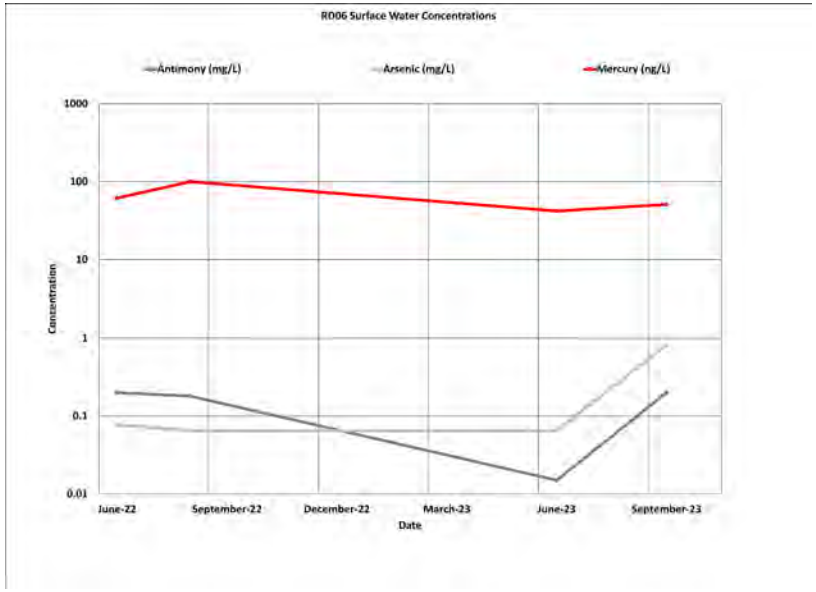


Figure 6-3. Surface Water Analytical Plots







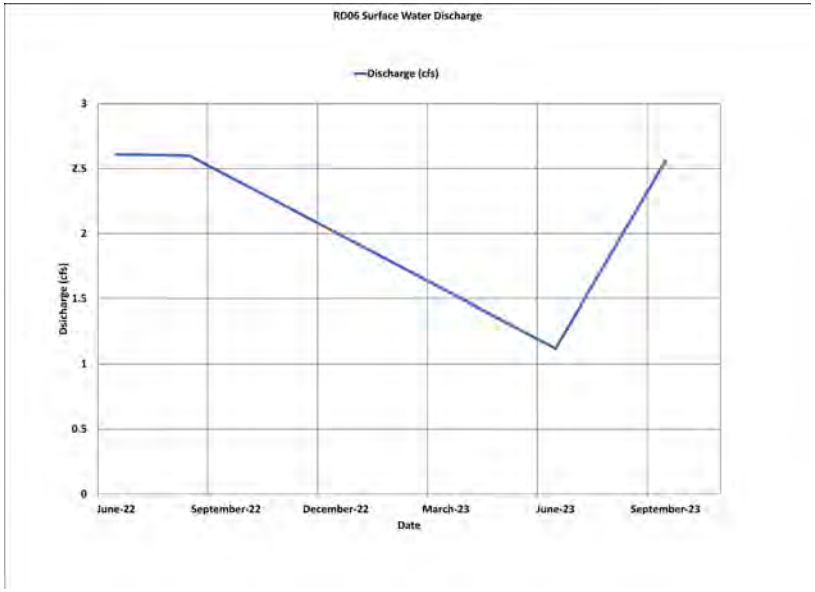
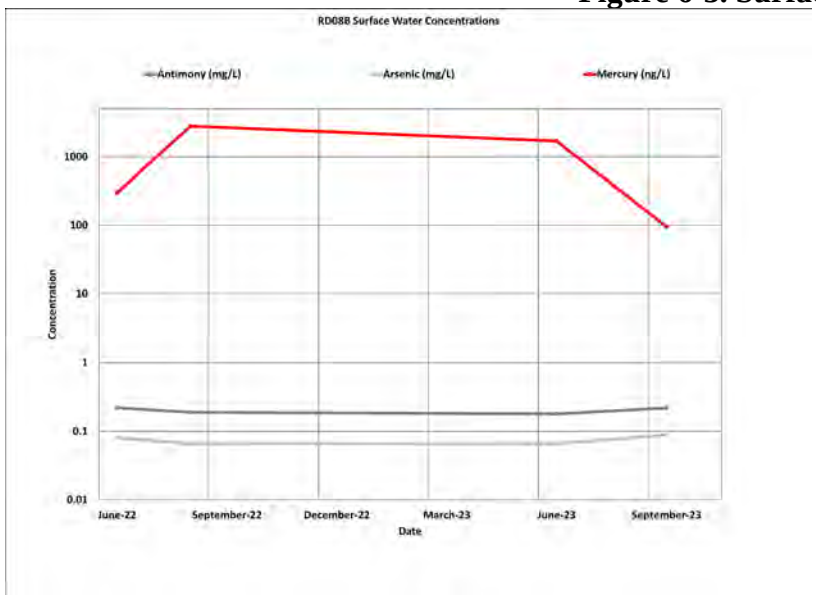
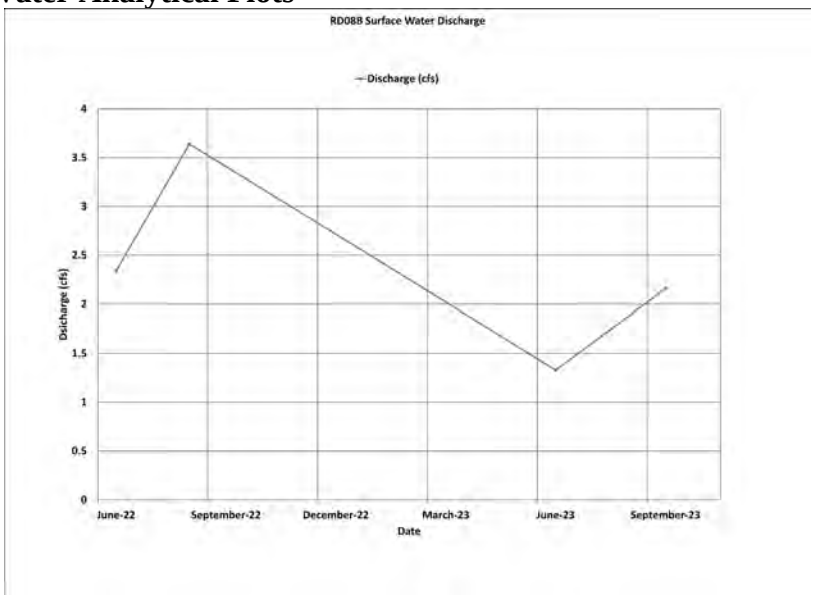
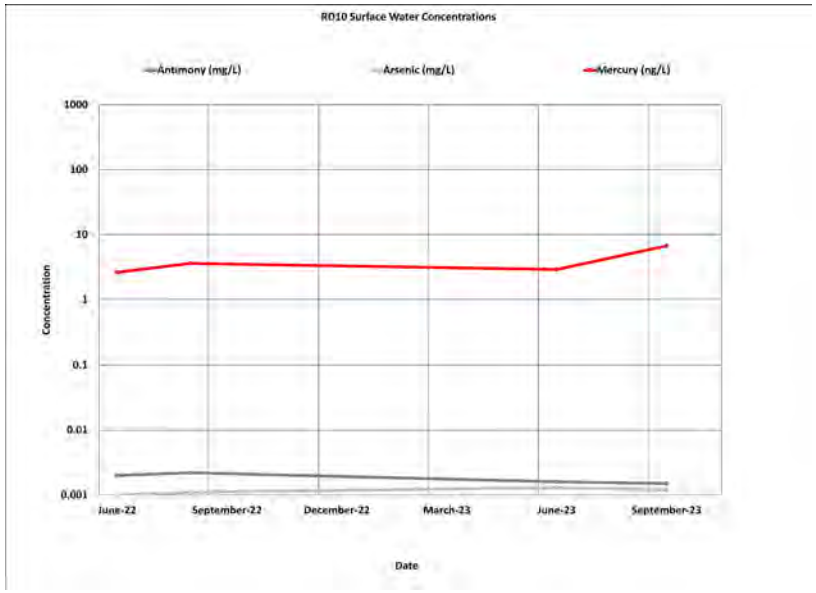


Figure 6-3. Surface Water Analytical Plots







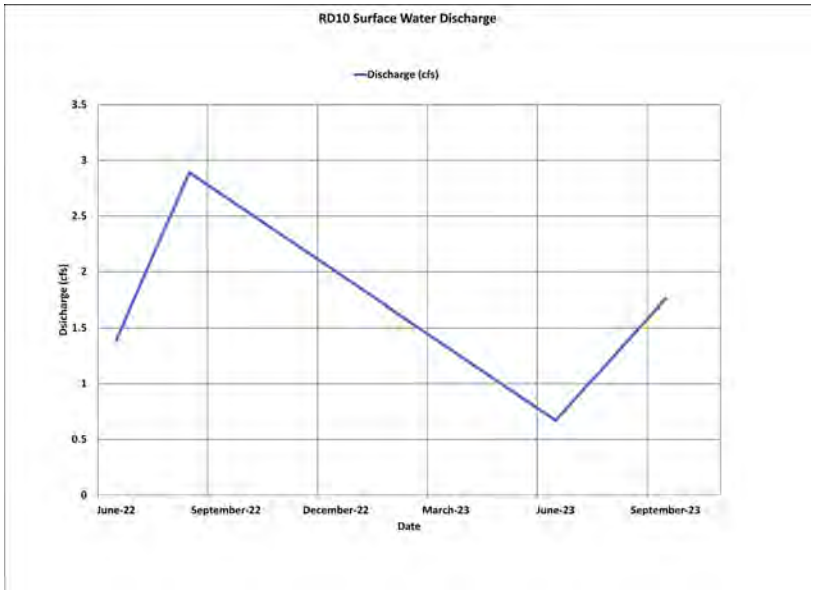
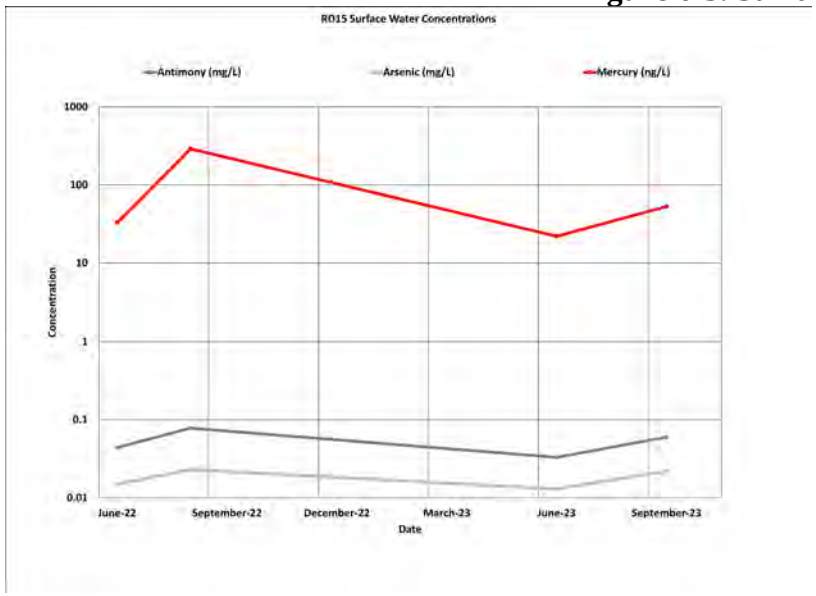


Figure 6-3. Surface Water Analytical Plots



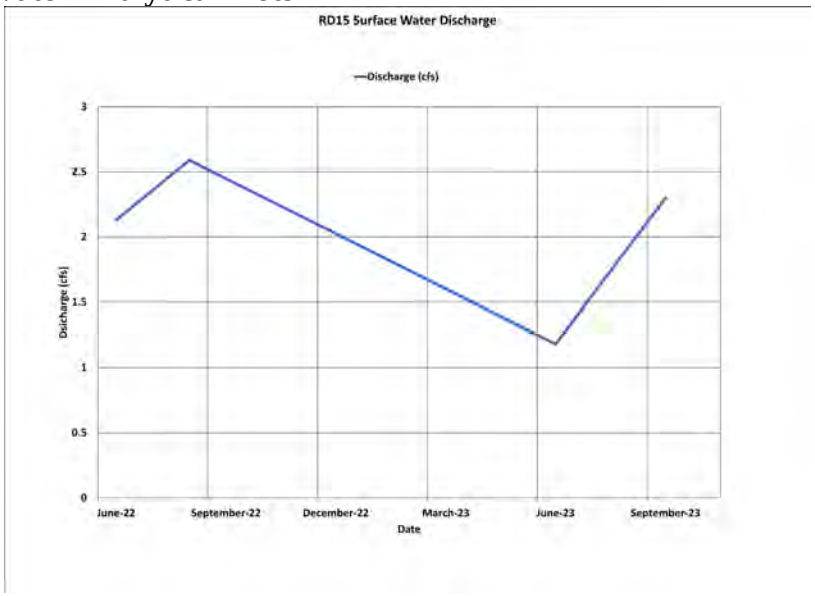
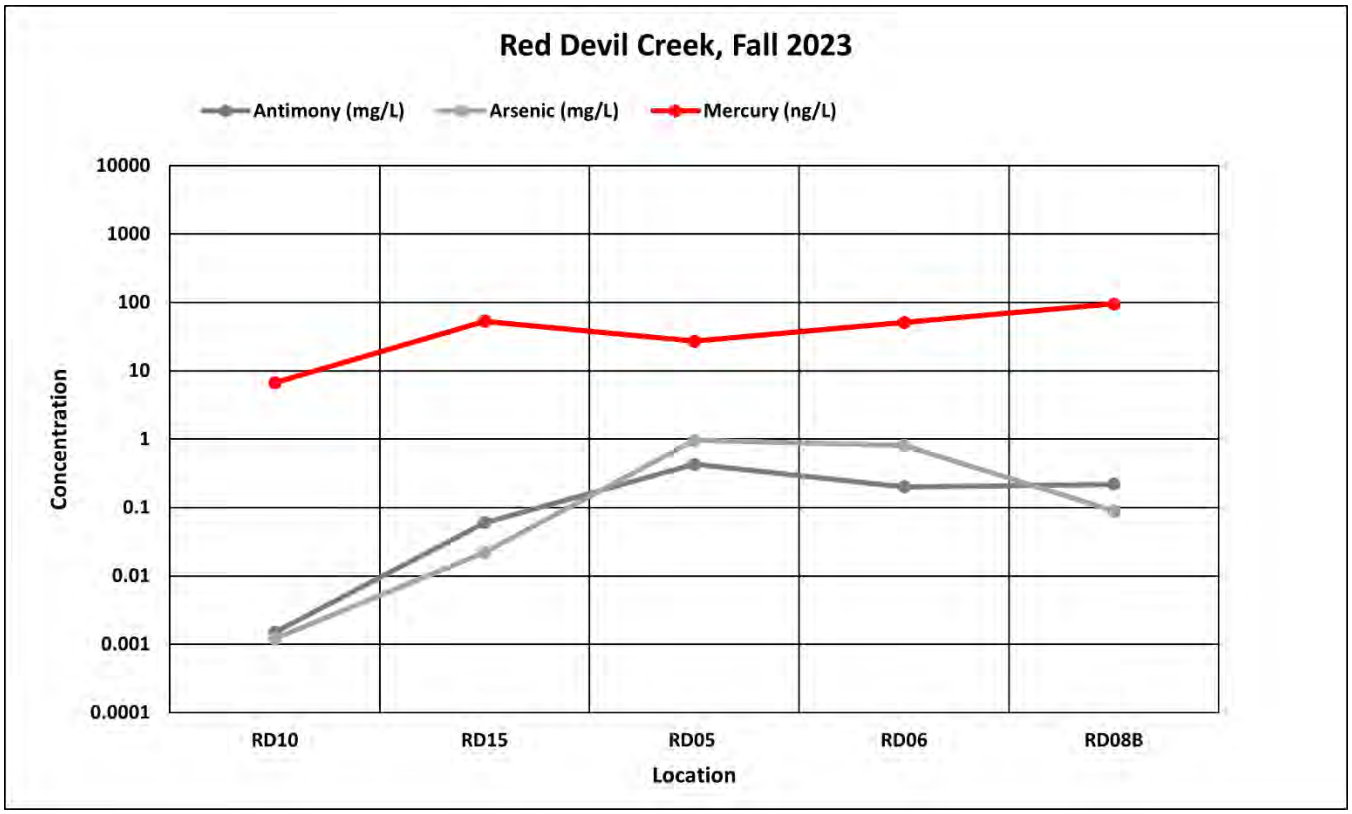


Figure 6-4. Red Devil Creek and Seep Contaminant Concentrations



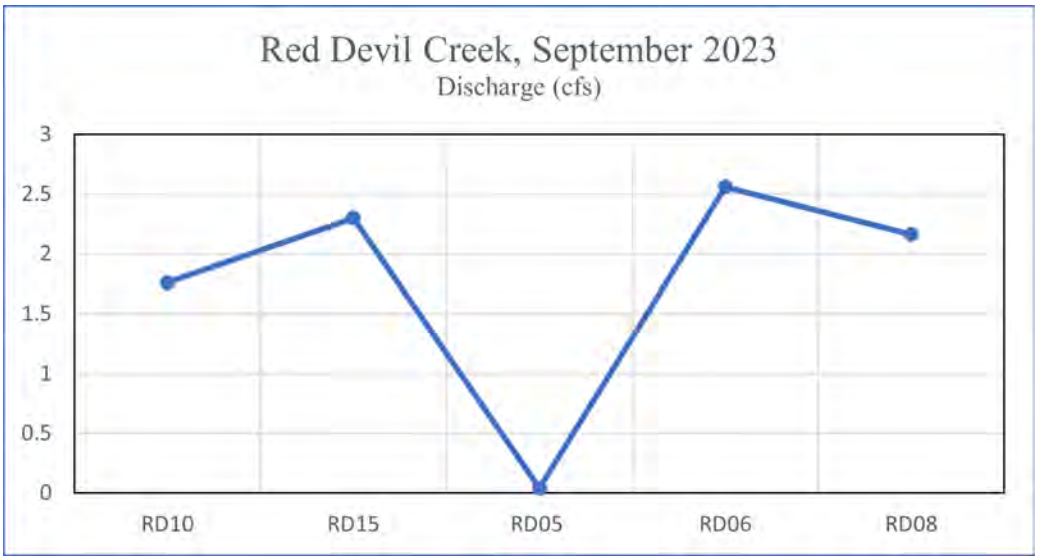
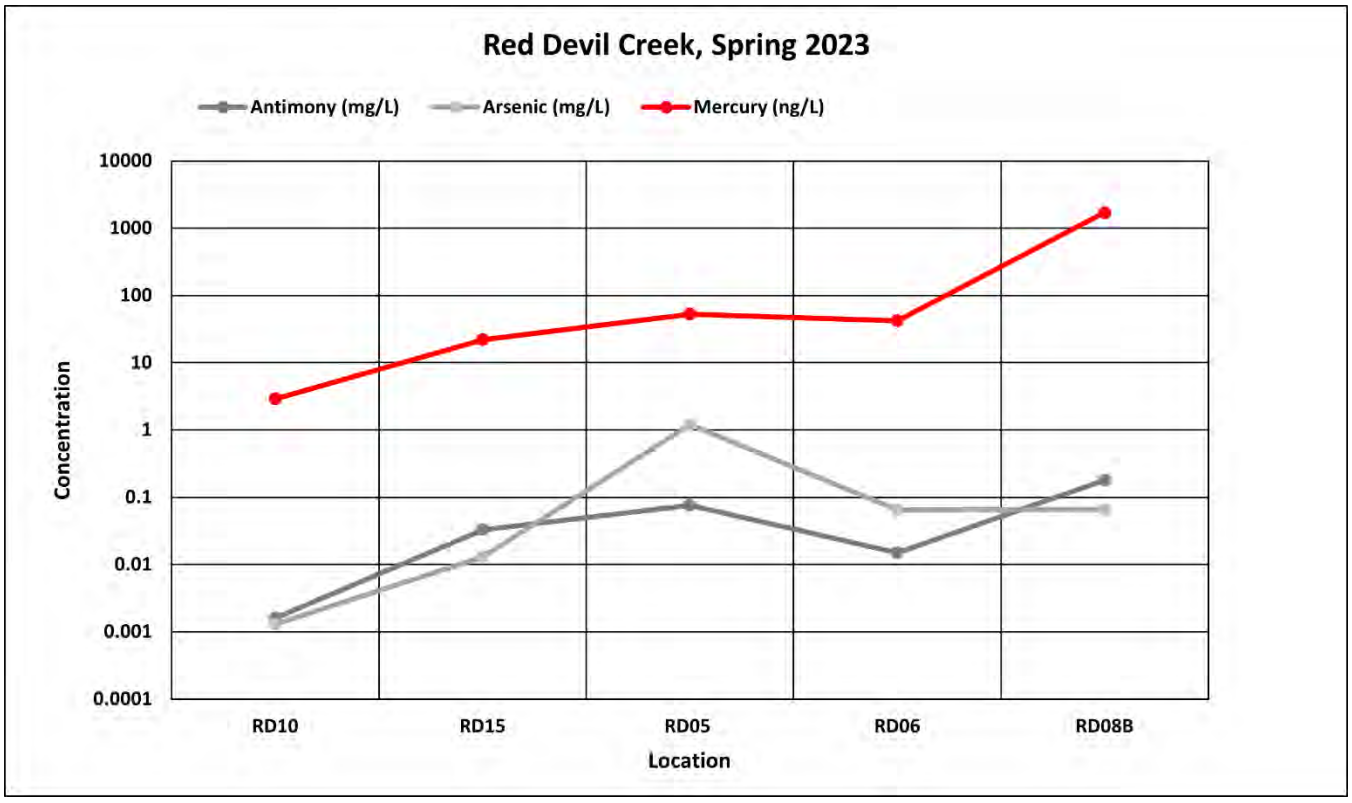
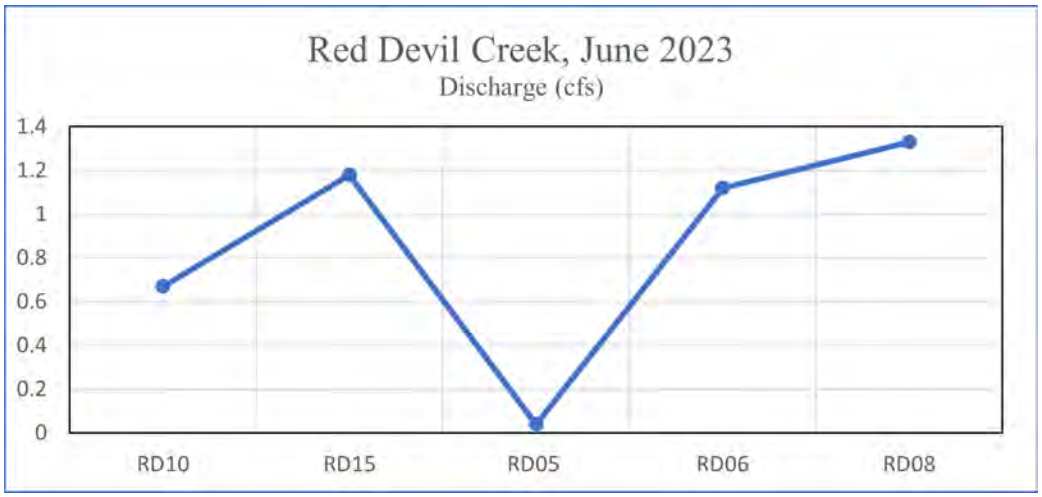


Figure 6-4. Red Devil Creek and Seep Contaminant Concentrations





TABLES

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Table 2-1. Monitoring Well Construction and Groundwater Depth Information

Monitoring Well ID	Soil Boring ID	Reported Well Total Depth As Constructed (feet bgs)	Reported Screened Interval (feet bgs)	Surveyed Ground Elevation (feet NAVD88)	Surveyed Top of Casing Elevation (feet NAVD88)	GW Observed During Drilling (feet bgs)	Measured Well Total Depth (feet below TOC)	Static Water Level Depth (feet below TOC)	Static Water Level Date	Static Water Level Time	GW Elevation (feet NAVD88)
MW01											
MW01	B01	29.5	19.0 - 29.1	254.51	257.51	17.8 - TD	NR	20.11	8/28/2021	9:19	237.40
MW01	B01	29.5	19.0 - 29.1	254.51	257.51	17.8 - TD	NR	17.97	6/1/2022	10:34	239.54
MW01	B01	29.5	19.0 - 29.1	254.51	257.51	17.8 - TD	NR	19.23	8/22/2022	10:06	238.28
MW01	B01	29.5	19.0 - 29.1	254.51	257.51	17.8 - TD	NR	18.66	6/14/2023	10:45	238.85
MW01	B01	29.5	19.0 - 29.1	254.51	257.51	17.8 - TD	NR	17.69	9/7/2023	9:12	239.82
MW03											
MW03	B03	25.5	15.0 - 25.0	228.37	230.77	19.0 - TD	NR	20.82	8/28/2021	11:05	209.95
MW03	B03	25.5	15.0 - 25.0	228.37	230.77	19.0 - TD	NR	16.51	6/1/2022	12:47	214.26
MW03	B04	25.5	15.0 - 25.0	228.37	230.77	19.0 - TD	NR	20.15	8/22/2022	9:42	210.62
MW03	B04	25.5	15.0 - 25.0	228.37	230.77	19.0 - TD	NR	18.14	6/14/2023	9:51	212.63
MW03	B04	25.5	15.0 - 25.0	228.37	230.77	19.0 - TD	NR	16.26	9/7/2023	11:02	214.51
MW04											
MW04	B04	30.5	20.0 - 30.0	239.92	242.12	25.3 - TD	NR	27.69	8/28/2021	12:50	214.43
MW04	B04	30.5	20.0 - 30.0	239.92	242.12	25.3 - TD	NR	NR	NR	NR	NR
MW04	B04	30.5	20.0 - 30.1	239.92	242.12	25.3 - TD	NR	26.35	8/22/2022	11:47	215.77
MW04	B04	30.5	20.0 - 30.1	239.92	242.12	25.3 - TD	NR	21.10	6/14/2023	13:23	221.02
MW04	B04	30.5	20.0 - 30.1	239.92	242.12	25.3 - TD	NR	22.10	9/7/2023	12:27	220.02
MW06											
MW06	B06	23.5	13.0 - 23.0	214.99	217.49	20.0 - TD	NR	19.02	8/28/2021	11:55	198.47
MW06	B06	23.5	13.0 - 23.0	214.99	217.49	20.0 - TD	NR	15.95	6/1/2022	13:37	201.54
MW06	B06	23.5	13.0 - 23.0	214.99	217.49	20.0 - TD	NR	19.06	8/22/2022	14:37	198.43
MW06	B06	23.5	13.0 - 23.0	214.99	217.49	20.0 - TD	NR	16.54	6/14/2023	12:07	200.95
MW06	B06	23.5	13.0 - 23.0	214.99	217.49	20.0 - TD	NR	10.35	9/7/2023	16:09	207.14
MW07											
MW07	B07	21.5	11.0 - 21.0	278.39	280.89	14.8 - TD	NR	20.93	8/28/2021	10:32	259.96
MW07	B07	21.5	11.0 - 21.0	278.39	280.89	14.8 - TD	NR	20.63	6/1/2022	10:51	260.26
MW07	B07	21.5	11.0 - 21.0	278.39	280.89	14.8 - TD	NR	21.94	8/22/2022	10:50	258.95
MW07	B07	21.5	11.0 - 21.0	278.39	280.89	14.8 - TD	NR	20.86	6/14/2023	10:52	260.03
MW07	B07	21.5	11.0 - 21.0	278.39	280.89	14.8 - TD	NR	20.46	9/7/2023	10:29	260.43
MW08											
MW08	11MP01SB	16.0	5.0 - 15.0	328.92	331.32	2.5 - 4.0, 10.5 - TD	NR	14.3	8/28/2021	10:25	317.05
MW08	11MP01SB	16.0	5.0 - 15.0	328.92	331.32	2.5 - 4.0, 10.5 - TD	NR	13.3	6/1/2022	11:25	317.99
MW08	11MP01SB	16.0	5.0 - 15.0	328.92	331.32	2.5 - 4.0, 10.5 - TD	NR	13.7	8/22/2022	10:43	317.62
MW08	11MP01SB	16.0	5.0 - 15.0	328.92	331.32	2.5 - 4.0, 10.5 - TD	NR	13.7	6/14/2023	11:14	317.64
MW08	11MP01SB	16.0	5.0 - 15.0	328.92	331.32	2.5 - 4.0, 10.5 - TD	NR	12.2	9/7/2023	10:17	319.11

Table 2-1. Monitoring Well Construction and Groundwater Depth Information

Monitoring Well ID	Soil Boring ID	Reported Well Total Depth As Constructed (feet bgs)	Reported Screened Interval (feet bgs)	Surveyed Ground Elevation (feet NAVD88)	Surveyed Top of Casing Elevation (feet NAVD88)	GW Observed During Drilling (feet bgs)	Measured Well Total Depth (feet below TOC)	Static Water Level Depth (feet below TOC)	Static Water Level Date	Static Water Level Time	GW Elevation (feet NAVD88)
MW09											
MW09	11MP17SB	31.0	20.0 - 30.0	274.88	277.28	14.0 - 16.0, 31.0 - TD	NR	25.37	8/28/2021	9:48	251.91
MW09	11MP17SB	31.0	20.0 - 30.0	274.88	277.28	14.0 - 16.0, 31.0 - TD	NR	25.42	6/1/2022	11:45	251.86
MW09	11MP17SB	31.0	20.0 - 30.0	274.88	277.28	14.0 - 16.0, 31.0 - TD	NR	27.33	8/22/2022	10:20	249.95
MW09	11MP17SB	31.0	20.0 - 30.0	274.88	277.28	14.0 - 16.0, 31.0 - TD	NR	25.11	6/14/2023	11:28	252.17
MW09	11MP17SB	31.0	20.0 - 30.0	274.88	277.28	14.0 - 16.0, 31.0 - TD	NR	23.33	9/7/2023	9:40	253.95
MW10											
MW10	11MP14SB	61.0	50.0 - 60.0	274.31	276.21	48.0 - TD	NR	30.01	8/28/2021	9:43	246.20
MW10	11MP14SB	61.0	50.0 - 60.0	274.31	276.21	48.0 - TD	NR	26.28	6/1/2022	11:40	249.93
MW10	11MP14SB	61.0	50.0 - 60.0	274.31	276.21	48.0 - TD	NR	27.04	8/22/2022	10:16	249.17
MW10	11MP14SB	61.0	50.0 - 60.0	274.31	276.21	48.0 - TD	NR	27.64	6/14/2023	11:26	248.57
MW10	11MP14SB	61.0	50.0 - 60.0	274.31	276.21	48.0 - TD	NR	23.55	9/7/2023	9:30	252.66
MW11											
MW11	11MP12SB	23.0	12.0 - 22.0	268.70	271.30	--	NR	23.55	8/28/2021	9:38	247.75
MW11	11MP12SB	23.0	12.0 - 22.0	268.70	271.30	--	NR	19.21	6/1/2022	11:34	252.09
MW11	11MP12SB	23.0	12.0 - 22.0	268.70	271.30	--	NR	22.16	8/22/2022	10:13	249.14
MW11	11MP12SB	23.0	12.0 - 22.0	268.70	271.30	--	NR	20.40	6/14/2023	11:19	250.90
MW11	11MP12SB	23.0	12.0 - 22.0	268.70	271.30	--	NR	21.10	9/7/2023	9:21	250.20
MW12											
MW12	11RD13SB	15.0	4.0 - 14.0	263.22	265.62	1.0 - TD	NR	NR	8/28/2021	10:44	Inner casing damaged from settling of outer casing, preventing access for DTW measurements.
MW12	11RD13SB	15.0	4.0 - 14.0	263.22	265.62	1.0 - TD	NR	NR	6/1/2022	11:11	Inner casing damaged from settling of outer casing, preventing access for DTW measurements.
MW12	11RD13SB	15.0	4.0 - 14.0	263.22	265.62	1.0 - TD	NR	NR	8/22/2022	10:59	Inner casing damaged from settling of outer casing, preventing access for DTW measurements.
MW12	11RD13SB	15.0	4.0 - 14.0	263.22	265.62	1.0 - TD	NR	NR	6/14/2023	11:00	Inner casing damaged from settling of outer casing, preventing access for DTW measurements.

Table 2-1. Monitoring Well Construction and Groundwater Depth Information

Monitoring Well ID	Soil Boring ID	Reported Well Total Depth As Constructed (feet bgs)	Reported Screened Interval (feet bgs)	Surveyed Ground Elevation (feet NAVD88)	Surveyed Top of Casing Elevation (feet NAVD88)	GW Observed During Drilling (feet bgs)	Measured Well Total Depth (feet below TOC)	Static Water Level Depth (feet below TOC)	Static Water Level Date	Static Water Level Time	GW Elevation (feet NAVD88)
MW12	11RD13SB	15.0	4.0 - 14.0	263.22	265.62	1.0 - TD	NR	NR	9/7/2023	NR	Inner casing damaged from settling of outer casing, preventing access for DTW measurements.
MW13											
MW13	11MP20SB	32.0	21.0 - 31.0	274.30	276.70	27.0 - TD	31.72	DRY	8/28/2021	10:37	Frost jacked, unusable for DTW measurements
MW13	11MP20SB	32.0	21.0 - 31.0	274.30	276.70	27.0 - TD	NR	24.37	6/1/2022	10:56	Frost jacked, unusable for DTW measurements
MW13	11MP20SB	32.0	21.0 - 31.0	274.30	276.70	27.0 - TD	NR	30.9	8/22/2022	10:54	Frost jacked, unusable for DTW measurements
MW13	11MP20SB	32.0	21.0 - 31.0	274.30	276.70	27.0 - TD	NR	28.81	6/14/2023	10:54	Frost jacked, unusable for DTW measurements
MW13	11MP20SB	32.0	21.0 - 31.0	274.30	276.70	27.0 - TD	NR	22.08	9/7/2023	10:33	Frost jacked, unusable for DTW measurements
MW14											
MW14	11MP25SB	36.0	25.0 - 35.0	246.71	249.01	25.7 - TD	--	--	--	--	Decommissioned in 2014 NTCRA
MW15											
MW15	11MP29SB	26.0	15.0 - 25.0	242.63	244.93	16.2 - TD	--	--	--	--	Decommissioned in 2014 NTCRA
MW16											
MW16	11MP30SB	22.0	11.0 - 21.0	226.09	228.09	16.0 - TD	NR	13.49	8/28/2021	11:01	214.60
MW16	11MP30SB	22.0	11.0 - 21.0	226.09	228.09	16.0 - TD	NR	7.00	1/15/1900	12:42	221.09
MW16	11MP30SB	22.0	11.0 - 21.0	226.09	228.09	16.0 - TD	NR	12.55	8/22/2022	9:19	215.54
MW16	11MP30SB	22.0	11.0 - 21.0	226.09	228.09	16.0 - TD	NR	9.99	6/14/2023	9:46	218.10
MW16	11MP30SB	22.0	11.0 - 21.0	226.09	228.09	16.0 - TD	NR	8.04	9/7/2023	10:57	220.05
MW17											
MW17	11MP91SB	52.5	41.5 - 51.5	226.36	228.66	25.0 - 33.0, 33.0 - TD	NR	15.82	8/28/2021	10:58	212.84
MW17	11MP91SB	52.5	41.5 - 51.5	226.36	228.66	25.0 - 33.0, 33.0 - TD	NR	9.15	6/1/2022	12:38	219.51
MW17	11MP91SB	52.5	41.5 - 51.5	226.36	228.66	25.0 - 33.0, 33.0 - TD	NR	15.02	8/22/2022	9:17	213.64
MW17	11MP91SB	52.5	41.5 - 51.5	226.36	228.66	25.0 - 33.0, 33.0 - TD	NR	11.97	6/14/2023	9:41	216.69
MW17	11MP91SB	52.5	41.5 - 51.5	226.36	228.66	25.0 - 33.0, 33.0 - TD	NR	8.97	9/7/2023	10:53	219.69
MW18											
MW18	11MP31SB	40.0	29.0 - 39.0	241.33	243.83	38.0 - TD	NR	29.87	8/28/2021	11:18	213.96
MW18	11MP31SB	40.0	29.0 - 39.0	241.33	243.83	38.0 - TD	NR	21.80	6/1/2022	13:14	222.03

Table 2-1. Monitoring Well Construction and Groundwater Depth Information

Monitoring Well ID	Soil Boring ID	Reported Well Total Depth As Constructed (feet bgs)	Reported Screened Interval (feet bgs)	Surveyed Ground Elevation (feet NAVD88)	Surveyed Top of Casing Elevation (feet NAVD88)	GW Observed During Drilling (feet bgs)	Measured Well Total Depth (feet below TOC)	Static Water Level Depth (feet below TOC)	Static Water Level Date	Static Water Level Time	GW Elevation (feet NAVD88)
MW18	11MP31SB	40.0	29.0 - 39.0	241.33	243.83	38.0 - TD	NR	28.72	8/22/2022	9:08	215.11
MW18	11MP31SB	40.0	29.0 - 39.0	241.33	243.83	38.0 - TD	NR	24.80	6/14/2023	10:23	219.03
MW18	11MP31SB	40.0	29.0 - 39.0	241.33	243.83	38.0 - TD	NR	21.95	9/7/2023	11:31	221.88
MW19											
MW19	11MP33SB	43.0	32.0 - 42.0	237.70	240.00	39.0 - TD	NR	21.81	8/28/2021	11:24	218.19
MW19	11MP33SB	43.0	32.0 - 42.0	237.70	240.00	39.0 - TD	NR	15.65	6/1/2022	13:08	224.35
MW19	11MP33SB	43.0	32.0 - 42.0	237.70	240.00	39.0 - TD	NR	20.93	8/22/2022	904	219.07
MW19	11MP33SB	43.0	32.0 - 42.0	237.70	240.00	39.0 - TD	NR	16.88	6/14/2023	10:19	223.12
MW19	11MP33SB	43.0	32.0 - 42.0	237.70	240.00	39.0 - TD	NR	15.12	9/7/2023	11:26	224.88
MW20											
MW20	11MP38SB	15.5	4.5 - 14.5	212.90	215.20	6.5 - TD	NR	7.67	8/28/2021	11:09	207.53
MW20	11MP38SB	15.5	4.5 - 14.5	212.90	215.20	6.5 - TD	NR	6.16	6/1/2022	12:52	209.04
MW20	11MP38SB	15.5	4.5 - 14.5	212.90	215.20	6.5 - TD	NR	7.40	8/22/2022	9:46	207.80
MW20	11MP38SB	15.5	4.5 - 14.5	212.90	215.20	6.5 - TD	NR	6.66	6/14/2023	9:58	208.54
MW20	11MP38SB	15.5	4.5 - 14.5	212.90	215.20	6.5 - TD	NR	5.80	9/7/2023	11:08	209.40
MW21											
MW21	11MP39SB	17.5	6.5 - 16.5	208.23	210.13	7.0 - TD	NR	8.96	8/28/2021	11:40	201.17
MW21	11MP39SB	17.5	6.5 - 16.5	208.23	210.13	7.0 - TD	NR	7.97	6/1/2022	12:57	202.16
MW21	11MP39SB	17.5	6.5 - 16.5	208.23	210.13	7.0 - TD	NR	8.64	8/22/2022	9:50	201.49
MW21	11MP39SB	17.5	6.5 - 16.5	208.23	210.13	7.0 - TD	NR	8.36	6/14/2023	10:04	201.77
MW21	11MP39SB	17.5	6.5 - 16.5	208.23	210.13	7.0 - TD	NR	8.15	9/7/2023	11:14	201.98
MW22											
MW22	11MP40SB	15.5	4.5 - 14.5	203.10	205.10	7.8 - TD	NR	9.97	8/28/2021	11:37	195.13
MW22	11MP40SB	15.5	4.5 - 14.5	203.10	205.10	7.8 - TD	NR	6.71	6/1/2022	13:02	198.39
MW22	11MP40SB	15.5	4.5 - 14.5	203.10	205.10	7.8 - TD	NR	9.72	8/22/2022	9:55	195.38
MW22	11MP40SB	15.5	4.5 - 14.5	203.10	205.10	7.8 - TD	NR	8.61	6/14/2023	10:09	196.49
MW22	11MP40SB	15.5	4.5 - 14.5	203.10	205.10	7.8 - TD	NR	7.74	9/7/2023	11:20	197.36
MW23											
MW23	11MP66SB	29.0	18.0 - 28.0	201.96	204.16	20.0 - TD	NR	16.38	8/28/2021	11:51	187.78
MW23	11MP66SB	29.0	18.0 - 28.0	201.96	204.16	20.0 - TD	NR	14.41	6/1/2022	17:49	189.75
MW23	11MP66SB	29.0	18.0 - 28.0	201.96	204.16	20.0 - TD	NR	16.31	8/22/2022	11:11	187.85
MW23	11MP66SB	29.0	18.0 - 28.0	201.96	204.16	20.0 - TD	NR	14.91	6/14/2023	12:01	189.25
MW23	11MP66SB	29.0	18.0 - 28.0	201.96	204.16	20.0 - TD	NR	15.70	9/7/2023	16:13	188.46
MW24											
MW24	11MP62SB	30.0	19.0 - 29.0	221.41	223.51	20.0 - TD	NR	17.45	8/28/2021	11:58	206.06
MW24	11MP62SB	30.0	19.0 - 29.0	221.41	223.51	20.0 - TD	NR	14.60	6/1/2022	13:56	208.91
MW24	11MP62SB	30.0	19.0 - 29.0	221.41	223.51	20.0 - TD	NR	17.41	8/22/2022	11:27	206.10
MW24	11MP62SB	30.0	19.0 - 29.0	221.41	223.51	20.0 - TD	NR	15.26	6/14/2023	12:59	208.25
MW24	11MP62SB	30.0	19.0 - 29.0	221.41	223.51	20.0 - TD	NR	15.93	9/7/2023	16:06	207.58

Table 2-1. Monitoring Well Construction and Groundwater Depth Information

Monitoring Well ID	Soil Boring ID	Reported Well Total Depth As Constructed (feet bgs)	Reported Screened Interval (feet bgs)	Surveyed Ground Elevation (feet NAVD88)	Surveyed Top of Casing Elevation (feet NAVD88)	GW Observed During Drilling (feet bgs)	Measured Well Total Depth (feet below TOC)	Static Water Level Depth (feet below TOC)	Static Water Level Date	Static Water Level Time	GW Elevation (feet NAVD88)
MW25											
MW25	11MP89SB	42.0	31.0 - 41.0	237.56	239.76	32.0 - TD	NR	32.26	8/28/2021	12:39	207.50
MW25	11MP89SB	42.0	31.0 - 41.0	237.56	239.76	32.0 - TD	NR	29.95	6/1/2022	13:51	209.81
MW25	11MP89SB	42.0	31.0 - 41.0	237.56	239.76	32.0 - TD	NR	31.93	8/22/2022	11:31	207.83
MW25	11MP89SB	42.0	31.0 - 41.0	237.56	239.76	32.0 - TD	NR	30.86	6/14/2023	13:04	208.90
MW25	11MP89SB	42.0	31.0 - 41.0	237.56	239.76	32.0 - TD	NR	30.64	9/7/2023	12:12	209.12
MW26											
MW26	11MP52SB	43.0	32.0 - 42.0	244.03	245.93	34.0 - TD	NR	36.15	8/28/2021	12:34	209.78
MW26	11MP52SB	43.0	32.0 - 42.0	244.03	245.93	34.0 - TD	NR	31.0	6/1/2022	13:45	214.94
MW26	11MP52SB	43.0	32.0 - 42.0	244.03	245.93	34.0 - TD	NR	33.5	8/22/2022	11:34	212.39
MW26	11MP52SB	43.0	32.0 - 42.0	244.03	245.93	34.0 - TD	NR	32.7	6/14/2023	13:08	213.24
MW26	11MP52SB	43.0	32.0 - 42.0	244.03	245.93	34.0 - TD	NR	31.9	9/7/2023	12:06	214.08
MW27											
MW27	11MP60SB	34.0	23.0 - 33.0	241.04	242.94	29.0 - TD	NR	30.92	8/28/2021	12:43	212.02
MW27	11MP60SB	34.0	23.0 - 33.0	241.04	242.94	29.0 - TD	NR	24.78	6/1/2022	14:01	218.16
MW27	11MP60SB	34.0	23.0 - 33.0	241.04	242.94	29.0 - TD	NR	30.01	8/22/2022	11:39	212.93
MW27	11MP60SB	34.0	23.0 - 33.0	241.04	242.94	29.0 - TD	NR	26.23	6/14/2023	13:14	216.71
MW27	11MP60SB	34.0	23.0 - 33.0	241.04	242.94	29.0 - TD	NR	27.01	9/7/2023	12:18	215.93
MW28											
MW28	11MP88SB	64.0	53.0 - 63.0	239.94	241.94	49.0 - TD	NR	29.51	8/28/2021	12:46	212.43
MW28	11MP88SB	64.0	53.0 - 63.0	239.94	241.94	49.0 - TD	NR	23.07	6/1/2022	14:04	218.87
MW28	11MP88SB	64.0	53.0 - 63.0	239.94	241.94	49.0 - TD	NR	28.56	8/22/2022	11:41	213.38
MW28	11MP88SB	64.0	53.0 - 63.0	239.94	241.94	49.0 - TD	NR	24.94	6/14/2023	13:16	217.00
MW28	11MP88SB	64.0	53.0 - 63.0	239.94	241.94	49.0 - TD	NR	24.84	9/7/2023	12:22	217.10
MW29											
MW29	11MP41SB	70.0	59.0 - 69.0	280.35	282.25	61.0 - TD	NR	64.00	9/1/2021	15:00	218.25
MW29	11MP41SB	70.0	59.0 - 69.0	280.35	282.25	61.0 - TD	NR	63.49	6/1/2022	14:38	218.76
MW29	11MP41SB	70.0	59.0 - 69.0	280.35	282.25	61.0 - TD	NR	64.43	8/22/2022	12:50	217.82
MW29	11MP41SB	70.0	59.0 - 69.0	280.35	282.25	61.0 - TD	NR	53.68	6/14/2023	13:57	228.57
MW29	11MP41SB	70.0	59.0 - 69.0	280.35	282.25	61.0 - TD	NR	59.79	9/7/2023	15:48	222.46
MW30											
MW30	11SM31SB	53.0	42.0 - 52.0	275.71	277.41	45.0 - TD	NR	54.19	8/28/2021	16:21	Suspected Dry (Water Elevation <223.7 feet)
MW30	11SM31SB	53.0	42.0 - 52.0	275.71	277.41	45.0 - TD	NR	50.56	6/1/2022	14:45	226.85
MW30	11SM31SB	53.0	42.0 - 52.0	275.71	277.41	45.0 - TD	NR	52.56	8/22/2022	12:57	224.85
MW30	11SM31SB	53.0	42.0 - 52.0	275.71	277.41	45.0 - TD	NR	51.38	6/14/2023	14:00	226.03
MW30	11SM31SB	53.0	42.0 - 52.0	275.71	277.41	45.0 - TD	NR	51.40	9/7/2023	15:55	226.01

Table 2-1. Monitoring Well Construction and Groundwater Depth Information

Monitoring Well ID	Soil Boring ID	Reported Well Total Depth As Constructed (feet bgs)	Reported Screened Interval (feet bgs)	Surveyed Ground Elevation (feet NAVD88)	Surveyed Top of Casing Elevation (feet NAVD88)	GW Observed During Drilling (feet bgs)	Measured Well Total Depth (feet below TOC)	Static Water Level Depth (feet below TOC)	Static Water Level Date	Static Water Level Time	GW Elevation (feet NAVD88)
MW31											
MW31	11UP11SB	44.8	33.8 - 43.8	495.79	497.99	34.0 - TD	NR	39.02	8/28/2021	15:09	458.97
MW31	11UP11SB	44.8	33.8 - 43.8	495.79	497.99	34.0 - TD	NR	36.09	6/1/2022	16:50	461.90
MW31	11UP11SB	44.8	33.8 - 43.8	495.79	497.99	34.0 - TD	NR	38.5	8/22/2022	16:32	459.49
MW31	11UP11SB	44.8	33.8 - 43.8	495.79	497.99	34.0 - TD	NR	38.29	6/14/2023	16:53	459.70
MW31	11UP11SB	44.8	33.8 - 43.8	495.79	497.99	34.0 - TD	NR	34.37	9/7/2023	1430	463.62
MW32											
MW32	11RD05SB	25.0	14.0 - 24.0	194.38	196.58	16.5 - TD	NR	19.28	8/28/2021	11:31	177.30
MW32	11RD05SB	25.0	14.0 - 24.0	194.38	196.58	16.5 - TD	NR	17.75	6/1/2022	13:25	178.83
MW32	11RD05SB	25.0	14.0 - 24.0	194.38	196.58	16.5 - TD	NR	7.60	8/22/2022	8:55	188.98
MW32	11RD05SB	25.0	14.0 - 24.0	194.38	196.58	16.5 - TD	NR	16.61	6/14/2023	9:16	179.97
MW32	11RD05SB	25.0	14.0 - 24.0	194.38	196.58	16.5 - TD	NR	17.43	9/7/2023	11:52	179.15
MW33											
MW33	11RD20SB	23.0	12.0 - 22.0	176.62	178.92	10.5 - TD	NR	8.12	8/28/2021	16:53	170.80
MW33	11RD20SB	23.0	12.0 - 22.0	176.62	178.92	10.5 - TD	NR	3.72	6/1/2022	17:55	175.20
MW33	11RD20SB	23.0	12.0 - 22.0	176.62	178.92	10.5 - TD	NR	6.67	8/22/2022	8:38	172.25
MW33	11RD20SB	23.0	12.0 - 22.0	176.62	178.92	10.5 - TD	NR	5.45	6/14/2023	9:08	173.47
MW33	11RD20SB	23.0	12.0 - 22.0	176.62	178.92	10.5 - TD	NR	4.23	9/7/2023	16:17	174.69
MW34											
MW34	AST5 MW1	NR	NR	290.95	294.25	--	NR	34.59	8/28/2021	9:55	259.66
MW34	AST5 MW1	NR	NR	290.95	294.25	--	NR	26.84	6/1/2022	11:56	267.41
MW34	AST5 MW1	NR	NR	290.95	294.25	--	NR	34.48	8/22/2022	10:24	259.77
MW34	AST5 MW1	NR	NR	290.95	294.25	--	NR	29.62	6/14/2023	9:08	264.63
MW34	AST5 MW1	NR	NR	290.95	294.25	--	NR	29.76	9/7/2023	9:45	264.49
MW35											
MW35	AST5 MW2	NR	NR	285.76	289.26	--	NR	39.18	8/28/2021	9:59	250.08
MW35	AST5 MW2	NR	NR	285.76	289.26	--	NR	33.18	6/1/2022	12:01	256.08
MW35	AST5 MW2	NR	NR	285.76	289.26	--	NR	39.63	8/22/2022	10:27	249.63
MW35	AST5 MW2	NR	NR	285.76	289.26	--	NR	35.16	6/14/2023	11:40	254.10
MW35	AST5 MW2	NR	NR	285.76	289.26	--	NR	35.30	9/7/2023	9:53	253.96
MW36											
MW36	AST5 MW3	NR	NR	286.33	290.03	--	NR	16.39	8/28/2021	10:02	273.64
MW36	AST5 MW3	NR	NR	286.33	290.03	--	NR	15.46	6/1/2022	12:05	274.57
MW36	AST5 MW3	NR	NR	286.33	290.03	--	NR	15.72	8/22/2022	10:31	274.31
MW36	AST5 MW3	NR	NR	286.33	290.03	--	NR	15.84	6/14/2023	11:46	274.19
MW36	AST5 MW3	NR	NR	286.33	290.03	--	NR	15.52	9/7/2023	9:57	274.51
MW39											
MW39	SM67	84.0	63 - 83	432.83	435.26	--	NR	84.79	8/28/2021	15:35	Dry (Water Elevation <349.8 feet)
MW39	SM67	84.0	63 - 83	432.83	435.26	--	NR	57.82	6/1/2022	16:30	377.44
MW39	SM67	84.0	63 - 83	432.83	435.26	--	NR	84.87	8/22/2022	15:01	350.39
MW39	SM67	84.0	63 - 83	432.83	435.26	--	NR	Dry	6/14/2023	15:55	Dry

Table 2-1. Monitoring Well Construction and Groundwater Depth Information

Monitoring Well ID	Soil Boring ID	Reported Well Total Depth As Constructed (feet bgs)	Reported Screened Interval (feet bgs)	Surveyed Ground Elevation (feet NAVD88)	Surveyed Top of Casing Elevation (feet NAVD88)	GW Observed During Drilling (feet bgs)	Measured Well Total Depth (feet below TOC)	Static Water Level Depth (feet below TOC)	Static Water Level Date	Static Water Level Time	GW Elevation (feet NAVD88)
MW39	SM67	84.0	63 - 83	432.83	435.26	--	NR	84.05	9/7/2023	14:08	351.21
MW40											
MW40	SM68c	140.0	119 - 139	392.86	395.18	--	NR	128.91	8/28/2021	15:45	266.27
MW40	SM68c	140.0	119 - 139	392.86	395.18	--	NR	125.78	6/1/2022	16:18	269.40
MW40	SM68c	140.0	119 - 139	392.86	395.18	--	NR	128.93	8/22/2022	16:43	266.25
MW40	SM68c	140.0	119 - 139	392.86	395.18	--	NR	127.32	6/14/2023	15:47	267.86
MW40	SM68c	140.0	119 - 139	392.86	395.18	--	NR	128.17	9/7/2023	15:31	267.01
MW42											
MW42	SM70b	140.0	119 - 139	339.85	342.34	--	NR	128.7	8/28/2021	16:31	213.66
MW42	SM70b	140.0	119 - 139	339.85	342.34	--	NR	121.5	6/1/2022	14:18	220.85
MW42	SM70b	139.0	119 - 139	339.85	342.34	--	NR	127.6	8/22/2022	12:04	214.76
MW42	SM70b	140.0	119 - 139	339.85	342.34	--	NR	122.6	6/14/2023	13:41	219.72
MW42	SM70b	140.0	119 - 139	339.85	342.34	--	NR	124.4	9/7/2023	12:44	217.99
MW43											
MW43	SM71b	118.5	98 - 118	300.87	303.69	--	NR	90.14	8/28/2021	16:38	213.55
MW43	SM71b	118.5	98 - 118	300.87	303.69	--	NR	82.92	6/1/2022	14:26	220.77
MW43	SM71b	118.5	98 - 118	300.87	303.69	--	NR	88.92	8/22/2022	11:55	214.77
MW43	SM71b	118.5	98 - 118	300.87	303.69	--	NR	84.40	6/14/2023	13:33	219.29
MW43	SM71b	118.5	98 - 118	300.87	303.69	--	NR	85.66	9/7/2023	12:52	218.03
MW44											
MW44	SM72	69	48-68	378.92	381.59	--	NR	35.42	8/28/2021	15:56	346.17
MW44	SM72	69	48-68	378.92	381.59	--	NR	32.45	6/1/2022	15:06	349.14
MW44	SM72	69	48-68	378.92	381.59	--	NR	35.01	8/22/2022	13:11	346.58
MW44	SM72	69	48-68	378.92	381.59	--	NR	33.28	6/14/2023	14:25	348.31
MW44	SM72	69	48-68	378.92	381.59	--	NR	32.45	9/7/2023	13:03	349.14
MW45											
MW45	SM73	82	61-81	397.70	400.37	--	NR	46.72	8/28/2021	13:40	353.65
MW45	SM73	82	61-81	397.70	400.37	--	NR	40.20	6/1/2022	15:32	360.17
MW45	SM73	82	61-81	397.70	400.37	--	NR	44.84	8/22/2022	13:37	355.53
MW45	SM73	82	61-81	397.70	400.37	--	NR	43.27	6/14/2023	15:07	357.10
MW45	SM73	82	61-81	397.70	400.37	--	NR	42.02	9/7/2023	13:25	358.35
MW46											
MW46	SM74	57	36-56	399.62	402.50	--	NR	35.63	8/28/2021	13:32	366.87
MW46	SM74	57	36-56	399.62	402.50	--	NR	32.01	6/1/2022	15:39	370.49
MW46	SM74	57	36-56	399.62	402.50	--	NR	34.00	8/22/2022	13:42	368.50
MW46	SM74	57	36-56	399.62	402.50	--	NR	33.33	6/14/2023	15:15	369.17
MW46	SM74	57	36-56	399.62	402.50	--	NR	31.95	9/7/2023	13:32	370.55
MW47											
MW47	SM75	67	46-66	380.67	383.67	--	NR	39.06	8/28/2021	13:25	344.61
MW47	SM75	67	46-66	380.67	383.67	--	NR	35.62	6/1/2022	15:50	348.05
MW47	SM75	67	46-66	380.67	383.67	--	NR	37.45	8/22/2022	13:48	346.22
MW47	SM75	67	46-66	380.67	383.67	--	NR	36.25	6/14/2023	15:24	347.42

Table 2-1. Monitoring Well Construction and Groundwater Depth Information

Monitoring Well ID	Soil Boring ID	Reported Well Total Depth As Constructed (feet bgs)	Reported Screened Interval (feet bgs)	Surveyed Ground Elevation (feet NAVD88)	Surveyed Top of Casing Elevation (feet NAVD88)	GW Observed During Drilling (feet bgs)	Measured Well Total Depth (feet below TOC)	Static Water Level Depth (feet below TOC)	Static Water Level Date	Static Water Level Time	GW Elevation (feet NAVD88)
MW47	SM75	67	46-66	380.67	383.67	--	NR	34.79	9/7/2023	13:40	348.88
MW48											
MW48	SM76	44.5	23-43	348.87	351.51	--	NR	20.19	8/28/2021	16:02	331.32
MW48	SM76	44.5	23-43	348.87	351.51	--	NR	18.96	6/1/2022	14:58	332.55
MW48	SM76	44.5	23-43	348.87	351.51	--	NR	19.28	8/22/2022	13:04	332.23
MW48	SM76	44.5	23-43	348.87	351.51	--	NR	19.30	6/14/2023	14:18	332.21
MW48	SM76	44.5	23-43	348.87	351.51	--	NR	18.39	9/7/2023	15:40	333.12
MW49											
MW49	SM77	61.7	40-60	301.15	303.78	--	NR	30.31	8/28/2021	16:10	273.47
MW49	SM77	61.7	40-60	301.15	303.78	--	NR	27.57	6/1/2022	17:40	276.21
MW49	SM77	61.7	40-60	301.15	303.78	--	NR	31.56	8/22/2022	12:44	272.22
MW49	SM77	61.7	40-60	301.15	303.78	--	NR	28.59	6/14/2023	14:09	275.19
MW49	SM77	61.7	40-60	301.15	303.78	--	NR	28.30	9/7/2023	16:00	275.48
MW50											
MW50	SM78	92	71-91	439.58	442.6501	--	NR	49.26	8/28/2021	14:30	393.39
MW50	SM78	92	71-91	439.58	442.6501	--	NR	44.50	6/1/2022	17:01	398.15
MW50	SM78	92	71-91	439.58	442.6501	--	NR	49.50	8/22/2022	15:01	393.15
MW50	SM78	92	71-91	439.58	442.6501	--	NR	45.91	6/14/2023	16:08	396.74
MW50	SM78	92	71-91	439.58	442.6501	--	NR	46.69	9/7/2023	15:00	395.96
MW51											
MW51	SM79	77	56-76	422.38	425.05	--	NR	40.28	8/28/2021	14:03	384.77
MW51	SM79	77	56-76	422.38	425.05	--	NR	37.11	6/1/2022	17:08	387.94
MW51	SM79	77	56-76	422.38	425.05	--	NR	42.33	8/22/2022	15:22	382.72
MW51	SM79	77	56-76	422.38	425.05	--	NR	38.18	6/14/2023	16:16	386.87
MW51	SM79	77	56-76	422.38	425.05	--	NR	39.43	9/7/2023	15:15	385.62
MW52											
MW52	SM80	56	35-55	383.91	386.83	--	NR	34.17	8/28/2021	13:17	352.66
MW52	SM80	56	35-55	383.91	386.83	--	NR	28.74	6/1/2022	15:58	358.09
MW52	SM80	56	35-55	383.91	386.83	--	NR	32.40	8/22/2022	13:55	354.43
MW52	SM80	56	35-55	383.91	386.83	--	NR	29.80	6/14/2023	15:29	357.03
MW52	SM80	56	35-55	383.91	386.83	--	NR	30.77	9/7/2023	13:44	356.06
MW53											
MW53	SM81	62	41-61	460.82	463.7785	--	NR	34.08	8/28/2021	14:56	429.70
MW53	SM81	62	41-61	460.82	463.7785	--	NR	28.78	6/1/2022	17:20	435.00
MW53	SM81	62	41-61	460.82	463.7785	--	NR	34.17	8/22/2022	16:10	429.61
MW53	SM81	62	41-61	460.82	463.7785	--	NR	30.10	6/14/2023	16:29	433.68
MW53	SM81	62	41-61	460.82	463.7785	--	NR	31.93	9/7/2023	14:37	431.85
MW54											
MW54	SM82	50	29-49	423.01	425.7406	--	NR	30.52	8/28/2021	14:17	395.22
MW54	SM82	50	29-49	423.01	425.7406	--	NR	28.30	6/1/2022	17:14	397.44
MW54	SM82	50	29-49	423.01	425.7406	--	NR	29.65	8/22/2022	15:33	396.09
MW54	SM82	50	29-49	423.01	425.7406	--	NR	28.93	6/14/2023	16:22	396.81

Table 2-1. Monitoring Well Construction and Groundwater Depth Information

Monitoring Well ID	Soil Boring ID	Reported Well Total Depth As Constructed (feet bgs)	Reported Screened Interval (feet bgs)	Surveyed Ground Elevation (feet NAVD88)	Surveyed Top of Casing Elevation (feet NAVD88)	GW Observed During Drilling (feet bgs)	Measured Well Total Depth (feet below TOC)	Static Water Level Depth (feet below TOC)	Static Water Level Date	Static Water Level Time	GW Elevation (feet NAVD88)
MW54	SM82	50	29-49	423.01	425.7406	--	NR	28.65	9/7/2023	15:20	397.09
MW55											
MW55	SM83	27	10-20	341.26	344.09	--	NR	14.08	8/28/2021	13:10	330.01
MW55	SM83	27	10-20	341.26	344.09	--	NR	11.66	6/1/2022	16:06	332.43
MW55	SM83	27	10-20	341.26	344.09	--	NR	12.73	8/22/2022	14:05	331.36
MW55	SM83	27	10-20	341.26	344.09	--	NR	12.79	6/14/2023	15:37	331.30
MW55	SM83	27	10-20	341.26	344.09	--	NR	11.79	9/7/2023	13:51	332.30
MW56											
MW56	SM84	76	55-75	408.55	411.329	--	NR	37.93	8/28/2021	13:46	373.40
MW56	SM84	76	55-75	408.55	411.329	--	NR	32.35	6/1/2022	15:00	378.98
MW56	SM84	76	55-75	408.55	411.329	--	NR	34.66	8/22/2022	13:18	376.67
MW56	SM84	76	55-75	408.55	411.329	--	NR	34.69	6/14/2023	14:35	376.64
MW56	SM84	76	55-75	408.55	411.329	--	NR	31.79	9/7/2023	13:12	379.54
MW57											
MW57	SM85	60	37.5-57.5	461.00	463.8141	--	NR	35.75	8/28/2021	15:17	428.06
MW57	SM85	60	37.5-57.5	461.00	463.8141	--	NR	30.52	6/1/2022	16:43	433.29
MW57	SM85	60	37.5-57.5	461.00	463.8141	--	NR	37.56	8/22/2022	16:25	426.25
MW57	SM85	60	37.5-57.5	461.00	463.8141	--	NR	32.31	6/14/2023	16:44	431.50
MW57	SM85	60	37.5-57.5	461.00	463.8141	--	NR	35.62	9/7/2023	14:15	428.19
MW58											
MW58	SM86	58	36.62-56.62	469.84	472.7246	--	NR	31.76	8/28/2021	14:43	440.96
MW58	SM86	58	36.62-56.62	469.84	472.7246	--	NR	29.81	6/1/2022	17:28	442.91
MW58	SM86	58	36.62-56.62	469.84	472.7246	--	NR	30.35	8/22/2022	16:00	442.37
MW58	SM86	58	36.62-56.62	469.84	472.7246	--	NR	30.83	6/14/2023	16:35	441.89
MW58	SM86	58	36.62-56.62	469.84	472.7246	--	NR	29.43	9/7/2023	14:47	443.29
MW59											
MW59	SM87	161.5	140-160	432.63	435.4785	--	NR	131.74	8/28/2021	15:28	303.74
MW59	SM87	161.5	140-160	432.63	435.4785	--	NR	132.56	6/1/2022	16:33	302.92
MW59	SM87	162.5	140-160	432.63	435.4785	--	NR	132.20	8/22/2022	14:18	303.28
MW59	SM87	162.5	140-160	432.63	435.4785	--	NR	132.18	6/14/2023	15:56	303.30
MW59	SM87	162.5	140-160	432.63	435.4785	--	NR	132.03	9/7/2023	14:03	303.45

Notes
Elevation datum: NAVD88 calculated using GEOID09.
TOC refers to the top of PVC inner casing.

Acronyms and Abbreviations
bgs = below ground surface
GW = groundwater
ID = identification
NAVD88 = North American Vertical Datum, 1988
NR = Not Recorded
NTCRA = non-time-critical removal action
PVC = polyvinyl chloride
TD = Total depth
TOC = Top of Casing
-- = No information available

Table 2-2. Red Devil Creek and Seep Discharge Gauging

Location[1]		RD02	RD03	RD10	RD14	RD04	RD12	RD13	RD15	RD05 (seep)	RD16	RD09	RD06	RD07	RD08B*
Average Spring		--	--	4.64	6.67	12.67	10.53	--	4.75	0.12	6.88	7.80	5.86	--	6.35
Average Fall		5.96	4.09	2.45	2.57	4.70	6.02	--	2.31	0.11	0.54	3.77	3.11	5.61	2.98
Estimated Discharge (cfs) by Date	**8/18/2011**	5.96	4.09	5.52	--	5.95	8.24	--	--	0.18	--	5.98	6.81	7.61	7.19
	5/26/2012	NR	NR	12.18	--	12.67	10.53	--	--	NR	--	13.36	14.47	NR	14.20
	9/12/2012	NR	NR	4.64	--	3.45	3.79	--	--	0.16	--	3.40	3.80	3.61	3.09
	6/19/2015	NR	NR	1.25	1.41	NR	NR	NR	1.40	0.23	1.61	1.40	1.54	NR	1.90
	9/2/2015	NR	NR	0.48	0.54	NR	NR	NR	0.67	0.19	0.60	0.80	0.79	NR	0.81
	9/28/2016	NR	NR	2.45	3.01	NR	NR	NR	3.53	0.35	NR	2.43	5.51	NR	NR
	6/1/2017	NR	NR	1.20	1.54	NR	NR	NR	1.91	0.01	NR	1.55	1.26	NR	2.15
	9/16/2017	NR	NR	5.22	6.35	NR	NR	NR	6.85	0.05	NR	6.23	7.08	NR	7.38
	5/19/2018	NR	NR	11.60	10.84	NR	NR	NR	15.80	0.33	NR	14.87	13.69	NR	10.41
	5/18/2019	NR	NR	11.47	12.87	NR	NR	NR	13.04	0.12	12.14	NR	15.15	NR	13.12
	9/10/2019	NR	NR	0.42	0.37	NR	NR	NR	0.41	0.01	0.47	NR	0.33	NR	0.26
	6/17/2020	NR	NR	0.54	NR	NR	NR	NR	0.88	0.17	NR	NR	1.11	NR	1.28
	9/2/2020	NR	NR	0.40	NR	NR	NR	NR	0.39	0.03	NR	NR	0.43	NR	0.44
	6/9/2021	NR	NR	1.47	NR	NR	NR	NR	1.68	0.04	NR	NR	1.78	NR	1.39
	9/3/2021	NR	NR	0.76	NR	NR	NR	NR	1.75	0.03	NR	NR	1.23	NR	1.66
	6/6/2022	NR	NR	1.39	NR	NR	NR	NR	2.13	0.05	NR	NR	2.61	NR	2.34*
	8/27/2022	NR	NR	2.89	NR	NR	NR	NR	2.59	0.04	NR	NR	2.60	NR	3.64*
	6/19/2023	NR	NR	0.67	NR	NR	NR	NR	1.18	0.04	NR	NR	1.12	NR	1.33*
	9/12/2023	NR	NR	1.76	NR	NR	NR	NR	2.30	0.04	NR	NR	2.56	NR	2.16*

Notes:

[1] Locations are organized from upstream to downstream along Red Devil Creek to the Kuskokwim River.

[*] RD08 was washed out due to the spring breakup flooding and replaced by RD08B in June 2022.

Acronyms and Abbreviations:

cfs = cubic feet per second

NR = Not Recorded; Station not monitored

RD = Red Devil

-- = Station not established

Table 2-3. Groundwater Baseline Analytical Data - Spring 2023

	Station ID			MW06	MW09	MW10	MW16	MW17	MW26	MW27	MW28	MW29	MW33
	Geographic Area			Pre-1955 MPA	Pre-1955 MPA	Pre-1955 MPA	Pre-1955 MPA	Pre-1955 MPA	Pre-1955 MPA	Pre-1955 MPA	Pre-1955 MPA	Pre-1955 MPA	Surface Mined Area
Analyte	Sample ID			0623MW06GW	0623MW09GW	0623MW10GW	0623MW16GW	0623MW17GW	0623MW26GW	0623MW27GW	0623MW28GW	0623MW29GW	0623MW33GW
Metals	Method		Units										
Aluminum	Metals (ICP)	6020B	mg/L	0.061	0.110	0.0064 J	0.34	0.082	0.13	0.008 J	0.0093 J	0.57	0.33
Antimony	Metals (ICP/MS)	6020B	mg/L	0.0100	0.0057	0.00032 J	0.35	0.0094	0.14	0.0096	0.0034	0.00034 J	0.35
Arsenic	Metals (ICP/MS)	6020B	mg/L	0.051	0.04	0.1	0.6	0.0039	1.1	0.019	0.11	0.038	0.03
Barium	Metals (ICP/MS)	6020B	mg/L	0.083	0.36	0.091	0.05	0.038	0.43	0.039	0.048	0.15	0.034
Beryllium	Metals (ICP/MS)	6020B	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	Metals (ICP/MS)	6020B	mg/L	ND	0.00008 J	ND	0.00024 J	ND	ND	0.000075 J	ND	ND	ND
Calcium	Metals (ICP)	6020B	mg/L	26	26	18	23	18	42	68	34	40	14
Chromium	Metals (ICP/MS)	6020B	mg/L	0.00052 J	0.00160	0.00017 J	0.00098	0.00052 J	0.001	0.00055 J	0.00018 J	0.0016	0.0021
Cobalt	Metals (ICP/MS)	6020B	mg/L	0.0016	0.00080	ND	0.0094	0.00005 J	0.021	0.0012	0.0029	0.0012	0.00026 J
Copper	Metals (ICP/MS)	6020B	mg/L	ND	0.0021	ND	0.0026	ND	0.0033	0.00095 J	ND	0.0013 J	0.0015 J
Iron	Metals (ICP)	6020B	mg/L	4.1	3.0	1	11	0.091 J	45	0.06 J	1.1	1.8	0.49
Lead	Metals (ICP/MS)	6020B	mg/L	0.000170 J	0.00039 J	ND	0.00031 J	0.000049 J	0.0005	ND	ND	0.00021 J	0.00031 J
Magnesium	Metals (ICP)	6020B	mg/L	26	19	29	49	14	26	45	29	43	11
Manganese	Metals (ICP/MS)	6020B	mg/L	0.65	3.3	0.16	6.7	0.0056	6.2	0.81	0.92	0.38	0.024
Nickel	Metals (ICP/MS)	6020B	mg/L	0.0028 J	0.0031	0.00034 J	0.0054	0.00073 J	0.017	0.014	0.0071	0.0047	0.0022 J
Potassium	Metals (ICP)	6020B	mg/L	0.6 J	0 J	0.89 J	1.6 J	0.24 J	2.4 J	1 J	0.65 J	0.83 J	0.52 J
Selenium	Metals (ICP/MS)	6020B	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	Metals (ICP/MS)	6020B	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	Metals (ICP)	6020B	mg/L	3.7	2.5	3.1	4.3	2.3	3.8	12	9	2	3.9
Thallium	Metals (ICP/MS)	6020B	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	Metals (ICP/MS)	6020B	mg/L	ND	0.00046 J	ND	0.0018 J	ND	0.00075 J	ND	ND	0.0021 J	0.0012 J
Zinc	Metals (ICP/MS)	6020B	mg/L	0.002 J	0.008	ND	0.0063 J	ND	0.0044 J	0.0095	ND	0.0025 J	0.0029 J
Mercury	Metals (ICP/MS)	7470A	mg/L	ND	ND	ND	0.00095	0.00035	0.0025	0.00075	ND	ND	0.00026 J
Total Low Level Mercury													
Mercury	Total Mercury	EPA 1631E	ng/L	28.0	200	81	1000	370	2500	1400	200	64	65
Dissolved Low Level Mercury													
Mercury	Dissolved Mercury	EPA 1631E	ng/L	10.00	77.0	2.6	510	160	1200	1300	150	22	55
Field Water Quality Parameters													
Temperature	Field Measurement	Deg C		7.1	8.8	6.2	6	6.4	8	5.2	5	7	3.2
pH	Field Measurement	pH Units		6.98	6.83	7.5	6.6	7.26	6.75	6.23	7.03	6.79	6.26
Specific Conductance	Field Measurement	µS/cm		336	265.9	291.4	504	199.3	550	728	415.4	538	179.2
Turbidity	Field Measurement	NTU		9.68	18.2	0.61	12.3	2.75	14.4	0.39	0.91	22.1	7.01
Dissolved Oxygen	Field Measurement	mg/L		1.67	1.46	0.76	0.29	9.09	7.5	2.08	0.31	1.1	9.96
Oxidation-Reduction Potential	Field Measurement	mV		-6.4	48.9	-29.0	23.6	77.6	8.8	207.4	24.6	42.8	160

Acronyms and Abbreviations
Deg C = degrees celsius
EPA = United States Environmental Protection Agency
GC/MS = gas chromatography/mass spectrometry
ICP/MS = inductively coupled plasma/mass spectrometry
µS/cm = Microsiemens per centimeter
mg/L = Milligrams per liter
mV = Millivolts
ND = Not detected
ng/L = Nanograms per liter
NTU = Nephelometric turbidity units

Data Qualifiers:
J = The analyte was detected. The associated result is estimated.
J+ = The analyte was detected. The associated result is estimated with high bias.
J- = The analyte was detected. The associated result is estimated low bias.
U = The analyte was analyzed for but not detected.
UJ = The analyte was analyzed for but not detected. The associated reporting limit is estimated.
F1 = MS and/or MSD recovery exceeds control limits.

Table 2-3. Groundwater Baseline Analytical Data - Spring 2023

Analyte	Station ID			MW40	MW42	MW43	MW44	MW45	MW46	MW47	MW49	MW50	MW51
	Geographic Area			Surface Mined Area	Vicinity of the Proposed Repository	Vicinity of the Proposed Repository	Vicinity of the Proposed Repository	Vicinity of the Proposed Repository	Vicinity of the Proposed Repository	Vicinity of the Proposed Repository	Vicinity of the Proposed Repository	Vicinity of the Proposed Repository	Vicinity of the Proposed Repository
	Sample ID			0623MW40GW	0623MW42GW	0623MW43GW	0623MW44GW	0623MW45GW	0623MW46GW	0623MW47GW	0623MW49GW	0623MW50GW	0623MW51GW
Metals	Method		Units										
Aluminum	Metals (ICP)	6020B	mg/L	0.018 J	9.4	0.0075 J	0.043	0.028 J	0.14	0.0097 J	10	0.017 J	0.049
Antimony	Metals (ICP/MS)	6020B	mg/L	0.011	0.31	0.0028	0.00082	ND	ND	0.00025 J	0.0019	0.013	ND
Arsenic	Metals (ICP/MS)	6020B	mg/L	0.42	3	0.37	0.0014	0.0009 J	0.0005 J	ND	0.028	0.57	0.0023
Barium	Metals (ICP/MS)	6020B	mg/L	0.14	0.42	0.13	0.027	0.00058 J	0.0035	0.0013	0.16	0.29	0.015
Beryllium	Metals (ICP/MS)	6020B	mg/L	ND	0.0014	ND	ND	ND	ND	ND	0.00034 J	ND	ND
Cadmium	Metals (ICP/MS)	6020B	mg/L	ND	0.00022 J	ND	ND	ND	ND	ND	0.00027 J	ND	ND
Calcium	Metals (ICP)	6020B	mg/L	45	36	20	35	16	11	13	10	70	17
Chromium	Metals (ICP/MS)	6020B	mg/L	0.00041 J	0.018	ND	0.00032 J	0.00045 J	0.0005 J	0.00031 J	0.02	0.00029 J	0.00045 J
Cobalt	Metals (ICP/MS)	6020B	mg/L	0.032	0.024	0.02	0.0027	ND	0.000071 J	ND	0.0097	0.0021	0.00053
Copper	Metals (ICP/MS)	6020B	mg/L	ND	0.044	ND	ND	ND	ND	0.00089 J	0.014	ND	ND
Iron	Metals (ICP)	6020B	mg/L	1.1	17	3.6	1.5	0.073 J	0.14	0.021 J	8.9	2	0.25
Lead	Metals (ICP/MS)	6020B	mg/L	0.000074 J	0.011	0.00009 J	ND	ND	0.000055 J	ND	0.0034	0.000049 J	ND
Magnesium	Metals (ICP)	6020B	mg/L	51	32	14	32	15	11	14	7.8	56	15
Manganese	Metals (ICP/MS)	6020B	mg/L	0.39	1.1	2.9	0.8	0.0016 J	0.0043	0.004	1.2	0.97	0.078
Nickel	Metals (ICP/MS)	6020B	mg/L	0.11	0.067	0.055	0.0028 J	0.00091 J	0.0013 J	0.00069 J	0.032	0.006	0.0015 J
Potassium	Metals (ICP)	6020B	mg/L	0.69 J	4.4	0.52 J	0.3 J	0.31 J	0.31 J	0.38 J	3 J	0.61 J	0.28 J
Selenium	Metals (ICP/MS)	6020B	mg/L	ND	0.0024 J	ND	ND	ND	ND	ND	ND	ND	ND
Silver	Metals (ICP/MS)	6020B	mg/L	ND	0.00029 J	ND	ND	ND	ND	ND	0.000064 J	ND	ND
Sodium	Metals (ICP)	6020B	mg/L	1.8	2.3	2.9	2	1.1	1.3	1.6	1.6	2.1	1.9
Thallium	Metals (ICP/MS)	6020B	mg/L	ND	0.00023 J	ND	ND	ND	ND	ND	0.00017 J	ND	ND
Vanadium	Metals (ICP/MS)	6020B	mg/L	ND	0.033	ND	ND	ND	0.00062 J	ND	0.033	ND	ND
Zinc	Metals (ICP/MS)	6020B	mg/L	0.0041 J	0.06	0.0031 J	ND	0.002 J	ND	0.0023 J	0.034	0.0028 J	0.0015 J
Mercury	Metals (ICP/MS)	7470A	mg/L	ND	0.02	ND	ND	ND	ND	ND	0.0033	ND	ND
Total Low Level Mercury													
Mercury	Total Mercury	EPA 1631E	ng/L	13	16000	2.9	3.6	10	12	9.2	3200	98	8.6
Dissolved Low Level Mercury													
Mercury	Dissolved Mercury	EPA 1631E	ng/L	1.1	4100	0.79	3.00	5.9	7.2	2.00	2500	23.0	4.9
Field Water Quality Parameters													
Temperature	Field Measurement	Deg C		7.2	12.8	4.4	4.4	3.8	4	4	4.5	6	6.6
pH	Field Measurement	pH Units		7.05	6.89	6.82	7.23	6.76	6.73	6.72	6.04	6.89	6.62
Specific Conductance	Field Measurement	µS/cm		612	408.6	249	385.8	186.4	147.6	178.2	123.9	652	188.4
Turbidity	Field Measurement	NTU		5.57	627	3.07	7.84	1.09	4.98	0.31	311	8.26	3.59
Dissolved Oxygen	Field Measurement	mg/L		1.56	2.82	0.97	2.6	8.25	8.82	8.33	7.46	5.08	6.96
Oxidation-Reduction Potential	Field Measurement	mV		69.5	128.4	65.8	-4.2	210.3	199	108.9	139.9	45.8	200

Acronyms and Abbreviations
Deg C = degrees celsius
EPA = United States Environmental Protection Agency
GC/MS = gas chromatography/mass spectrometry
ICP/MS = inductively coupled plasma/mass spectrometry
µS/cm = Microsiemens per centimeter
mg/L = Milligrams per liter
mV = Millivolts
ND = Not detected
ng/L = Nanograms per liter
NTU = Nephelometric turbidity units

Data Qualifiers:
J = The analyte was detected. The associated result is estimated.
J+ = The analyte was detected. The associated result is estimated with high bias.
J- = The analyte was detected. The associated result is estimated low bias.
U = The analyte was analyzed for but not detected.
UJ = The analyte was analyzed for but not detected. The associated reporting limit is estimated.

Table 2-3. Groundwater Baseline Analytical Data - Spring 2023

	Station ID			MW52	MW53	MW54	MW55	MW56	MW57	MW58	MW59	Duplicate of MW49	Duplicate of MW52	Duplicate of MW10
	Geographic Area			Vicinity of the Proposed Repository	Vicinity of the Proposed Repository	Vicinity of the Proposed Repository	Vicinity of the Proposed Repository	Vicinity of the Proposed Repository	Vicinity of the Proposed Repository	Vicinity of the Proposed Repository	Vicinity of the Proposed Repository	Vicinity of the Proposed Repository	Vicinity of the Proposed Repository	Pre-1955 MPA
Analyte	Sample ID			0623MW52GW	0623MW53GW	0623MW54GW	0623MW55GW	0623MW56GW	0623MW57GW	0623MW58GW	0623MW59GW	0623MW97GW	0623MW98GW	0623MW99GW
Metals	Method		Units											
Aluminum	Metals (ICP)	6020B	mg/L	0.15	0.041	0.015 J	0.0063 J	0.052	0.34	0.045	0.96	ND	0.088	0.014 J
Antimony	Metals (ICP/MS)	6020B	mg/L	0.00028 J	0.00017 J	0.00079 J	0.0071	0.00021 J	0.00015 J	0.00019 J	0.001	0.0071	0.0091	0.00039 J
Arsenic	Metals (ICP/MS)	6020B	mg/L	0.0058	0.00027 J	0.065	0.05	0.00078 J	0.0014	0.0032	0.14	0.056	0.0045	0.11
Barium	Metals (ICP/MS)	6020B	mg/L	0.0042	0.13	0.12	0.13	0.056	0.0091	0.1	0.33	0.13	0.04	0.09
Beryllium	Metals (ICP/MS)	6020B	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	Metals (ICP/MS)	6020B	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Calcium	Metals (ICP)	6020B	mg/L	9	18	39	19	45	6.5	28	51	20	18	17
Chromium	Metals (ICP/MS)	6020B	mg/L	0.00083	0.00047 J	0.00023 J	0.00034 J	0.00045 J	0.0017	0.00042 J	0.0029	0.00037 J	0.00052 J	0.00027 J
Cobalt	Metals (ICP/MS)	6020B	mg/L	0.00027 J	0.00015 J	0.0013	0.0018	0.0023	0.00025 J	0.00034 J	0.0014	0.0018	0.000063 J	0.000051 J
Copper	Metals (ICP/MS)	6020B	mg/L	ND	ND	ND	ND	0.00079 J	0.00064 J	ND	0.0024	ND	ND	ND
Iron	Metals (ICP)	6020B	mg/L	0.12	0.049 J	3.5	22	0.1	0.33	2.3	3.3	24	0.097 J	1.1
Lead	Metals (ICP/MS)	6020B	mg/L	ND	0.000043 J	ND	ND	0.000062 J	0.000094 J	ND	0.00029 J	ND	0.000058 J	ND
Magnesium	Metals (ICP)	6020B	mg/L	5.4	11	37	14	38	3.6	22	49	14	14	27
Manganese	Metals (ICP/MS)	6020B	mg/L	0.017	0.043	0.36	0.66	2	0.012	0.11	0.55	0.69	0.0059	0.16
Nickel	Metals (ICP/MS)	6020B	mg/L	0.0011 J	0.001 J	0.0065	0.0039	0.014	0.002 J	0.0023 J	0.0039	0.0043	0.00097 J	0.0004 J
Potassium	Metals (ICP)	6020B	mg/L	0.3 J	ND	0.63 J	0.67 J	0.51 J	0.3 J	0.48 J	0.94 J	0.66 J	0.26 J	0.73 J
Selenium	Metals (ICP/MS)	6020B	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	Metals (ICP/MS)	6020B	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	Metals (ICP)	6020B	mg/L	2.2	1.8	1.8	1.7	1.3	2	1.5	1.6	1.8	2.4	2.9
Thallium	Metals (ICP/MS)	6020B	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	Metals (ICP/MS)	6020B	mg/L	0.00048 J	ND	ND	ND	ND	0.0011 J	ND	0.0033 J	ND	ND	ND
Zinc	Metals (ICP/MS)	6020B	mg/L	0.0015 J	0.003 J	ND	0.0023 J	0.0078	0.0034 J	ND	0.0037 J	0.0025 J	0.0033 J	ND
Mercury	Metals (ICP/MS)	7470A	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00036	ND
Total Low Level Mercury														
Mercury	Total Mercury	EPA 1631E	ng/L	29	32	10	20	10	130	16	180	22	480	33
Dissolved Low Level Mercury														
Mercury	Dissolved Mercury	EPA 1631E	ng/L	9	11.0	2.8	17	3.10	71	2.8	51	19	170	2.7
Field Water Quality Parameters														
Temperature	Field Measurement	Deg C		3.6	4.5	6	3.7	4.7	7	6.4	6.1	4.5	3.6	6.2
pH	Field Measurement	pH Units		6.06	6.62	7.06	6.45	6.94	6.35	7.38	7.04	6.04	6.06	7.5
Specific Conductance	Field Measurement	µS/cm		99.3	188.5	428.3	284.5	436.3	68.1	309.3	566	123.9	99.3	291.4
Turbidity	Field Measurement	NTU		3.09	1.47	8.68	8.98	5.32	2.96	6.69	63.3	311	3.09	0.61
Dissolved Oxygen	Field Measurement	mg/L		11.76	8.2	2.8	1.44	2.97	9.37	0.18	0.55	7.46	11.76	0.76
Oxidation-Reduction Potential	Field Measurement	mV		117.8	109.7	-3.3	355	207.8	219.5	-2.1	44.4	139.9	117.8	-29

Acronyms and Abbreviations
Deg C = degrees celsius
EPA = United States Environmental Protection Agency
GC/MS = gas chromatography/mass spectrometry
ICP/MS = inductively coupled plasma/mass spectrometry
µS/cm = Microsiemens per centimeter
mg/L = Milligrams per liter
mV = Millivolts
ND = Not detected
ng/L = Nanograms per liter
NTU = Nephelometric turbidity units

Data Qualifiers:
J = The analyte was detected. The associated result is estimated.
J+ = The analyte was detected. The associated result is estimated with high bias.
J- = The analyte was detected. The associated result is estimated low bias.
U = The analyte was analyzed for but not detected.
UJ = The analyte was analyzed for but not detected. The associated reporting limit is estimated.

Table 2-4. Groundwater Baseline Analytical Data - Fall 2023

	Station ID			MW06		MW09		MW10		MW16		MW17		MW26		MW27		MW28		MW29		MW33	
	Geographic Area			Pre-1955 MPA		Pre-1955 MPA		Pre-1955 MPA		Pre-1955 MPA		Pre-1955 MPA		Pre-1955 MPA		Pre-1955 MPA		Pre-1955 MPA		Pre-1955 MPA		Pre-1955 MPA	
Analyte	Sample ID			0923MW06GW		0923MW09GW		0923MW10GW		0923MW16GW		0923MW17GW		0923MW26GW		0923MW27GW		0923MW28GW		0923MW29GW		0923MW33GW	
Metals	**Method**		**Units**																				
Aluminum	Metals (ICP)	6020B	mg/L	ND		0.045		ND		1.7		0.057		0.071		ND		ND		0.53		0.38	
Antimony	Metals (ICP/MS)	6020B	mg/L	0.011		0.0027		0.0008		1.1		0.006		0.12		0.0056		0.0058		0.0011		0.42	
Arsenic	Metals (ICP/MS)	6020B	mg/L	0.053		0.015		0.074		1.1		0.0031		1.2		0.026		0.082		0.041		0.032	
Barium	Metals (ICP/MS)	6020B	mg/L	0.083		0.39		0.085		0.083		0.036		0.46		0.036		0.045		0.17		0.038	
Beryllium	Metals (ICP/MS)	6020B	mg/L	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Cadmium	Metals (ICP/MS)	6020B	mg/L	ND		0.00004	J	ND		0.0003	J	ND		ND		0.00011	J	ND		ND		0.000039	J
Calcium	Metals (ICP)	6010D	mg/L	29		30		20		30		19		54		82		37		50		18	
Chromium	Metals (ICP/MS)	6020B	mg/L	ND		ND		ND		0.004	J+	0.0008	J+	0.00096	J+	ND		ND		0.0021	J+	0.0023	J+
Cobalt	Metals (ICP/MS)	6020B	mg/L	0.0017		0.0011	J	ND		0.0083		ND		0.019		0.0029		0.0023	J	0.0013		ND	
Copper	Metals (ICP/MS)	6020B	mg/L	ND		ND		ND		0.0082		ND		0.0031	J+	ND		ND		0.0027	J+	ND	
Iron	Metals (ICP)	6020B	mg/L	4.5		2		0.78		14		ND		42		ND		0.79		2.4		0.71	J
Lead	Metals (ICP/MS)	6020B	mg/L	ND		ND		ND		0.0013		ND		ND		ND		ND		ND		0.00056	J
Magnesium	Metals (ICP)	6010D	mg/L	28		21		30		61		14		31		50		28		49		13	
Manganese	Metals (ICP/MS)	6020B	mg/L	0.59		4.6		0.11		5.6		0.0031	J+	5		2.5		0.74		0.38		0.033	
Nickel	Metals (ICP/MS)	6020B	mg/L	0.0032	J+	ND		ND		0.0094	J+	ND		0.016	J+	0.039	J+	0.0058	J+	0.0044	J+	ND	
Potassium	Metals (ICP)	6010D	mg/L	0.8	J	0.56	J	0.99	J	3	J	0.43	J	2.8	J	1.2	J	0.87	J	1.2	J	0.79	J
Selenium	Metals (ICP/MS)	6020B	mg/L	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Silver	Metals (ICP/MS)	6020B	mg/L	ND		ND		ND		0.00013	J	ND		ND		ND		ND		ND		ND	
Sodium	Metals (ICP)	6010D	mg/L	3.9		2.7		3.2		5.8		2.5		4.2		13		9.6		2.4		4.9	
Thallium	Metals (ICP/MS)	6020B	mg/L	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Vanadium	Metals (ICP/MS)	6020B	mg/L	ND		ND		ND		0.0061		ND		ND		ND		ND		ND		ND	
Zinc	Metals (ICP/MS)	6020B	mg/L	ND		ND		ND		0.016		ND		0.0072	J+	0.021	J	ND		ND		ND	
Mercury	Metals (ICP/MS)	7470A	mg/L	ND		ND		ND		0.0046		ND	F1	0.0022		0.00044		ND		ND		0.00029	J
Total Low Level Mercury																							
Mercury	Total Mercury	EPA 1631E	ng/L	20		150		8.4		4000		240	J-, J	2400		870		130		270		9.9	
Dissolved Low Level Mercury																							
Mercury	Dissolved Mercury	EPA 1631E	ng/L	9.5		26		1.6		670		14		73		720		110		72		8.5	
Field Water Quality Parameters																							
Temperature	Field Measurement	Deg C		4.61		4.26		4.70		7.33		5.67		6.45		5.67		5.90		4.38		4.60	
pH	Field Measurement	pH Units		6.85		6.76		7.48		6.34		7.01		6.66		6.35		6.94		6.71		5.96	
Specific Conductance	Field Measurement	µS/cm		418		377		362		605		194		603		790		431		565		194	
Turbidity	Field Measurement	NTU		7.61		1.77		1.35		63.27		1.03		53.12		0.23		0.00		34.18		9.71	
Dissolved Oxygen	Field Measurement	mg/L		0.42		2.73		0.78		3.47		10.88		0.68		0.58		0.53		0.17		7.05	
Oxidation-Reduction Potential	Field Measurement	mV		-1.1		65.1		-45.1		102.0		141.6		63.3		54.9		15.9		26.9		210.0	

Acronyms and Abbreviations
Deg C = Degrees Celsius.
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ICP/ MS = Inductively coupled plasma/mass spectrometry
µS/cm = Microsiemens per centimeter
mg/L = Milligrams per liter
mV = Millivolts
NA = Not analyzed
ND = Not detected
ng/L = Nanograms per liter
NTU = Nephelometric turbidity units

Data Qualifiers:
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J+ = The analyte was detected. The associated result is estimated with high bias.
J- = The analyte was detected. The associated result is estimated low bias.
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F1 = MS and/or MSD recovery exceeds control limits.

Table 2-4. Groundwater Baseline Analytical Data - Fall 2023

	Station ID			MW40		MW42		MW43		MW44		MW45		MW46		MW47		MW49		MW50		MW51	
	Geographic Area			Surface Mined Area		Surface Mined Area		Surface Mined Area		Vicinity of the Proposed Repository		Vicinity of the Proposed Repository		Vicinity of the Proposed Repository		Vicinity of the Proposed Repository		Vicinity of the Proposed Repository		Vicinity of the Proposed Repository		Vicinity of the Proposed Repository	
Analyte	Sample ID			0923MW40GW		0923MW42GW		0923MW43GW		0923MW44GW		0923MW45GW		0923MW46GW		0923MW47GW		0923MW49GW		0923MW50GW		0923MW51GW	
Metals	**Method**		**Units**																				
Aluminum	Metals (ICP)	6020B	mg/L	ND		0.77		ND		0.091		ND		0.07		ND		0.27		0.22		0.044	
Antimony	Metals (ICP/MS)	6020B	mg/L	0.0069		0.24		0.0023	J	ND		ND		ND		ND		ND		0.015	J	ND	
Arsenic	Metals (ICP/MS)	6020B	mg/L	0.32		1.5		0.39		0.0016		0.00098	J	0.00029	J	ND		0.0018		0.58		0.0027	
Barium	Metals (ICP/MS)	6020B	mg/L	0.12		0.17		0.13		0.03		ND		0.0018	J+	ND		0.006	J	0.31		0.02	
Beryllium	Metals (ICP/MS)	6020B	mg/L	ND		0.00016	J	ND		ND		ND		ND		ND		ND		ND		ND	
Cadmium	Metals (ICP/MS)	6020B	mg/L	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Calcium	Metals (ICP)	6010D	mg/L	44		38		23		40		19		13		16		11		77		18	
Chromium	Metals (ICP/MS)	6020B	mg/L	ND		0.0021	J+	0.0012	J+, J	0.0015	J+	0.00092		0.0016		0.002	J+	0.0045	J+	0.0021	J+	0.0013	J+
Cobalt	Metals (ICP/MS)	6020B	mg/L	0.025		0.0021	J	0.02	J	0.0029		ND		ND		ND		0.0004	J+	0.0023		0.00085	J+
Copper	Metals (ICP/MS)	6020B	mg/L	ND		0.003	J+	ND		ND		ND		ND		ND		ND		ND		ND	
Iron	Metals (ICP)	6020B	mg/L	1		5.9		3.5	J	2.2		0.11	J+	ND		ND		0.3	J+	1.9		0.3	J+
Lead	Metals (ICP/MS)	6020B	mg/L	ND		0.00067		ND		ND		ND		ND		ND		ND		ND		ND	
Magnesium	Metals (ICP)	6010D	mg/L	46		29		16		34		17		13		17		7.5		59		16	
Manganese	Metals (ICP/MS)	6020B	mg/L	0.29		0.46		2.6		0.84		0.0026	J+	ND		0.01	J+	0.11		1		0.11	
Nickel	Metals (ICP/MS)	6020B	mg/L	0.086		0.013	J+	0.055	J+	0.0035	J+	ND		ND		ND		0.0048	J+	0.0088	J+	ND	
Potassium	Metals (ICP)	6010D	mg/L	0.85	J	1.2	J	0.55	J	0.52	J	0.45	J	0.44	J	0.4	J	0.48	J	0.83	J	0.36	J
Selenium	Metals (ICP/MS)	6020B	mg/L	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Silver	Metals (ICP/MS)	6020B	mg/L	0.00053		0.000028	J	ND		0.00003	J	0.00019	J	ND		ND		ND		0.000047	J	ND	
Sodium	Metals (ICP)	6010D	mg/L	1.8		2.5		3.2		2.3		1.2		1.4		1.8		1.6		2.3		2.2	
Thallium	Metals (ICP/MS)	6020B	mg/L	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Vanadium	Metals (ICP/MS)	6020B	mg/L	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Zinc	Metals (ICP/MS)	6020B	mg/L	ND		ND		ND		ND		ND		ND		ND		ND		0.026	J	ND	
Mercury	Metals (ICP/MS)	7470A	mg/L	ND		0.0029		ND		ND		ND	F1	ND		ND		ND		0.00078		ND	
Total Low Level Mercury																							
Mercury	Total Mercury	EPA 1631E	ng/L	17		4800		1.3	J+	8		10		NA		1.3	J+	95	J	810		7.8	
Dissolved Low Level Mercury																							
Mercury	Dissolved Mercury	EPA 1631E	ng/L	0.55		180		0.49	J	0.59		3.6		1.5		0.74	J	6		100		0.92	
Field Water Quality Parameters																							
Temperature	Field Measurement	Deg C		3.97		4.39		4.14		3.12		3.00		2.96		3.36		3.33		6.26		3.63	
pH	Field Measurement	pH Units		7.01		6.65		6.63		7.03		6.52		6.61		6.77		5.72		6.87		6.40	
Specific Conductance	Field Measurement	µS/cm		480		388		246		416		211		147		198		117		644		169	
Turbidity	Field Measurement	NTU		9.43		224.1		2.01		8.83		0.00		2.92		0.00		5.53		26.63		6.80	
Dissolved Oxygen	Field Measurement	mg/L		1.92		0.48		0.75		0.27		7.63		9.17		6.66		7.37		4.52		5.45	
Oxidation-Reduction Potential	Field Measurement	mV		-28.7		77.3		50.1		22.3		193.5		188.2		187.7		208.3		32.7		162.3	

Acronyms and Abbreviations
Deg C = Degrees Celsius.
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GC/MS = Gas Chromatography/Mass Spectrometry
ICP/ MS = Inductively coupled plasma/mass spectrometry
µS/cm = Microsiemens per centimeter
mg/L = Milligrams per liter
mV = Millivolts
NA = Not analyzed
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F1 = MS and/or MSD recovery exceeds control limits.

Table 2-4. Groundwater Baseline Analytical Data - Fall 2023

	Station ID			MW52		MW53		MW54		MW55		MW56		MW57		MW58		MW59		Duplicate of MW43		Duplicate of MW16		Duplicate of MW17	
	Geographic Area			Vicinity of the Proposed Repository		Vicinity of the Proposed Repository		Vicinity of the Proposed Repository		Vicinity of the Proposed Repository		Vicinity of the Proposed Repository		Vicinity of the Proposed Repository		Vicinity of the Proposed Repository		Vicinity of the Proposed Repository		Pre-1955 MPA		Pre-1955 MPA		Pre-1955 MPA	
Analyte	Sample ID			0923MW52GW		0923MW53GW		0923MW54GW		0923MW55GW		0923MW56GW		0923MW57GW		0923MW58GW		0923MW59GW		0923MW97GW		0923MW98GW		0923MW99GW	
Metals	**Method**		**Units**																						
Aluminum	Metals (ICP)	6020B	mg/L	0.073		0.042	J	ND		0.085	J	0.21		ND		ND		0.82		ND		1.7		0.047	
Antimony	Metals (ICP/MS)	6020B	mg/L	ND		0.00085		ND		0.0059	J	ND		ND		ND		0.002		0.0024	J	1.1		0.0077	
Arsenic	Metals (ICP/MS)	6020B	mg/L	0.0054		0.00071	J	0.054	J	0.088		0.0027		0.00068	J	0.0026		0.28		0.35	J	1.1		0.0031	
Barium	Metals (ICP/MS)	6020B	mg/L	0.004		0.13		0.12		0.14		0.076		0.0051		0.1		0.36		0.12		0.084		0.035	
Beryllium	Metals (ICP/MS)	6020B	mg/L	ND		ND		ND		ND		ND		ND		ND		0.00016	J	ND		0.00012	J	ND	
Cadmium	Metals (ICP/MS)	6020B	mg/L	ND		ND		ND		ND		ND		ND		ND		ND		ND		0.00029	J	ND	
Calcium	Metals (ICP)	6010D	mg/L	11		20		41		19		49		9.5		29		56		21		29		19	
Chromium	Metals (ICP/MS)	6020B	mg/L	0.0014	J+	ND		0.0019	J+	0.0032	J+	0.0053	J+	0.0021	J+	0.0011	J+	0.0031	J+	ND	UJ	0.004	J+	ND	
Cobalt	Metals (ICP/MS)	6020B	mg/L	ND		ND		0.001	J+	0.0015		0.0075		ND		ND		0.0016		0.019	J	0.0084	J+	ND	
Copper	Metals (ICP/MS)	6020B	mg/L	ND		ND		ND		ND		0.0029	J+	ND		ND		0.003	J+	ND		0.0085		ND	
Iron	Metals (ICP)	6020B	mg/L	ND		ND		2.6		28		0.73		ND		2		5.9		3.3	J	14		ND	
Lead	Metals (ICP/MS)	6020B	mg/L	ND		ND		ND		ND		ND		ND		ND		0.00048	J+	ND		0.0014	J	ND	
Magnesium	Metals (ICP)	6010D	mg/L	6		11		39		14		40		4.9		22		54		15		60		14	
Manganese	Metals (ICP/MS)	6020B	mg/L	0.016		0.088		0.31		0.61		3.3		ND		0.094		0.59		2.6	J	5.5		0.0026	J+
Nickel	Metals (ICP/MS)	6020B	mg/L	ND		ND		0.006	J+	0.0055	J+	0.021	J+	ND		ND		0.0042	J+	0.053	J+	0.0098	J+	ND	
Potassium	Metals (ICP)	6010D	mg/L	0.26	J	0.29	J	0.62	J	0.73	J	0.6	J	0.23	J	0.46	J	1.1	J	0.54	J	2.9	J	0.36	J
Selenium	Metals (ICP/MS)	6020B	mg/L	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Silver	Metals (ICP/MS)	6020B	mg/L	ND		ND		0.000061	J	0.000045	J	ND		ND		ND		ND		ND		0.000043	J	ND	
Sodium	Metals (ICP)	6010D	mg/L	2.5		2		1.9		2		1.4		2.2		1.6		1.8		3		5.8		2.4	
Thallium	Metals (ICP/MS)	6020B	mg/L	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Vanadium	Metals (ICP/MS)	6020B	mg/L	ND		ND		ND		ND		ND		ND		ND		ND		ND		0.0062	J	ND	
Zinc	Metals (ICP/MS)	6020B	mg/L	ND		ND		ND		ND		ND		ND		ND		ND		ND		0.016	J	ND	
Mercury	Metals (ICP/MS)	7470A	mg/L	ND		ND		ND		0.00015	J	ND		ND		ND		ND		ND		0.0047		ND	
Total Low Level Mercury																									
Mercury	Total Mercury	EPA 1631E	ng/L	24		42		40		190		25		32		4.8		130		4.3	J+	4100		160	J
Dissolved Low Level Mercury																									
Mercury	Dissolved Mercury	EPA 1631E	ng/L	11		10		19		120		1.6		13		1		0.96		0.62		720		13	
Field Water Quality Parameters																									
Temperature	Field Measurement	Deg C		3.13		3.46		4.05		3.19		3.21		3.09		5.28		5.81		4.14		7.33		5.67	
pH	Field Measurement	pH Units		6.09		6.45		6.94		6.75		6.63		6.06		7.23		7.13		6.63		6.34		7.01	
Specific Conductance	Field Measurement	µS/cm		93		149		421		258		448		82		266		537		246		605		194	
Turbidity	Field Measurement	NTU		3.14		4.60		7.53		22.49		7.55		0.76		8.77		42.55		2.01		63.27		1.03	
Dissolved Oxygen	Field Measurement	mg/L		11.18		7.90		6.55		1.11		1.86		9.66		0.50		2.35		0.75		3.47		10.88	
Oxidation-Reduction Potential	Field Measurement	mV		156.5		40.8		-6.0		53.3		174.8		15.7		-9.8		18.0		50.1		102.0		141.6	

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F1 = MS and/or MSD recovery exceeds control limits.

Table 2-5. Surface Water Baseline Analytical Data - Spring 2023

	[1]Sample Location		RD10SW		RD15SW		RD05SW (seep)		RD06SW		RD08BSW		RD08BSW	
	Sample ID		0623RD10SW		0622RD15SW		0623RD05SW		0623RD06SW		0623RD08SW		0623RD99SW	
	Sampling Date		6/20/2023		6/20/2023		6/20/2023		6/20/2023		6/20/2023		6/20/2023	
	Matrix		WS		WS		WS		WS		WS		WS	
Analyte	**Method**	**Units**	Result		Result		Result		Result		Result		Result	
General Chemistry														
Total Dissolved Solids	160.1	mg/L	**83**		**95**		**390**		**160**		**130**		**81**	
Total Suspended Solids	160.2	mg/L	**0.8**		ND		**3.6**		ND		**1.2**		**0.8**	
Chloride	300.0	mg/L	**0.43**	**J**	ND		**0.45**	J	**0.49**	**J**	**0.48**	**J**	**0.48**	**J**
Fluoride	300.0	mg/L	ND		**0.2**		**ND**		**0.22**		**0.22**		ND	
Sulfate	300.0	mg/L	**8.6**		**30**		**8.5**		**10**		**11**		**11**	
Alkalinity	310.1	mg/L	**72**		**240**		**68**		**78**		**79**		**79**	
Bicarbonate Alkalinity as CaCO3	310.1	mg/L	**72**		**240**		**68**		**78**		**79**		**79**	
Carbonate Alkalinity as CaCO3	310.1	mg/L	ND		ND		ND		ND		ND		ND	
Nitrate Nitrite as N	353.2	mg/L	**0.085**	**J**	**0.076**	**J**	ND		**0.077**	**J**	**0.076**	**J**	ND	
Metals														
Aluminum	6020B	mg/L	**0.031**	**J**	**0.03**	**J**	**0.0059**	**J**	**0.027**	**J**	**0.04**		**0.029**	**J**
Antimony	6020B	mg/L	**0.0016**		**0.033**		**0.076**		**0.15**		**0.18**		**0.18**	
Arsenic	6020B	mg/L	**0.0013**		**0.013**		**1.2**		**0.065**		**0.066**		**0.065**	
Barium	6020B	mg/L	**0.022**		**0.021**		**0.1**		**0.027**		**0.027**		**0.027**	
Beryllium	6020B	mg/L	ND		ND		ND		ND		ND		ND	
Cadmium	6020B	mg/L	ND		ND		ND		ND		ND		ND	
Calcium	6010D	mg/L	**15**		**14**		**38**		**16**		**16**		**16**	
Chromium	6020B	mg/L	**0.00034**	**J**	**0.00031**	**J**	**0.0003**	**J**	**0.00035**	**J**	**0.00026**	**J**	**0.00027**	**J**
Cobalt	6020B	mg/L	**0.000054**	**J**	**0.000049**	**J**	**0.0037**		**0.00018**	**J**	**0.00021**	**J**	**0.00016**	**J**
Copper	6020B	mg/L	ND		ND		ND		ND		**0.00078**	**J**	ND	
Iron	6020B	mg/L	**0.13**		**0.096**	**J**	**2.7**		**0.14**		**0.14**		**0.13**	
Lead	6020B	mg/L	ND		ND		ND		ND		**0.000053**	**J**	ND	
Magnesium	6010D	mg/L	**8.6**		**8.5**		**44**		**11**		**11**		**11**	
Manganese	6020B	mg/L	**0.02**		**0.016**		**0.24**		**0.025**		**0.028**		**0.025**	
Nickel	6020B	mg/L	**0.00029**	**J**	**0.00034**	**J**	**0.017**		**0.001**	**J**	**0.001**	**J**	**0.00097**	**J**
Potassium	6010D	mg/L	**0.22**	**J**	**0.28**	**J**	**1.2**	**J**	**0.34**	**J**	**0.39**	**J**	**0.36**	**J**
Selenium	6020B	mg/L	ND		ND		ND		ND		ND		ND	
Silver	6020B	mg/L	ND		ND		ND		ND		ND		ND	
Sodium	6010D	mg/L	**1.4**		**1.5**		**8.4**		**2**		**2.2**		**2.2**	
Thallium	6020B	mg/L	ND		ND		ND		ND		ND		ND	
Vanadium	6020B	mg/L	ND		ND		ND		ND		ND		ND	
Zinc	6020B	mg/L	ND		**0.0016**	**J**	**0.0028**	**J**	**0.0016**	**J**	**0.0019**	**J**	**0.0026**	**J**
Mercury	7470A	mg/L	ND		ND		ND		ND		ND		ND	
Low Level Mercury Analysis														
Mercury	EPA 1631E	ng/L	**2.9**		**22**		**53**		**42**		**1700**		**52**	
Field Water Quality Parameters														
Temperature	Field Measurement	Deg C	5.4		5.6		3.6		5.5		5.6		5.6	
pH	Field Measurement	pH Units	7.94		7.92		7.14		7.83		7.99		7.99	
Specific Conductance	Field Measurement	µS/cm	148.7		140.6		515		166.7		124.9		124.9	
Turbidity	Field Measurement	NTU	1.38		1.73		13.6		2.21		3.32		3.32	
Dissolved Oxygen	Field Measurement	mg/L	11.92		12.02		2.37		11.78		12.01		12.01	
Oxidation-Reduction Potential	Field Measurement	mV	46.8		88.8		48.8		82.3		176.2		176.2	

Notes

Bold font indicates a detection

- = not applicable

[1] Sample results are arranged from upstream to downstream.

Acronyms and Abbreviations

Deg C = Degrees Celsius
µS/cm = microsiemens per centimeter
ID = Identifer
mg/L = milligrams per liter
mV = millivolts
ND = Not detected
ng/L = nanograms per liter
NTU = nephelometric turbidity unit
WS = surface water

Qualifiers

J = The analyte was detected. The associated result is estimated.
J+ = The analyte was detected. The associated result is estimated with high bias.
J- = The analyte was detected. The associated result is estimated low bias.
U = The analyte was analyzed for but not detected.
UJ = The analyte was analyzed for but not detected. The associated reporting limit is estimated.

Table 2-6. Surface Water Baseline Analytical Data - Fall 2023

	[1]Sample Location		RD10SW		RD15SW		RD05SW		RD06SW		RD08BSW		RD08BSW	
	Sample ID		0923RD10SW		0923RD15SW		0923RD05SW		0923RD06SW		0923RD08BSW		0923RD99SW	
	Sampling Date		9/13/2023		9/13/2023		9/13/2023		9/13/2023		9/13/2023		9/13/2023	
	Matrix		WS		WS		WS		WS		WS		WS	
Analyte	**Method**	**Units**	**Result**		**Result**		**Result**		**Result**		**Result**		**Result**	
General Chemistry														
Total Dissolved Solids	160.1	mg/L	ND		**66**		**190**		**35**		ND		ND	
Total Suspended Solids	160.2	mg/L	**40**		**17**		**8.2**		ND		**3**		**4**	
Chloride	300.0	mg/L	**0.56**	J	**0.64**	J	**0.81**	J	**0.62**	J	NA	-	**0.68**	J
Fluoride	300.0	mg/L	ND		**0.18**	J	**0.25**		**0.18**	J	NA	-	**0.19**	J
Sulfate	300.0	mg/L	**7.9**		**7.9**		**37**		**10**		NA	-	**10**	
Alkalinity	310.1	mg/L	**68**		**62**		**230**		**73**		NA	-	**73**	
Bicarbonate Alkalinity as CaCO3	310.1	mg/L	**68**		**62**		**230**		**73**		NA	-	**73**	
Carbonate Alkalinity as CaCO3	310.1	mg/L	ND		ND		ND		ND		NA	-	ND	
Nitrate Nitrite as N	353.2	mg/L	**0.25**		**0.2**		ND		**0.2**		**0.2**		**0.18**	
Metals														
Aluminum	6020B	mg/L	**0.18**		**0.1**		ND		ND		**0.118**		**0.17**	
Antimony	6020B	mg/L	**0.0015**		**0.06**		**0.043**		**0.2**		**0.219**		**0.22**	
Arsenic	6020B	mg/L	**0.0012**		**0.022**		**0.96**		**0.081**		**0.0885**		**0.089**	
Barium	6020B	mg/L	**0.028**		**0.022**		**0.095**		**0.025**		**0.0278**		**0.028**	
Beryllium	6020B	mg/L	ND		ND		ND		ND		ND		ND	
Cadmium	6020B	mg/L	ND		ND		ND		ND		ND		ND	
Calcium	6010D	mg/L	**17**		**16**		**42**		**18**		**18.2**		**18**	
Chromium	6020B	mg/L	ND		ND		ND		ND		ND		ND	
Cobalt	6020B	mg/L	ND		ND		**0.0047**		ND		ND		ND	
Copper	6020B	mg/L	ND		ND		ND		ND		**0.000699**		ND	
Iron	6020B	mg/L	**0.26**		**0.24**	J+	**2.5**	J+	**0.18**	J+	**0.331**		**0.4**	
Lead	6020B	mg/L	ND		ND		ND		ND		ND		ND	
Magnesium	6010D	mg/L	**9.1**		**9.7**		**47**		**12**		**11.8**		**12**	
Manganese	6020B	mg/L	**0.022**	B	**0.023**		**0.32**		**0.031**		**0.0373**		**0.038**	
Nickel	6020B	mg/L	ND		ND		**0.018**	J+	ND		ND		ND	
Potassium	6010D	mg/L	**0.22**		**0.34**	J	**1.2**	J	**0.4**	J	**0.442**	J	**0.42**	J
Selenium	6020B	mg/L	ND		ND		ND		ND		ND		ND	
Silver	6020B	mg/L	ND		ND		ND		ND		ND		ND	
Sodium	6010D	mg/L	**1.5**		**1.8**		**11**		**2.3**		**2.27**		**2.3**	
Thallium	6020B	mg/L	ND		ND		ND		ND		ND		ND	
Vanadium	6020B	mg/L	ND		ND		ND		ND		**0.000572**	J	ND	
Zinc	6020B	mg/L	ND		ND		ND		ND		ND		ND	
Mercury	7470A	mg/L	ND		ND		ND		ND		**0.00035**		**0.0002**	J
Low Level Mercury Analysis														
Mercury	EPA 1631E	ng/L	**6.7**		**53**		**27**		**51**		**95**		**100**	
Field Water Quality Parameters														
Temperature	Field Measurement	Deg C	4.09		3.92		3.58		3.87		3.89		3.89	
pH	Field Measurement	pH Units	7.62		7.62		6.88		6.66		7.05		7.05	
Specific Conductance	Field Measurement	µS/cm	144		150		527		181		171		171	
Turbidity	Field Measurement	NTU	0.24		0.31		3.41		0.78		0.45		0.45	
Dissolved Oxygen	Field Measurement	mg/L	13.75		13.25		2.02		13.36		13.13		13.13	
Oxidation-Reduction Potential	Field Measurement	mV	79.5		137.3		31.1		156.0		156.3		156.3	

Notes

Bold font indicates a detection

- = not applicable

[1] Sample results are arranged from upstream to downstream.

Acronyms and Abbreviations

Deg C = Degrees Celsius.
EPA = United States Environmental Protection Agency
µS/cm = Microsiemens per centimeter
mg/L = Milligrams per liter
mV = Millivolts
NA = Not analyzed
ND = Not detected
ng/L = Nanograms per liter
NTU = Nephelometric turbidity units

Data Qualifiers:

B = The analyte was found in the blank and the sample.
J = The analyte was detected. The associated result is estimated.
J+ = The analyte was detected. The associated result is estimated with high bias.
J- = The analyte was detected. The associated result is estimated low bias.
U = The analyte was analyzed for but not detected.
UJ = The analyte was analyzed for but not detected. The associated reporting limit is estimated.